

Manual on Statistics of International Trade in Services Compiler's Guide 2010



United Nations



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Organisation for Economic
Co-operation and Development



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Trade and Development



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Department of Economic and Social Affairs
Statistics Division

Studies in Methods

Series M No. 95

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United Nations Publication
Sales No. E.15.XVII.6
ISBN 978-92-1-161592-0

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Printed by the United Nations, New York

Foreword

In 2010, at its forty-first session, the Statistical Commission adopted¹ the *Manual on Statistics of International Trade in Services 2010 (MSITS 2010)* while urging the Task Force² on Statistics of International Trade in Services (TFSITS) to give high importance to the development of corresponding compilation guidance. TFSITS discussed the outline of the *Compiler's Guide for MSITS 2010* as early as March 2010, but started to work on it only in late 2011 to ensure close coordination with the ongoing work of the International Monetary Fund (IMF) on its compilation guidance for the *Balance of Payments and International Investment Position Manual, 6th edition (BPM6)*. TFSITS was supported in its work by the UN Expert Group on the Compilation of Statistics of International Trade in Services, which was established especially for the purpose of developing the *Compiler's Guide*.

The *Compiler's Guide* is aligned with the international statistical standards in the field of economic statistics, in particular the *System of National Accounts 2008 (2008 SNA)*, the BPM6, the *Organization for Economic Cooperation and Development (OECD) Benchmark Definition of Foreign Direct Investment, 4th edition, 2008* and the *International Recommendations for Tourism Statistics, 2008*.

The preparation of the *Guide* was organized by means of four virtual meetings and one face-to-face meeting. The members of the UN Expert Group, including all members of TFSITS, participated actively in these meetings. The group of about 70 experts from various national agencies of developed and developing countries exchanged hundreds of inputs in numerous iterations of successive drafts of the chapters. The *Guide* benefited from strong cooperation among international organizations, as well as from the advice of consultants, the invaluable input of a large number of member countries' experts and the many comments received during the successive worldwide consultations and online discussion forums, conducted under the auspices of the Task Force.

The *Guide* will help to harmonize and improve the ways in which statisticians at the national level collect, compile and disseminate trade in services statistics. While international standards in economic statistics³ are in the process of being implemented, the publication of the present *Guide* is timely, providing the statistical community with guidelines, best practices, case studies and practical advice on the compilation of trade in services statistics. Those statistics consist of transactions between residents and non-residents in services classified by the Extended Balance of Payments Services Classification (EBOPS) categories and by country of residence; they also include foreign affiliate trade statistics (FATS), as well as statistics on modes of supply. The overarching aim of the *Guide* is to increase the availability and quality of those statistics in order to fulfil the urgent need and demand for such data by policymakers, researchers, market analysts and the public in general.

The *Guide* is first of all intended for use by statisticians of national statistics offices, central banks and ministries of trade and investment or other agencies engaged in the compilation of trade in services statistics. We recommend that countries implement the guidelines progressively, taking into account their national

¹ See *Official Records of the Economic and Social Council, 2010, Supplement No. 24 (E/2010/24)*, chap. I. B, decision 41/104, para. (b).

² In March 2014, the Task Force on Statistics of International Trade in Services merged with the Task Force on International Merchandise Trade Statistics.

³ *System of National Accounts 2008, (2008 SNA)*, Studies in Methods, Series F, No. 2/Rev.5 (United Nations publication, Sales No. E.08.XVII.29) and International Monetary Fund (IMF) *Balance of Payments and International Investment Position Manual, 6th ed. (BPM6)* (Washington, D.C., 2009).

information needs, priorities and resources. The *Guide* will not only be available as a printed publication, but also as a living document in electronic format on the TFSITS website, where further country examples and practices can be regularly added or updated, especially as new compilation techniques become available over time.

Acknowledgements

The *Compiler's Guide* for MSITS 2010 was developed under guidance from the inter-Task Force on Statistics of International Trade in Services (TFSITS), with strong support from the UN Expert Group on the compilation of Statistics of International Trade in Services, as mandated by the Statistical Commission. The process itself was organized by the United Nations Statistics Division.

At the very beginning of the process, national statistical agencies, national central banks, international and regional organizations were consulted on the annotated outline of the *Compiler's Guide* through worldwide consultation. On the basis of that consultation, initial drafts of each chapter were produced and reviewed by an extended Expert Group during four consecutive virtual meetings in 2012 and early 2013, and by the UN Expert Group in one face-to-face meeting in June 2013. In addition to those meetings, the TFSITS met separately on the development of the *Guide* in 2012, 2013 and 2014. The consultation and reviews and virtual and in-person meetings were coordinated by the Statistics Division, the Organization for Economic Cooperation and Development (OECD) and the World Trade Organization (WTO). The process benefited immensely from the advice, as well as the country examples, received during the various meetings.

Special thanks go to WTO (Joscelyn Magdeleine and Andreas Maurer), OECD (Bettina Wistrom, Satoru Hagino and Fabienne Fortanier), Eurostat (Hionia Vlachou) and the Statistics Division (Ronald Jansen, Karoly Kovacs and Nancy Snyder) as main contributors to the *Guide*. Robert Yuskavage, Paul Farello and Maria Borga assisted on the sections related to the collection and compilation of foreign affiliates statistics (FATS).

All members of the Task Force are acknowledged for reviewing the *Guide* throughout the drafting process and for providing valuable comments, including the following: Nadim Ahmad (OECD), Digna Amil (Eurostat); Sanja Blazevic (United Nations Conference of Trade and Development (UNCTAD)), Daniela Comini (Eurostat), Claudia de Camino (Economic Commission for Latin America and the Caribbean (ECLAC)); Christophe Durand (International Trade Centre (ITC)); Franca Faes-Cannito (Eurostat); Paul Farello (United States of America Bureau of Economic Analysis); Satoru Hagino (OECD); Oliver Herrmann (World Tourism Organization (UNTWO)); Ronald Jansen (Statistics Division); Toshie Kori (Bank of Japan); Karoly Kovacs (Statistics Division); Fernando Lemos (Central Bank of Brazil); Joscelyn Magdeleine (WTO); Silvia Matei (International Monetary Fund (IMF)); Andreas Maurer (WTO); Riina Kerner (Eurostat); Maria Isabel Mendez (Bank of Chile); Markie Muryawan (UNCTAD); Henk Nijmeijer (Eurostat); Karo Nuortila (Eurostat); Giovanni Giuseppe Ortolani (Banca d'Italia); François Renard (consultant); Nathalie Schueller (European Commission); Almut Steger (Deutsche Bundesbank); Hidetoshi Takeda (Bank of Japan); Jens Walter (Deutsche Bundesbank); and Bettina Wistrom (OECD).

The following contributors are acknowledged for providing text on compilation guidance and country examples: Australian Bureau of Statistics (Mark Burkhart, Chris Hinchcliffe, Bernard Williams, Paul Mahoney and Jenine Borowik);

Banca d'Italia (Giovanni Giuseppe Ortolani); Banco Central de Chile (Maria Isabel Mendez); Banco Central do Brasil (Fernando Lemos and Thiago Vieira); Banco de México (Andrés Zetina Gutiérrez); Banco de Portugal (Patricia Alexandra Gonçalves and Carla Marques); Bangko Sentral ng Pilipinas (Rosabel Guerrero); Central Bank of the Republic of Turkey (Osman Cagatay); Institut national de la statistique et des études économiques du Grand-Duché de Luxembourg (Nico Weyer); Banque de France (François Mouriaux, Elisabeth Kremp, Valérie Chauvin, Bertrand Colles, Brunot Longuet and Séverine Castor); United States Bureau of Economic Analysis (Paul Farello and Maria Borga); Bank of Japan (Toshie Kori and Hidetoshi Takeda); Central Bureau of Statistics, Israel (Shimon Arieli); Central Bank of the Russian Federation (Lydia Troshina); Statistics Netherlands (Ger Stam and Ben Schoffelen); Central Statistics Office of Ireland (Stephen Treacy, Jennifer Banim, Stephen McDonagh and Susana Portillo); Czech Statistical Office (Tereza Košťáková and Jaroslav Sixta); Depa Census and Statistics Department, Hong Kong (Desmond Sam); Departamento Administrativo Nacional de Estadística Colombia (Lilan Andrea Guio and Martha Poveda Gómez); Federal Statistical Office of Germany (Matthias Nahm); Directorate General of Commercial Intelligence and Statistics of India (Amitava Saha and Dipankar Sinha); Deutsche Bundesbank (Beatrix Stejskal Passler, Almut Steger and Jens Walter); ECLAC (Claudia de Camino); Eesti Pank, Estonia (Andres Kerge and Andres Lauba); Eurostat (Axel Behrens, Zsolt Volfinger, Matthias Ludwig, Leonidas Akritidis and Luis de la Fuente Layos); General Statistics Office of Vietnam (Thi Minh Thuy Le); Hungarian Statistical Office (Zsolt Morcsanyi, Anita Bany and Zsófia Prohászka); International Monetary Fund (IMF) (Silvia Matei), ITC (Christian Delachenal and Christophe Durand); Instituto Nacional de Estadística, Spain (José Antonio Isanta Foncuberta); Ministry of Commerce, China (Yuan Haiying); National Bank of the Republic of Belarus (Elena Rezanovich); National Statistics Institute, Uruguay (Alvaro Fuentes and Jose Gaston Presto Mattos); National Institute of Statistics and Economic Studies, France (Alain Gallais, Colette Hericher and Raoul Depoutot); National Statistical Office, Malta (Elaine G. Borg); National Statistics Office, Philippines (Estela de Guzman and Antonio Balneg Jr.); OECD (Maria Isabel Mendez, Fernando Galindo Rueda, Vladimir Lopez-Bassols, Jean Christophe Dumont, Ayse Bertrand and Nadim Ahmad); Oesterreichische Nationalbank (Patricia Walter and Rene Dell'mour); Office des Changes, Morocco (Mounir Rhandi); Office for National Statistics of the United Kingdom of Great Britain and Northern Ireland (Stephen Curtis and Katherine Kent); Palestinian Central Bureau of Statistics (Husam Kahlifa and Haleema Saeed); Poland Central Statistical Office (Agnieszka Matulska-Bachura); Portal do Instituto Nacional de Estatística (Paula Bordelo); Positium (Margus Tiru); South African Reserve Bank (Zirk Jansen and Stefaans Walters); Statistical Office of the Slovak Republic (Veronika Töröková); Statistics Canada (Denis Caron and Patrick O'Hagan); Statistics Denmark (Casper Winther and Maria Nilsson); Statistics Finland (Risto Sippola and Teemu Oinonen); Statistics Iceland (Auður Ólína Svavarsdóttir, Vésteinn Ingibergsson and Sigrún Svava Valdimarsdóttir); Statistics Malaysia (Dorairaju Suppan and Mohd Ridauddin Bin Masud); Statistics New Zealand (Matthew Haigh, Wido Van Lijf, Aaron Carson, and Salendra Kumar); Statistics Norway (Leif Korbol and Trude Nygård Evensen); Statistics Singapore (Wong Wee Kim); University of Tartu, Department of Geography (Rhein Ahas); UNWTO (Marion Libreros Pinot, Clara Vanderpool and Oliver Herrman); WTO (Barbara D'Andrea-Adrian, Ying Yan, Antonella Liberatore, Ninez Piezas-Jerbi and Yann Marcus); and consultants François Renard and Robert Yuskavage.

In addition, the following experts are acknowledged for reviewing the draft *Compiler's Guide* and providing advice: Ibrahim Almayoof (Saudi Arabian Monetary

Agency); Benjamin Avusevwa (Kenya National Bureau); Omar Bajodah (Saudi Arabian Monetary Agency); Elisabetta Bilotta (National Institute for Statistics Italy); Elena Borushko (Eurasian Economic Commission); Christophe Demunter (Eurostat); Kenneth Egesa (Bank of Uganda); Miloudi Errati (Haut Commissariat au Plan Morocco); Ron Farier (Government of Bermuda); 'Ata'ata M. Finau (Statistics Tonga); Philomen Harrison (Caribbean Community); Majed Hamoudeh (Economic and Social Commission for Western Asia); Eivind Hoffmann (Norwegian Directorate of Immigration); Nilima Lal (Secretariat of the Pacific Community); Mia Mikic (Economic and Social Commission for Asia and the Pacific); Themba Munalula (Common Market for Eastern and Southern Africa); Claes Petri (Statistics Sweden); Ibtissam Sahir (Haut Commissariat au Plan Morocco); Nathalie Schueller (European Commission); Emanuela Trinca (Italian Institute of Statistics); Liu Xiuling (National Bureau of Statistics of China); and Jitendra Bissessar and Johan van den Heever (OECD), as well as the following colleagues from: Eurostat (Pekka Alajaasko, Digna Amil, Liliana Apostol, Franca Faes-Cannito, Luis Del Barrio, Arturo de la Fuente Nuño, Jens Gruetz, Rennie Herve, Riina Kerner, Zsuzsanna Melinda Kovacs, Hakan Linden, Amerigo Liotti, Tatiana Mrlianova, Olaf Nowak, Henk Nijmeijer, Karo Nuortila, Alzbeta Ridzonova, Manfred Schmiemann and Petra Snejers, Johan Van der Valk); IMF (Cornelia Hammer, Florina Tanase and Ethan Weisman); UNCTAD (Sanja Blazevic, Torbjörn Fredriksson, Steve MacFeely, Yumiko Mochizuki, Astrit Sulstarova and Claudia Trentini); and the Economic Commission for Europe (Carsten Boldsen, Tihomira Dimova and Rami Peltola).

Finally, Vladimir Markhonko is acknowledged for his significant contribution in ensuring that the *Guide* is coherent and consistent. He was a consultant at the Statistics Division in 2013 and again in 2014, and was entrusted with the task of carrying out a thorough review of the *Compiler's Guide* to ensure consistency across chapters and with international statistical standards and other statistical domains.

List of acronyms

AMNE	activities of multinational enterprises
BD4	<i>OECD Benchmark Definition of Foreign Direct Investment</i> , 4 th ed.
BPM6	<i>Balance of Payments and International Investment Position Manual</i> , 6 th ed.
CAPI	computer-assisted personal interviewing
CATI	computer-assisted telephone interviewing
CAWI	computer-assisted web interviewing
CIF	cost, insurance and freight
CPC	Central Product Classification
EBOPS	Extended Balance of Payments Services Classification
Eurostat	Statistical Office of the European Union
FATS	foreign affiliates statistics (as used in the present <i>Guide</i>)
FDI	foreign direct investment
FISIM	financial intermediation services indirectly measured
FOB	free on board
FTE	full-time equivalent
GATS	General Agreement on Trade in Services
GDP	gross domestic product
ICFA	ISIC rev.4, Categories for Foreign Affiliates in Services
ICSE	International Classification of Status in Employment (International Labour Organization)
ICT	information and communications technology
IDC	Internet data collection
ILO	International Labour Organization
IMF	International Monetary Fund
IMTS	International Merchandise Trade Statistics
IRTS	International Recommendations for Tourism Statistics
ISCO	International Standard Classification of Occupations (International Labour Organization)
ISIC	International Standard Industrial Classification of All Economic Activities
ITRS	international transactions reporting system
MNE	multinational enterprise
OECD	Organization for Economic Cooperation and Development
RSIM	<i>Recommendations on Statistics of International Migration</i>
SBR	statistical business register

SNA	System of National Accounts
SPEs	special-purpose entities
TFSITS	Task Force on Statistics of International Trade in Services
TSA	Tourism Satellite Account
UCI	ultimate controlling institutional unit (used in respect of foreign affiliates)
UNCTAD	United Nations Conference on Trade and Development
W/120	Services Sectoral Classification List (see World Trade Organization document MTN.GNS/W/120)
XBRL	Extensible Business Reporting Language

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Introduction

1. Rapid technological advances in the past few decades in transport, computing and telecommunications, including the development of the Internet and electronic commerce, have allowed enterprises to avail themselves of resources for production at more distant locations than ever before and have enabled them to import or export services from ever wider markets. This trend towards globalization, reinforced by liberalization policies and the removal of regulatory obstacles to economic activities, has fuelled the steady growth of multinational enterprises, international investment and trade in goods and services. Better communication and transport have also facilitated the movement of people for the purposes of tourism, migration, employment and trade. The result has been a growing economic interdependency among countries, be it through international trade, multinational enterprises, global value chains or the outsourcing of business functions. Particularly in the field of trade in services, which are increasingly becoming the focus of trade liberalization agreements, market access deregulation and other policy initiatives, statisticians face a growing challenge to produce statistics that measure these complex global transactions in a clear, accurate and timely manner.

2. The services sector accounts for the largest share of business activity, employment and economic growth in most economies, yet the role of services trade, particularly in designing policies and negotiating regional agreements, continues to be poorly understood. A major reason for this disconnect is the absence of abundant, high-quality data on trade in services that is comparable across economies, making it difficult to measure the impact of services trade on the economy and provide useful information for negotiators and policymakers to open up market access or develop policy tools to facilitate trade in services.

3. In that context, the Statistical Commission adopted of the United Nations,⁴ in 2010 at its forty-first session, the *Manual on Statistics of International Trade in Services 2010* (MSITS 2010) and endorsed the implementation plan, while urging the Task Force on Statistics of International Trade in Services (TFSITS) to give high importance to the development of corresponding compilation guidance. To ensure close coordination with the work of the International Monetary Fund (IMF) on the compilation guidance for the *Balance of Payments and International Investment Position Manual*, 6th ed. (BPM6), the work on the *Compiler's Guide for MSITS 2010* started late in 2011 with the support of a United Nations Expert Group established for that purpose. The *Compiler's Guide* aims to help compilers while remaining consistent with the recommendations of MSITS 2010, as well as with related statistical recommendations and the compilation guidance that has been developed for BPM6.⁵

4. The *Compiler's Guide* serves the purpose of harmonizing and improving the ways in which statisticians at the national level collect, compile and disseminate statistics of international trade in services. The aim is to increase the availability and quality of such statistics in order to fulfil the urgent needs and demands for statistics that reflect modalities through which services may be supplied by policymakers, researchers, market analysts and the public in general. While the international stand-

⁴ See *Official Records of the Economic and Social Council*, 2010, Supplement No. 24 (E/2010/24), chap. I. B, decision 41/104, para (b).

⁵ IMF, *BPM6 Compilation Guide: Companion Document to the Sixth Edition of the Balance of Payments and International Investment Position Manual* (Washington, D.C., 2014).

⁶ *System of National Accounts 2008*, (2008 SNA) Studies in Methods, Series F, No. 2/Rev.5 (United Nations publication, Sales No. E.08.XVII.29).

ard in economic statistics of the *System of National Accounts 2008* (2008 SNA)⁶ and BPM6 are in the process of being implemented, the *Compiler's Guide* is meant to provide the statistical community with guidelines, best practices, case studies and practical advice on the compilation of data in compliance with the MSITS 2010 framework for the compilation of statistics on the international supply of services.

Box 1

Uses of the terms *statistics of international trade in services* and *statistics on the international supply of services*

The information needs described in the *Manual on Statistics of International Trade in Services 2010* (MSITS 2010) touch upon a multipurpose field of statistical work. As described in box I.2 of MSITS 2010, the conceptual framework introduced in it covers a broad range of statistical domains including (a) statistics on services transactions between residents and non-residents (or resident/non-resident trade in services statistics) broken down by detailed service categories, partner countries and modes of supply, (b) foreign affiliates statistics (FATS) covering the supply of services through a commercial presence, broken down by type of services, partner countries and related data on foreign affiliates (e.g., employment or value added) and (c) additional monetary and non-monetary indicators for analysing the international supply of services. Therefore, the information needs described in MSITS 2010 go beyond the concept of international services transactions or trade in services as covered in the balance of payments (BOP) or in the rest of the world account of the SNA.

The exact terminology to refer to the complete set of statistical domains differs across various statistical forums and users, however. In particular, compilers should note that *statistics of international trade in services* is an umbrella term that should be used in the broad sense outlined above. Indeed, those combined components of MSITS 2010 are recognized by the Statistical Commission of the United Nations as a separate field of statistical activity under that title. The broad use of the term initially referred to the fact that, in the mid-1990s, trade agreements were increasingly covering services as well as goods. The most well-known and wide-reaching agreement that triggered the information needs as described in MSITS 2010 is the General Agreement on Trade in Services (GATS).

The term *statistics of international trade in services* is often interpreted by users to refer only to statistics on services transactions between residents and non-residents (i.e., as covered in the BOP goods and services account). Therefore, the statistical framework developed in MSITS 2010 to compile information on the modes of services supply uses the term *statistics on the international supply of services* to make it more explicit that components covered by the extended scope of international trade in services are also covered. For the purposes of the *Guide* and in line with MSITS 2010 (in particular with the more substantive chapters 3, 4 and 5), the term *statistics of international trade in services* (or *trade in services statistics*) is used in more general contexts to describe the wide statistical domain, and the term *statistics on the international supply of services* is used when explicit emphasis is placed on the inclusion of foreign affiliates statistics (FATS) and additional monetary and non-monetary indicators for measuring the international supply of services.

A. Background

A.1. Overview of the General Agreement on Trade in Services

5. In 1994, the Uruguay Round of multilateral trade negotiations was completed by the signing of the Agreement Establishing the World Trade Organization

(WTO). Annex 1B to the Agreement contains the General Agreement on Trade in Services (i),⁷ which established a set of rules and disciplines governing the use by WTO members of measures affecting trade in services. Trade in services was defined in article I of GATS as “the supply of a service”. The same article also defined four different ways in which a service can be supplied by a natural and juridical person (service supplier) from the territory of a WTO member to a service consumer in the territory of another WTO member. Article XXVIII elaborated the meaning of the main concepts set out by GATS for use in international negotiations⁸ on liberalizing trade in services and in related analytical work.

6. The term “service” is not defined in the Agreement. However, the scope of services with which GATS is concerned was clarified by the secretariat of WTO in the Services Sectoral Classification List (MTN.GNS/W/120 (W/120)), which was based on consultations with the WTO members and issued in 1991. The identification in W/120 of relevant sectors and subsectors enabled WTO members to undertake specific commitments. It should be noted that WTO members have tended to avoid any major changes to the list to ensure the stability and comparability of commitments over time, even though related international statistical classifications have been revised (see chapter I, section B).

7. GATS created a need for specific data that led to the establishing of a special statistical domain: statistics of international trade in services. In view of the fundamental importance of conceptual framework of GATS for those statistics, its key elements are described in chapter 1, section B, of the *Compiler's Guide*.

A.2. Data needs related to the General Agreement on Trade in Services

8. The GATS negotiators and trade in services policymakers, as well as the business community, research institutions and the public at large, need detailed and internationally comparable statistical information on the supply of services by mode, type of service and trading partner. The policymakers require such data to ensure an informed decision-making process leading to specific commitments, the comparison of national commitments and the conduct of efficient negotiations, as well as to assess the extent of liberalization reached in specific sectors or markets and provide statistical background for the settlement of disputes.

9. The availability of timely and comparable data reflecting the international supply of services would greatly benefit the business community, as such data would facilitate the evaluation of the importance of each type of internationally traded service and an understanding of how those services are provided in the respective economies, helping the business community to realize competitive advantages in a globalized world. Such data would also be of interest to research institutions and the public at large since it would allow them to assess the role of services in economic and social development both in their respective countries and globally and would enable them to participate more effectively in the formulation of their countries' trade policies.

10. The conceptual and practical issues related to the compilation of data on the value of internationally supplied services occupy most of the *Guide*. It is necessary to stress, however, that statistical needs related to GATS go beyond the value of services, as various non-monetary indicators of modes of supply are critically important for assessing their economic and social impact. Chapter 16 of the *Guide* focuses specifically on the conceptual and data compilation issues related to the compilation of such indicators.

⁷ See www.wto.org/english/docs_e/legal_e/26-gats_01_e.htm.

⁸ The regional economic integration agreements take their inspiration from the General Agreement on Trade in Services (GATS) definitions. However, some of these agreements may define the modes in a somewhat different way. The compilers should be aware of this while interpreting data on value of the services supplied under different modes in a regional context.

A.3. The Manual on Statistics of International Trade in Services as a statistical response to data needs related to the General Agreement on Trade in Services

11. GATS has highlighted that the scope of the supply of services, which is of primary interest to trade negotiators and policymakers, is far broader than what statistics conventionally measure (e.g., it includes supply of services by commercial presence), thus making the statistical community aware of an informational gap that had to be filled. Dealing with that issue was a serious challenge, as the conceptual framework of GATS differs from statistical frameworks adopted internationally for economic statistics. To meet that challenge successfully, it was necessary to conceptualize the supply of services by mode in a statistical context.

12. In response to that challenge, TFSITS drafted the *Manual on Statistics of International Trade in Services* (MSITS) and the Statistical Commission adopted it at its thirty-second session, in March 2001. MSITS established the statistical framework that allowed the measurement of the supply of services. MSITS was revised by the TFSITS less than a decade after its adoption to take into account the publication of revised international statistical standards, including BPM6; the 2008 SNA; the *Central Product Classification (CPC)*, ver. 2; the *International Standard Industrial Classification of All Economic Activities (ISIC)*, rev.4; the *International Merchandise Trade Statistics (IMTS) 2010*; the *International Recommendations for Tourism Statistics (IRTS) 2008*; and others, as well as the necessity for further elaboration of modes of supply measurement. The revised version of MSITS, adopted by the Statistical Commission in 2010, provides a clearer, more detailed and more comprehensive statistical framework, which, once implemented, will result in data crucial for statistical and economic analysis of the international supply of services and for evidence-based decision-making.

13. The MSITS 2010 statistical framework was developed using two main building blocks: (a) BPM6 concepts and definitions describing transactions between residents and non-residents of different economies and (b) concepts and definitions developed in the Foreign Affiliates Statistics (FATS) on the basis of BPM6 and the *OECD Benchmark Definition of Foreign Direct Investment*, 4th ed. The use of those two building blocks was necessitated by the following consideration: The ability to analyse the supply of services between natural and juridical persons located in the territories of different WTO members, in terms of the services transactions between residents and non-residents of different economies, made it possible not only to estimate the value of the supply of services by all modes, except for commercial presence, but also to provide details of the supply by service category and trading partner. However, since the BPM6 conceptual framework does not cover the supply of services through the commercial presence of service suppliers in the economy of service consumers, a new statistical framework for measuring the supply of services through that mode had to be established. That framework was developed as part of FATS. It should be underlined that that framework, once implemented, will not only generate information needed for purposes related to GATS, but also will result in statistics that are indispensable for a better understanding of the overall dynamics of the global economy and for assessing the impact of globalization on individual countries. Chapter 1 contains an overview of the main elements of those two components of the MSITS 2010 statistical framework, as well as the main concepts underlying the compilation of additional monetary and non-monetary indicators relevant for analysing the international supply of services. The remainder of the *Guide* deals with various issues related to data collection, compilation and dissemination.

14. While stressing the importance of the MSITS 2010 conceptual framework, it should not be overlooked that the MSITS recommendations and guidelines on the compilation of statistics by mode of supply are laid out only for statistical purposes. They do not imply any attempt to interpret GATS.⁹ In that connection, MSITS 2010 recognizes that a comprehensive statistical treatment of modes of supply that fully mirror the GATS legal definition and other GATS articles is beyond its scope.¹⁰ The same limitation applies to the present *Guide*.

A.4. *Manual on Statistics of International Trade in Services 2010 and Compiler's Guide for the Manual on Statistics of International Trade in Services 2010*

15. Although the original version of the MSITS was released in 2002, the international statistical community did not produce compilation guidance to accompany its recommendations. With the adoption of the 2010 edition of MSITS, the Statistical Commission specifically requested that TFSITS develop appropriate compilation guidance. That is the reason that the Statistics Division, with the assistance of TFSITS, established, in December 2011, an Expert Group on the compilation of trade in services statistics (EGCSITS) to assist in the preparation of the *Compiler's Guide for MSITS 2010*. The Expert Group included all members of TFSITS, as well as compilers from developing and developed economies, and was convened by the Statistics Division. The *Guide* represents the result of the work of both TFSITS and EGCSITS.

16. EGCSITS was established to ensure active country involvement in the development of the *Compiler's Guide*. In March 2012, the first meeting of EGCSITS was held through virtual discussion. The main objective of the meeting was to review the annotated outlines of all chapters of the *Guide* and to define its scope and the content of each of its chapters. A revised annotated outline was circulated for worldwide consultation in July 2012 and the first draft chapters were prepared. The outcome of the worldwide consultation and the draft chapters were discussed in a virtual meeting in October 2012. Further draft chapters were discussed at a third virtual meeting in March 2013. At all three meetings, about 65 representatives of countries and international organizations actively participated. At the end of June 2013, EGCSITS held a face-to-face meeting in Geneva to discuss the first full draft of the *Guide*. A revised version of that draft *Guide* was subsequently prepared and presented to TFSITS at its meeting in October 2013 and was discussed electronically by EGCSITS in November 2013. A draft version of the *Guide* was submitted to, and adopted by, the Statistical Commission at its forty-fifth session, held in March 2014. TFSITS finalized the draft *Guide* over the course of 2014.

B. Purposes and scope of the *Guide*

17. The main purpose of the *Guide* is to assist countries in the production of high-quality official statistics on international trade in services, in compliance with MSITS 2010. The *Guide* strives to achieve that aim by (a) the clarification and elaboration of a number of more difficult conceptual issues and (b) the identification of good practices in the implementation of MSITS 2010.¹¹ Furthermore, the *Guide* is intended to better integrate the compilation of statistics of international trade in services in the context of global statistical work and, therefore, recognizes the importance not only of such pillars as BPM6 and the 2008 SNA, but also of the Statistical Commission recommendations for other related statistical domains and its guidance contained

⁹ *Manual on Statistics of International Trade in Services 2010* (MSITS 2010), Statistical Papers, Series M, No. 86/Rev.1 (United Nations publication, Sales No. E.10.XVII.14), para. 5.32. Available at [https://unstats.un.org/unsd/tradeserv/TFSITS/msits2010/docs/MSITS%202010%20M86%20\(E\)%20web.pdf](https://unstats.un.org/unsd/tradeserv/TFSITS/msits2010/docs/MSITS%202010%20M86%20(E)%20web.pdf).

¹⁰ *Ibid.*, para. 5.27.

¹¹ It should be noted that clarification of the conceptual issues implies (a) an explanation of the terms used in the definitions of particular concepts and (b) operationalization of the definitions by relating them to the statistical procedures that might be used to obtain anticipated data. The term "good practice" is to be understood as a set of activities contributing to the implementation of recommendations contained in MSITS 2010 and resulting in the production and dissemination of high quality statistics of international trade in services.

¹² See *Guidelines on Integrated Economic Statistics, Studies in Methods*, Series F, No. 108 (United Nations publication, Sales No. E.12.XVII.7).

¹³ See unstats.un.org/unsd/dnss/QualityNQAF/nqaf.aspx.

in *Guidelines on Integrated Economic Statistics*¹² and the national quality assurance framework (NQAF).¹³

18. In particular, the *Guide* aims to complement the BPM6 compilation guidance on balance-of-payments (BOP) statistics, focusing on the compilation of data by EBOPS 2010 category, trading partner and mode of supply. It also includes more detailed compilation guidelines for FATS as far as it relates to the international supply of services, and provides guidance on how to compile statistics on the modes of supply on the basis of the framework laid down in chapter V of MSITS 2010. It is expected that an increasing number of countries will begin to compile services data by mode of supply, following the good practices provided in the *Guide*. Furthermore, the *Guide* recognizes the importance of data quality, metadata and the use of information technology tools in the statistical production process and contains guidance and advice relevant to those areas of statistical work. In addition, the *Guide* is intended to promote trade in services statistics by making available to users a comprehensive source of information on its methodological foundations and data compilation practices. This will enable users to understand better the nature of those statistics and, consequently, to interpret and use them correctly and more effectively.

19. As it is not possible to present a single best practice applicable in all cases, the *Guide* outlines various options that may be suitable, depending on a country circumstances and resources. For countries with well-developed compilation systems, the *Guide* contains criteria against which those compilation systems can be compared and evaluated. For countries that may need to improve aspects of their compilation systems, the *Guide* presents examples of good practices and related country experiences. For countries without well-developed systems, the *Guide* contains advice on good practices and other guidance that can be used as a starting point to develop appropriate data collection and data compilation procedures. It should be noted that national compilers who have gone through the process of implementing the recommendations contained in MSITS 2010 helped to identify the good practices described in the *Guide*. The *Guide* focuses on the main features of the relevant international recommendations and good practices, while more technical and country-specific details are available on the dedicated Statistics Division website.

20. The scope of the *Guide* was determined by the tasks that the trade in services compiler typically has to deal with. The tasks range from operationalizing the conceptual framework and defining the set of variables to be compiled, putting in place effective institutional arrangements, identifying appropriate data sources and data collection and data compilation procedures, and organizing efficient quality assurance and data dissemination programmes. The *Guide* elaborates challenges and good practices in the above-mentioned areas of work, and provides numerous country experiences and guidance on how those practices can be applied under different country circumstances.

C. Organization of the *Guide*

21. The organization of the *Guide* largely follows the logic of the statistical process, beginning with an overview of the general frameworks underlying the compilation of trade in services statistics, followed by a description of data collection and compilation issues, good practices and data and metadata dissemination, and concludes with the elaboration of several key cross-cutting topics.

22. Part I of the *Guide* provides an overview of general frameworks, namely conceptual frameworks (chapter 1), legal frameworks (chapter 2) and institutional arrangements (chapter 3), that underpin statistics of international trade in services.

23. Part II focuses on data collection and begins with an introduction and overview of data sources within the modes of supply framework (chapter 4), followed by the elaboration of registers and survey frames (chapter 5), enterprise and establishment surveys (chapter 6), surveys of persons and households (chapter 7), the international transaction reporting system (ITRS) (chapter 8), administrative records (chapter 9) and other data sources (chapter 10). Part II concludes with a comparison of data sources (chapter 11).

24. Part III elaborates various issues of data compilation. It begins with an introduction and overview of data compilation within the modes of supply framework (chapter 12) and an elaboration of challenges and good practices in the integration of data from different sources (chapter 13). Specific issues and good practices relevant to the compilation of particular data sets are elaborated in the subsequent chapters as follows: resident/non-resident trade in services statistics (chapter 14), the compilation of FATS and the international supply of services (chapter 15) and the compilation of additional indicators on the international supply of services (chapter 16). Guidance on estimation and the modelling of missing data, forecasting and back-casting is contained in chapter 17.

25. Part IV focuses on cross-cutting topics and contains four chapters that provide guidance on metadata (chapter 18), quality management (chapter 19), data and metadata dissemination (chapter 20) and the use of information and communications technology (chapter 21).

26. The *Guide* has a number of annexes that will be provided online.

Part I

General frameworks

The *Manual on Statistics of International Trade in Services 2010* (MSITS 2010) provides an overarching statistical framework for compiling the data required for measurement of the international supply of services and elaborates the relationships among various components of that framework. The present *Compiler's Guide* accompanies that reference publication. Part I contains an overview of the conceptual framework (chapter 1), the legal framework (chapter 2) and the institutional arrangements (chapter 3). Parts II and III focus on data sources and collection and data compilation. Part IV deals with cross-cutting issues.

Chapter 1

Conceptual frameworks

1.1. Chapter 1 introduces the conceptual framework identified in *MSITS 2010* (section A), describes the General Agreement on Trade in Services (GATS), modes of supply and statistical framework (section B) and provides an overview of concepts relating to statistics on resident/non-resident transactions in services (section C), foreign affiliates statistics (section D) and additional indicators for analysing the international supply of services (section E). The chapter concludes with a description of the guidelines on integrated economic statistics (section F).

A. Introduction

1.2. GATS was a driving force in the drafting of MSITS, both for the first version of the *Manual*, at the end of the 1990s, and its current 2010 edition. GATS establishes a set of rules and disciplines that govern the use of measures affecting trade in services by World Trade Organization (WTO) members. Under GATS, WTO members are committed to entering into successive rounds of trade liberalization negotiations, which are conducted by type of service and mode of supply. Economic integration agreements at the regional or bilateral level follow the same approach. Consequently, the availability of statistics on the international supply of services, detailed by service type, mode of supply and partner country, is highly important for trade in services policymaking and related analysis.

1.3. Chapter II of MSITS 2010 focuses on the conceptual framework for the development of statistics of international trade in services and explains how existing statistical systems and classifications can be used to progressively build such statistics to provide the information necessary for measuring the international supply of services. It is consistent with concepts and definitions included in the *2008 System of National Accounts* (2008 SNA) and the *Balance of Payments and International Investment Position Manual*, 6th edition (BPM6). The compilation guidance provided for those frameworks should be used as a starting point and the present *Guide* should be read as an extension of that guidance, covering specific compilation needs in the context of MSITS 2010 implementation.

1.4. Since the relevant conceptual frameworks are outlined in MSITS 2010 and detailed in other international manuals, the present chapter introduces only briefly the basic elements of the frameworks that are essential in the context of compiling trade in services statistics, and makes reference to relevant material in the manuals. It clarifies information needs, in particular those of GATS, and links that information to the compilation of statistics on the following:

- (a) Services transactions between residents and non-residents, broken down by service type (according to the Extended Balance of Payments Services Classification 2010 (EBOPS 2010)), partner, mode of supply (mainly 1, 2 and

- 4) and relationship between the parties (trade between affiliated firms and between unaffiliated firms);
- (b) Foreign Affiliates Statistics (FATS), focusing on the variables and breakdowns of interest in the context of the international supply of services, while being consistent with the frameworks described in *Benchmark Definition of Foreign Direct Investment*, 4th edition of the *Organization for Economic Cooperation and Development* (OECD) and *Measuring Globalization: OECD Handbook on Economic Globalization Indicators*;
- (c) Additional monetary and non-monetary (quantitative) indicators relevant for the assessment of the importance of various modes of supply, in particular, modes 2 and 4, in an economic context.

B. General Agreement on Trade in Services, modes of supply and statistical frameworks

1.5. MSITS 2010 describes the structure and guiding principles of GATS and its scope. When making commitments in GATS negotiations, WTO members often make reference to the Services Sectoral Classification List (MTN.GNS/W/120 (W/120)). The list should be viewed as an optional classification system of services sectors for negotiating purposes, rather than as a statistical classification such as EBOPS 2010,¹⁴ which is used to compile and publish resident/non-resident trade in services statistics.¹⁵

1.6. According to GATS, the international supply of services can take place through four different modes of supply that depend on the territorial presence of the supplier and the consumer at the time of the transaction. The four modes can be described as follows:

- (a) **Mode 1 (cross-border supply):** the supply of services from the territory of one member into the territory of any other member;
- (b) **Mode 2 (consumption abroad):** the supply of services in the territory of one member to a service consumer of any other member;
- (c) **Mode 3 (commercial presence):** the supply of services by a service supplier of one member, through a commercial presence in the territory of any other member;
- (d) **Mode 4 (presence of natural persons):** the supply of services by a service supplier of one member, through the presence of natural persons of a member in the territory of any other member.¹⁶ Mode 4 is further described in box 1.1.

1.7. Existing statistical frameworks can be used as a basis for the production of data to satisfy the information needs of GATS regarding modes of service supply. For example, the value of the international supply of services of a country can be established once statistics on the output of foreign controlled affiliates have been developed for the services sector to accompany the balance-of-payments (BOP) services statistics. The combination of both data sets would cover all four modes, provided that compilers ensure that appropriate breakdowns are delivered (i.e., service type, mode of supply, partner country and exchanges between related and unrelated trade). As MSITS 2010 explains, to produce a complete picture of the international supply of services, additional data, including both monetary and non-monetary indicators, are still necessary.

1.8. For the compilation of data on the value of the international supply of services, MSITS 2010 develops a phased approach that includes (a) the compilation of resident/non-resident trade in services statistics in the context of the BOP, suggesting a breakdown of transactions, according to EBOPS 2010, by partner country, mode of

¹⁴ See MSITS 2010, annex 1.

¹⁵ A correspondence table has been developed between the Services Sectoral Classification List (W/120) (World Trade Organization (WTO), document MTN.GNS/W/120); and the 2010 Extended Balance of Payments Services Classification (EBOPS 2010) (see also MSITS 2010 paras. 2.11-2.23).

¹⁶ A "natural person of a member" is defined as a national of that member or to a non-national who has the right to permanent residence in that member. See article XXVIII of GATS for further information.

Box 1.1

Clarifying mode 4 from a statistical perspective

Chapter V of MSITS 2010 introduces mode 4 in a statistical context on the basis of the description of article 1 of GATS and the annex on movement of natural persons supplying services under the Agreement. Mode 4 can, in general, be described as covering foreign natural persons entering the host economy to perform the following activities:

- (a) Fulfil service contracts directly (contractual service suppliers): this covers self-employed persons (independent professionals) or employees of a foreign service supplier;
- (b) Work in a foreign affiliate that delivers services (intracorporate transfer or direct recruitment by the affiliate);
- (c) Negotiate a service contract (services sellers) or the constitution/acquisition of an establishment supplying services (persons responsible for setting up commercial presence) or market a service, etc.

Persons covered under mode 4 are those providing services under a service contract. Therefore, persons crossing a border to access the employment market, as well as persons present for the production of goods or the provision of services supplied under governmental authority, are excluded. Permanent migration is also excluded from mode 4 movements (GATS does not apply to measures affecting residence, citizenship or employment on a permanent basis).

Persons covered by mode 4 are, therefore, not limited to foreign persons directly involved in the rendering of services (as indicated in (a), above), but also include those persons whose presence abroad is instrumental in the provision of a service (items (b) and (c)). Therefore, data to be compiled in connection with mode 4 of the supply of services cover:

- (a) The value of services supplied directly by persons moving under mode 4 commitments as indicated under (a) above, that is, the value that, in general, would be measured as trade in services in the balance of payments (BOP). The exception would be for services supplied by self-employed persons staying more than a year (still in the context of a service contract). However, normally such persons will represent a small proportion of the mode 4 population and their change in residence will be difficult to identify in practice, and the value of the supplied services would still be recorded under services in the BOP. Compiling the mode 4 value of services is not relevant for persons entering the host economy to perform activities described in points (b) and (c), above. In fact, the work of persons covered by point (b) is considered instrumental to the output of foreign affiliates that supply services through a commercial presence (mode 3). Persons covered by point (c) are not producing or delivering a service to consumers at the time of their presence in client's country. They are, rather, engaged in negotiations for an eventual future supply of services;
- (b) Non-monetary (quantitative) data on the number of natural persons crossing borders to supply services (or the number of trips of such persons) for all three categories described above (see chapter 16 of the present *Guide*).

Note: See chapter V of MSITS 2010 for more information.

supply (mainly referring to modes 1, 2 and 4) and the relationship between the trading parties, and (b) the development of FATS, exclusively referring to mode 3. FATS should include data on output (or sales/turnover if output is not possible) broken down by service type (or service activity if type is not possible), by partner country (i.e., country of operation of affiliate for outward FATS, or of the ultimate controlling institutional unit (UCI) for inward FATS), and identifying to whom the output is sold, with a particular interest in the output sold within the country in which the controlled affiliate has been established.

1.9. MSITS 2010 also recommends the compilation of other indicators (both monetary and non-monetary) of interest to users, including other FATS variables (employment, value added, number of enterprises, etc.); non-monetary quantitative indicators for mode 4 (i.e., the number of individuals crossing borders and temporarily abroad to provide services in the context of service contracts) and mode 2 (individuals going abroad to consume services); and indicators such as foreign direct investment (FDI), service sector indicators or services trade by enterprise characteristics (STEC).

1.10. For services negotiations, especially within the GATS framework, users need comprehensive information on the international rendering of services and their mode of supply, as well as on the operators taking part in those operations and the operations' main features. That need has led to the development of statistics on the international supply of services that go beyond the primary reason for calculating the BOP. Proper legal and institutional arrangements are extremely important for the development of the statistics needed for analysing the international supply of services. In most cases, the compilation of such statistics is a cooperative effort of several agencies, such as the national statistical office, the central bank, the ministry of the economy and the national agency in charge of trade negotiations. This collaborative process calls for better coordination of data collection and compilation among different institutions (see chapters 2 and 3 for details).

1.11. In order to maximally exploit the potential of combining and comparing statistics on the international supply of services within and between countries, compilers are encouraged to use internationally accepted concepts and methods and classification systems when developing their data collection and compilation systems. In the case of trade in services, those concepts include MSITS 2010 and related international statistical systems and frameworks, such as BPM6, the 2008 SNA and *OECD Benchmark Definition of Foreign Direct Investment*, 4th edition (BD4). For modes of supply, compilers should align with the framework developed in chapter V of MSITS 2010. In terms of classifications for BOP services transactions and FATS, as well as for modes 4 and 2 quantitative indicators, compilers should, to the extent possible, use EBOPS 2010, the *International Standard Industrial Classification of All Economic Activities* (ISIC), rev.4, and the partner country data classifications used in the BOP Data Structure Definition, which was prepared in the context of the Statistical Data and Metadata Exchange (SDMX) initiative, sponsored by seven international organizations: Bank for International Settlements, European Central Bank, Eurostat, the International Monetary Fund (IMF), OECD, the United Nations and the World Bank.¹⁷

1.12. If compilers deviate from the internationally accepted concepts and methods and classification systems to, for example, reflect specificities of their economies or to take into account certain statistical frameworks adopted in their countries, they are encouraged to develop classification systems that are compatible with those listed above and construct the appropriate tables for conversion to international systems.

C. Statistics on resident/non-resident transactions in services

1.13. The concepts and definitions recommended for use in statistics on services transactions between residents and non-residents are based on MSITS 2010, chapter III, which is, in turn, based on BPM6, chapter 10. Statistics compiled following those concepts and definitions reflect the value of services supplied mainly through modes 1, 2 and 4. The collection of such data is, in general, the responsibility of a country's BOP compilation agency. In many countries, that agency is the central bank, but in others, the responsibility is given to the agency in charge of compiling economic sta-

¹⁷ In the Area Dimension (CL_Area) of the Balance of Payments (BOP) Data Structure Definitions (DSD), individual country coding follows the International Standard for country codes and codes for their subdivisions (ISO 3166). The latest version of the BOP DSD is available on the Statistical Data and Metadata Exchange (SDMX) website (http://sdmx.org/?page_id=1747).

tistics (usually the national statistical office). Alternatively, some countries have opted for a division of tasks (e.g., with the statistical office collecting trade in services data and the central bank compiling and disseminating them). The collection and compilation of resident/non-resident services transactions are further discussed in chapters 5 through 11 and 13 and 14 of the present *Guide*.

1.14. When producing statistics on services transactions, compilers should:

- (a) Follow the general BPM6 principles regarding institutional units, residence, centre of predominant economic interest, economic transactions, valuation, market prices, accrual accounting, gross recording, etc., and, of course, the definition of services;¹⁸
- (b) Break down services transactions according to EBOPS 2010 on a step-by-step basis, according to the needs of the compiling economy. Compilers should be aware that EBOPS 2010 is consistent with the BPM6 classification of services but provides a more detailed breakdown and suggests a number of complementary groupings for compilation by particular sector;
- (c) Break down the value of services by trading partner according to the economy of residence of the respective trading partner. That step should be implemented gradually and in line with the needs of the compiling country;¹⁹
- (d) Identify or estimate the modes of supply related to the services transactions;
- (e) Specify the relationship between the parties involved in the services transactions.

¹⁸ See MSITS 2010, para. 3.41.

¹⁹ See MSITS 2010, paras. 3.57 and 3.58.

1.15. When compiling statistics on the international supply of services, as specified above, it should be taken into account that the prices at which exchanges between affiliated firms are valued may not represent market prices. However, the concept of market price is particularly important, given that increased globalization is paired with, and often driven by, enterprises headquartered in one country that establish affiliates in other countries to produce and distribute goods and services (see boxes 1.2 and 1.3). International trade in services between such parents and their foreign affiliates has rapidly increased. Therefore, within the framework of statistics on the international supply of services, the identification of trading partners in transactions between parents and foreign affiliates has an important analytical value.

Box 1.2

Transfer and market prices

In some cases, the values against which transactions between affiliated enterprises are priced internally may not represent market prices. In general, when there is an international transaction between two affiliated firms, it is expected that the value of the transaction for the exporting affiliate will be equal to the value of the transaction for the importing affiliate and that, hence, they will cancel each other out, leaving the overall profits of the multinational enterprise (MNE) unchanged, no matter at what price it values the transaction. However, in a world in which international transactions are taxed and the rates of business income taxation differ among countries, an MNE will have definite financial incentives to *choose strategically* the “transfer price” to minimize the amount of tax paid to both jurisdictions. A transfer price is the price at which an enterprise transfers physical goods and intangible property or provides services to associated enterprises. Because transfer pricing might result in the under- or over-invoicing of transactions between affiliated enterprises, compared with transactions between unrelated parties, adjustments should be made when the exchange values do not represent market prices.

Note: See *OECD Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations 2010*, www.oecd.org/ctp/transfer-pricing/transfer-pricing-guidelines.htm for more information.

The OECD *Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations 2010* states that, for income taxation and customs valuation purposes, enterprises should follow the “arm’s length standard”, i.e., set the transfer price equal to the price that two unrelated parties would negotiate when trading the same or substantially similar products under the same or substantially similar circumstances. The OECD guidelines propose five methods for adjusting transfer prices by that standard on the basis of the comparability of the transactions. Transactions are considered comparable when their “economically relevant characteristics” are the same, or if they differ, when the differences have no material impact on the results. In practice, internal and external transactions are unlikely to be exactly comparable. Therefore, the OECD guidelines recommend that material differences be identified, quantified and adjusted when determining the arm’s length transfer price. Moreover, since transfer pricing is not an exact science, the guidelines recommend that transfer prices be set inside a range of acceptable arm’s length prices, known as the “arm’s length range”.

Box 1.3 Trade in value added

With the increased international fragmentation of production, intra- and interindustry trade has grown dramatically, creating so-called global value chains (GVCs). Conventional measures of international trade do not always reflect the flows of goods and services within those chains, and are unable to answer policy questions related to the economic and employment impact of their country’s embeddedness in GVCs. In response, OECD and WTO have developed an analytical data set on trade in value added (TiVA), in order to provide insight into the value that is added by each country in the production of goods and services that are consumed worldwide.

The estimates are based on a global input-output table, constructed from official national input-output tables or supply and use tables and bilateral trade statistics of goods and services, made consistent with national accounts data. Since TiVA combines national statistics to develop a global analytical toolkit, it requires high-quality input data from national compilers, including information on bilateral trade in services (by EBOPS category) and on the characteristics of the firms involved in services trade (notably, their industry classification). The first aspect requires BOP compilers to develop trade in services statistics by partner; the second aspect involves the development of data sets by national compilers that allow for the analysis of services trade companies by economic characteristics (known as services trade by enterprise characteristics (STEC)). Those statistics are developed through the identification of firms responsible for trade in services, by linking trade and business registers.

1.16. The identification of trading partners is especially important in the case of service items, such as manufacturing services on physical inputs owned by others; research and development; computer services; audiovisual services; charges for the use of intellectual property n.i.e.; and professional and management consulting services, that are provided within global production and marketing networks. It is recognized, however, that compiling such statistics by trading partner is resource intensive and difficult, owing to issues related to disclosure and incompleteness of information. The issues related to the identification of trading partner are further discussed in part II, in the context of data collection, and part III, in the context of data compilation.

1.17. A second consideration relates to the bundling of services with other services or with goods, such as in the tourism sector. Some arrangers bundle various

types of services and goods, with the final client making only one payment that covers both the package of services and goods itself, as well as the service fee for arranging those products.²⁰ In principle, the payments for related services or goods should be unbundled,²¹ but if unbundling is not possible, it may be a strong indication that the bundling has resulted in the creation of a new product. In such a case, an appropriate classification must be found for the new product.

1.18. A final consideration is the strong link between intellectual property products and trade in services. Services related to intellectual property rights, for example, such creative services as computer or audiovisual services, are becoming increasingly important in the business world. Therefore, information on such services is becoming progressively more important for economic analysis. Chapter 14 addresses the relevant EBOPS 2010 services components in a single group, including services related to intellectual property products and other business and personal services (covering charges for the use of intellectual property n.i.e.; telecommunications, computer and information services; other business services; and personal, cultural and recreational services). MSITS 2010 also suggests some relevant complementary groupings within EBOPS 2010, namely, computer software transactions, audiovisual transactions and cultural transactions.

D. Foreign Affiliates Statistics

1.19. MSITS 2010 focuses on the foreign-controlled affiliates subset. The key concepts of FATS, as described in MSITS 2010, chapter IV, involve foreign direct investment relationships and control and are in line with those specified in BPM6, *OECD Benchmark Definition of Foreign Direct Investment*, 4th edition²² and *Measuring Globalization: OECD Handbook on Economic Globalization Indicators*.²³ Details of FATS collection and compilation are discussed in chapters 5, 6, 10, 11, 13 and 15 of the present *Guide*.

1.20. A number of variables are recommended for compilation: sales/turnover or output, employment, value added, trade and number of enterprises, etc. Output is the variable recommended for measuring the supply of services through mode 3, but sales or turnover can be used in the absence of data on output. Variables should be broken down to the extent possible into the following categories: type of service provided (if possible, using a classification compatible with EBOPS 2010 definitions and identifying the provision of services in the country of operations); main economic activity; and country of operation of affiliates for outward FATS and country of the ultimate controlling institutional unit (UCI) for inward FATS. The basic concepts of BPM6 also apply to FATS: residence; determining control, which is necessary for determining the FATS universe; and the recording of information on an accrual basis and for monetary information valuation at market prices. The valuation of transactions between affiliated firms may not represent market prices. That question is discussed further in box 1.3.

1.21. Given that at the time of writing of the present *Guide*, FATS was still a relatively new statistical domain, it is suggested that compilers develop a FATS compilation system in stages. MSITS 2010 recommends, as an initial priority, that FATS be compiled on an activity basis, both because that is required for the compilation of some variables and because data are currently most widely available on that basis. However, since the compilation of data on a product basis is recognized as a longer-term goal, compilers are encouraged to work towards providing product detail for the variables that lend themselves to that basis of attribution, namely, sales/turnover and/or output, as well as exports and imports. If such specificity cannot be achieved, com-

²⁰ See BPM6. Paragraph 3.17 does not refer specifically to services transactions, but it recommends unbundling two or more different transactions that appear as a single transaction from the perspective of the parties involved.

²¹ Travel agencies and tour operators function in that way. Besides the treatment of transactions of travel agents that is described, BPM6 and MSITS 2010 do not provide further information on unbundling. However, both manuals propose an alternative presentation of travel by type of product consumed, which would encourage the unbundling of transactions. This is actually supported by tourism statisticians in the context of the Tourism Satellite Account and, more generally, to better link the information with the need for establishing supply/use and input-output tables.

²² MSITS 2010 and the present *Guide* adopt the definition of foreign direct investment as provided in the Organization for Economic Cooperation and Development (OECD), *OECD Benchmark Definition of Foreign Direct Investment*. Available from www.oecd.org/fr/daf/inv/statistiquesetanalyses/delinvestissement/fdibenchmarkdefinition.htm.

²³ These definitions are further described and adapted to the European Union context in Eurostat *Foreign Affiliates Statistics (FATS) Recommendations Manual*, Eurostat Methodologies and Working Papers (Luxembourg, Publications Office of the European Union, 2012). Available from <http://ec.europa.eu/eurostat/en/web/products-manuals-and-guidelines/-/KS-RA-12-016>.

compilers may wish to disaggregate data on sales or output in each industry into the sub-categories of sales/output of goods and sales/output of services, as a first step towards achieving a product basis.

1.22. Inward FATS often appear in structural business statistics (SBS), traditionally compiled by national statistical offices, but they can also be collected in the same manner as foreign direct investment (FDI) statistics, or in conjunction with those, such as a dedicated survey. Outward FATS can be produced within the scope of FDI statistics or a dedicated survey. FATS can also be compiled from administrative records of a public agency that deals with economic or commercial issues related to FDI. For both inward and outwards FATS, analysing the relationships among different data collection and compilation options yields a number of advantages, including increased cost effectiveness and the reduction of the reporting burden. Compilers of FATS may also consider accessing surveys, prepared by supranational bodies, based on frameworks taken from the business registers of international groups.²⁴ The current interest in the phenomenon of economic globalization and the new approach of international trade statistics, in terms of value added, and their relationship to global value chains, has revealed the importance of reinforcing such statistics.

²⁴ See, for example, the Eurostat EuroGroups Register.

E. Additional indicators for analysing the international supply of services

1.23. MSITS 2010 also recommends the compilation of additional indicators to further analyse the international supply of services beyond the value of such transactions. Such indicators are needed in order to respond to the numerous information needs of trade negotiators and other users. Some of those indicators are directly related to the GATS negotiations, as they support the comparison of commitments and provide background information for the settling of disputes, or can be used more generally for an in-depth analysis of the international supply of services. The other indicators range from data on the number of persons/trips relevant to modes 2 and 4 to the use of data on services production, prices, employment and sectoral indicators (e.g., tourism, telecommunications, etc.). The additional sets of statistics do not require the development of new statistical frameworks, but refer rather to existing ones. Their compilation indicates in particular the potential offered by the linking of trade in services statistics and business registers. Data collection and compilation of those other indicators are described in chapters 6, 7, 9, 10, 11, 13 and 16.

1.24. Frameworks of particular interest are those related to the movements of individuals across borders, i.e., tourism and migration statistics, whether for supplying services (mode 4) or for consuming services (mode 2). Obtaining data on the characteristics of such movements and on the individuals involved is highly important for trade policymaking and monitoring, for the analysis of the global supply of services and for broader tourism and migration policy, in particular for mode 4. Data on the movements of natural persons should include detailed information on the characteristics and activities of such persons, as well as on the services they are rendering or consuming while abroad.

F. Integrated economic statistics

1.25. At its thirty-seventh session, in 2006, the Statistical Commission recommended an integrated approach for national economic statistics programmes to ensure the efficiency of the statistical process and increase the consistency and coher-

ence of economic statistics.²⁵ The Commission subsequently developed *Guidelines for Integrated Economic Statistics*,²⁶ to enhance the quality and analytical value of short-term, annual and benchmark economic statistics and macroeconomic statistics.²⁷

1.26. The recommendations in *Guidelines for Integrated Economic Statistics* are based on internationally adopted standards, including the 2008 SNA, BPM6 and specialized technical manuals on subjects such as the measurement of prices, sectoral and business statistics and FDI. The methodological standards, recommendations and emphasis on policy-relevant data in those manuals formed the basis for the organizing principles and detailed practices set forth in *Guidelines for Integrated Economic Statistics*.²⁸ The main characteristics of that integrated approach are described in box 1.4.

²⁵ Based on the report of the Secretary-General on integrated economic statistics (E/CN.3/2006/5).

²⁶ *Guidelines on Integrated Economic Statistics*, Studies in Methods, Series F, No. 108 (United Nations publication, Sales No. E.12.XVII.7). Available from <http://unstats.un.org/unsd/nationalaccount/docs/IES-Guidelines-e.pdf>.

²⁷ Ibid.

²⁸ Ibid.

Box 1.4

Integrated approach to economic statistics

Guidelines for Integrated Economic Statistics identifies the following features of an integrated approach:

- (a) **Common concepts, definitions and classifications** The use of harmonized terminology, definitions, concepts, standards and classifications is necessary in a national statistical system so that the various data collections are comparable and can be related to one another;
- (b) **Business registers and frames** Business registers play an important role in integrated economic statistics by providing a central sampling frame for all business surveys;
- (c) **Standardization of surveys** Integration should be comprehensive and encompass survey design, sample frame and questionnaire design;
- (d) **Administrative data** Administrative source data can be integrated for statistical purposes; concepts must be matched with statistical records. The advantage of using administrative records and various government data is that it promotes more efficient use of data collections and reduces the burden of the respondents;
- (e) **Data editing, linkage and integration** Transparency and documentation of the editing process are indispensable for ensuring that the resulting data can be used by various statistical domains and will be widely accepted and understood by users;
- (f) **Dissemination and communication** Integration may facilitate the provision of user-friendly presentations of data and explanations of concepts, as well as ensure a consistent format across publications, electronic sources and websites.

Chapter 2

Legal framework

2.1. Chapter 2 outlines the need for and importance of a legal framework to regulate the activities of institutions involved in data collection and compilation, in accordance with the statistical framework recommended by MSITS 2010 for the measurement of the international supply of services, the content of data sources and the confidentiality of the information provided. The chapter focuses on the following subject matter: good practices (section A); the importance of the legal framework (section B); legal acts governing the content and availability of data sources (section C); legal acts regulating institutional arrangements (section D); legal acts protecting the confidentiality of reported data (section E); and country practices (section F).

A. Summary of good practices

2.2. It is good practice for national laws and regulations to be established to define the rights and responsibilities of all agencies involved in the collection, exchange, processing, compilation and dissemination of the following: data on services transactions between residents and non-residents; FATS; and additional monetary and non-monetary indicators for analysing the international supply of services. Such laws and regulations would ensure that those agencies are in a better position to establish the necessary institutional arrangements detailing their involvement in the statistical process. More specifically, such laws and regulations should give the compiler a clear mandate to collect the necessary data from relevant sources and to compile and disseminate those statistics in the formats deemed appropriate by the responsible agency. The present *Guide* encourages compilers to actively participate, whenever appropriate, in the preparation of the necessary modifications to national legislation or relevant administrative regulations. Moreover, it is good practice for international recommendations for trade in services statistics to be properly reflected in national laws or regulations.

2.3. It is further advised that additional legal acts establish more specific provisions for data content, namely, the specific circumstances under which data must be reported to other national agencies as well as the frequency of dissemination. The legal basis for surveys related to resident/non-resident trade in services statistics and FATS should also be well-established and should be cited on the survey forms themselves. In the case of outward FATS, where the relevant company is located abroad, the legal acts should provide a mandate for statistical compilers to require information from domestic companies on their foreign affiliates. The statistical compilers should also be well aware of the contents of the legal provisions underpinning the international bank transaction reporting system (ITRS) implemented in the country and make full use of them. It is further advised that the national statistical act establish a reminder and penalty system, including the possibility of imposing fines on data reporters, in cases of non-compliance in reporting required information.

2.4. Finally, it is of extraordinary importance that the legal framework include provisions guaranteeing the protection of individual data, restricting the use of such data to official statistical purposes only and preventing identifiable enterprise-specific information from being disclosed in the disseminated statistics.

B. The importance of the legal framework

2.5. The legal framework promoted by the present *Guide* consists of the laws and legally binding regulations that govern the relationship between members of the national statistical system and data reporters for the provision of data, as well as all aspects of data compilation and dissemination. A well-established legal framework is the foundation of an effective and well-functioning national statistical system for the following reasons:

- (a) A framework gives the statistical compiler a clear mandate to collect data and to compile and disseminate statistics, and makes relevant information, such as supplementary data sources, available to the compiler. In view of the multiplicity of data sources necessary for the compilation of statistics on the international supply of services, a strong and comprehensive legal authority to collect data is of special significance;
- (b) It identifies and defines the national competent authority and the roles of governmental agencies in particular statistical domains (see chapter 3);
- (c) It is a prerequisite for establishing a high-quality system of official statistics. For example, the first element of the quality assurance framework recommended by both the Statistical Commission and the IMF Data Quality Assessment Framework for Balance of Payments and International Investment Position Statistics (DQAF)²⁹ is the availability of a sound legal framework.³⁰
- (d) It is likely to increase public trust in the confidential treatment of reported data and, thereby, to facilitate obtaining accurate information and higher response rates. Statistical confidentiality is a key element in collecting, storing and disseminating statistics and related microdata. Thus, the legal framework should include provisions guaranteeing the protection of individual data and restricting the use of such data to official statistical purposes only;
- (e) It assists in the implementation of an integrated approach to statistics of trade in services between residents and non-residents and FATS, as only well-coordinated efforts of several agencies can guarantee the successful compilation and dissemination of such statistics. The stronger the legal powers of coordination at the centre of the statistical system, the greater the chance of integrating the statistics effectively;³¹
- (f) It provides the possibility of imposing penalties on data reporters, including enterprises, in cases of non-compliance in reporting required information, such as delays in reporting, missing or unreported data and errors.

2.6. Legal acts relevant for statistics of international trade in services exist at different levels and include those regulating the collection, processing and dissemination of statistics; the working relations of the agencies concerned; and the legal acts protecting the confidentiality of information. The structure of the legal framework can vary from country to country. Often there is a national statistical act establishing the mandate of the national statistical authority and governing general statistical issues, such as the establishment of a reminder and penalty system for enterprises failing to comply with the reporting obligation. The national act could also identify statisti-

²⁹ IMF, *Data Quality Assessment Framework (DQAF) for Balance of Payments and International Investment Position Statistics* (2012), p. 1., http://dsbb.imf.org/images/pdfs/dqrs_bop.pdf.

³⁰ See E/CN.3/2012/13, annex I.

³¹ See *Guidelines on Integrated Economic Statistics*, para. 4.5.

cal areas that are part of the mandate. In addition to the general act, additional acts could establish more specific provisions for a single statistical area, such as trade in services or FATS, for the data content or the circumstances under which the data must be reported to other national agencies. The act could also define the valid media for and frequency of reporting and dissemination.

2.7. If a country becomes a party to an international convention or adopts international recommendations, it needs to incorporate the binding provisions and non-binding recommendations of those conventions into its national laws and regulations. In that connection, it should be noted that, in the field of international trade, many international agreements exist to govern transactions in goods and services. For example, the results of the Uruguay Round of multilateral trade negotiations contain numerous legal obligations for WTO members and are incorporated in their national legislation. International recommendations for statistics on the international supply of services should similarly be reflected in national laws or regulations. International recommendations, including those laid out in MSITS 2010 and BPM6, as well as in associated implementation guidelines, provide the foundation collecting data. Those recommendations must be supported by national legal acts to give national statistical offices a clear mandate for collecting the necessary data.

2.8. Some regions may have legally binding agreements that have an impact on the national definition of statistics on the international supply of services, or on their scope, as well as on regulations pertaining to the national agencies involved in the statistical process. Sometimes separate acts regulate different areas of statistics. For example, the European Union regulation No. 184/2005 of the European Parliament and of the Council of 12 January 2005 on Community statistics concerning balance of payments, international trade in services and foreign direct investment regulates the data to be submitted to Eurostat on trade in services between residents and non-residents and regulation No. 716/2007 of the European Parliament and of the Council of 20 June 2007 on Community statistics on the structure and activity of foreign affiliates regulates the FATS data to be submitted to Eurostat.

2.9. In many instances, the introduction of necessary improvements to the quality of official statistics may be facilitated by developing appropriate legal provisions, or, if such provisions already exist, by amending them with regard to the collection of administrative data to be used for statistical purposes. The national agency or agencies responsible for the overall compilation and dissemination of statistics on the international supply of services should, whenever appropriate, actively participate in the discussions on respective national legislation or relevant administrative regulations in order to establish a solid foundation for the high quality and timeliness of such statistics.

C. Legal acts regulating institutional arrangements

2.10. More than one national institution is often involved in the compilation of data, in accordance with the statistical framework recommended in MSITS 2010 for measurement of the international supply of services. Therefore, the national statistical office or the central bank is the responsible national authority for the coordination of data compilation and dissemination. In many countries, there is a statistics act or formal legal arrangement that determines the national authority for data collection, such as through surveys, as well as for data compilation and dissemination. In some countries, those responsibilities are shared among two or more agencies. For example, central banks may be responsible for obtaining data from financial institutions, while the national statistical agency is responsible for collecting data from other insti-

tutions, as well as for compiling and disseminating the data. An investment approval agency or financial supervisor may be a very important source of information about cross-border transactions in services. In such a case, it is important for legal or other arrangements to be in place that will allow the agency responsible for the compilation of a particular data set to obtain access to the relevant data sources.

2.11. When the compiling statistical authority is dependent upon other national institutions for data, close cooperation and coordination are needed and should be facilitated by appropriate legislation. In such a context, it is good practice for compilers to actively participate, whenever appropriate, in the necessary modifications to national legislation or relevant administrative regulations in order to establish a solid foundation for enhancing the quality and timeliness of statistics. It is good practice for the national laws and regulations to define the rights and responsibilities of all agencies involved in the collection, exchange, processing, compilation and dissemination of statistics so that those agencies will be in a better position to establish the necessary institutional arrangements detailing their involvement in the statistical process. For instance, if adequate legal provisions are in place, the responsible agency can more quickly and efficiently establish a working arrangement with the organizations that keep records relevant to statistics on the international supply of services. (See chapter 3 for further discussion of institutional arrangements.)

D. Legal acts governing the content and availability of data sources

2.12. If the statistics are based on administrative records, it is advisable to include a paragraph in the legal text that gives the statistical office the legal right to access those data sources. Such language would facilitate cooperation among the institutions involved, contributing to timely data delivery and ensuring transparency.

2.13. One of the administrative sources relevant to trade in services statistics is customs records. The World Customs Organization (WCO) is the international platform through which countries reach legal agreements on customs regulations, including those relevant to the compilation of data on international freight and insurance related to the transportation and customs clearance of goods. Among the most relevant WCO conventions is the revised Kyoto Convention on the Simplification and Harmonization of Customs Procedures,³² which provides standards for such customs procedures as the inward and outward processing of goods; those must be understood when compiling, for example, manufacturing services on physical inputs owned by others. WCO also participates in setting legal provisions for the customs valuation of goods, which has significant consequences for the valuation of the related international transactions in services. In that context, it should be noted that it is the responsibility of WTO to formally adopt such provisions and amend them as necessary.³³

2.14. Much of the data needed for measuring the international supply of services come from statistical surveys or from an international transactions reporting system (ITRS), formerly known as a foreign exchange record system. Most examples of such systems evolved as by-products of foreign exchange control acts, which were, and in many instances remain, legally binding. Statistical compilers should be aware of the contents of the legal provisions underpinning the national ITRS and make full use of them. In addition, as an increasing number of countries are planning to remove certain legal obligations, statistical compilers should prepare themselves well in advance to make necessary adjustments in their data collection arrangements.

³² The International Convention on the Simplification and Harmonization of Customs Procedures entered into force in 1974 (United Nations, *Treaty Series*, vol. 950, No. 13561). The revised Kyoto Convention was adopted in June 1999. The provisions contained in the revised Kyoto Convention aim to facilitate trade, but at the same time make customs records a highly standardized and reliable data source for trade statistics across countries. The revised Kyoto Convention comprises a body, general annex and specific annexes.

³³ Statistical compilers should take note of the rules on customs valuation as set out in the WTO Agreement on Customs Valuation (see *International Merchandise Trade Statistics: Concepts and Definitions 2010*, (IMTS 2010), Statistical Papers, Series M, No. 52 (United Nations publication, Sales No. E.10.XVII.13), annex D).

2.15. The importance of a well-established legal basis for statistical surveys is recognized and promoted by all concerned international and regional organizations. For example, according to IMF, a good legal authority needs to state that the reporting of statistical information is mandatory, especially for large enterprises.³⁴ It is good practice to explicitly refer to such legislation in the resident/non-resident trade in services statistics and FATS survey forms.

³⁴ See *BPM6 Compilation Guide*, para. 2.5.

2.16. Compared with outward FATS, inward FATS is often easier to collect because the relevant enterprises are present in the compiling economy. Often, only information about the foreign-owned share of an enterprise located domestically needs to be collected. That information can, in turn, be linked to existing information in national business statistics. In the case of outward FATS, where the relevant economic entity is located abroad, the legal acts should provide a mandate for statistical compilers to require information from domestic enterprises on their foreign affiliates in other countries. That aspect might cause difficulties for compilers because of the limited data availability, as well as sensitivity to reporting such data. In either case, it is important that compilers have a clear legal mandate for collecting the data.

E. Legal acts protecting confidentiality

2.17. According to the Fundamental Principles of Official Statistics of the United Nations, individual data collected by statistical agencies for statistical compilation are to be strictly confidential and used exclusively for statistical purposes.³⁵ Statistical confidentiality is a key element in producing reliable statistics, as it is important to gain the trust of the data providers. Thus, legal provisions should be established to ensure confidentiality and the proper use of data and to prevent the dissemination of identifiable enterprise-specific information.

³⁵ See Economic and Social Council resolution 2013/21. In addition, the General Assembly adopted resolution 68/261 (without a vote), thereby endorsing the Fundamental Principles of Official Statistics, as adopted by the Statistical Commission in 1994 and reaffirmed in 2013, and endorsed by the Economic and Social Council in its resolution 2013/21.

2.18. Legal acts on confidentiality should also address the use of administrative data for official statistical purposes. In particular, it is important that legal acts state that administrative data forwarded to the statistical authority become statistical data upon receipt, which implies that such data, once validated and edited by the statistical agency, should not be shared with the administrative authority that initially provided it. (Examples of legal acts on data confidentiality are provided in boxes 2.1 and 2.2.)

Confidentiality of customs declarations

2.19. In general, customs declarations are not subject to the same level of confidentiality measures as other statistical instruments. By design, customs declarations are used to assess tariffs, fees and taxes, and to enforce multiple agencies' requirements for the admissibility of goods into a country or to enforce a country's export laws and regulations. Once customs declarations are transmitted to the agency responsible for the compilation of international trade statistics, in many cases, that agency treats the information as confidential. However, in most cases, the compiling agency does not subject all data to rigorous disclosure reviews, and rather applies "passive disclosure" methods by which importers or exporters inform the agency of possible situations for investigation and of the need for some form of statistical suppression. Such passive disclosure methods should be well noted by statistical compilers when considering obtaining information on cross-border trade in services, for example from customs declarations.

2.20. The compiling agency may also establish regulations to safeguard confidentiality in the exchange of basic information among agencies. However, regardless of the legal status of confidential information, whether personal or commercial,

such information should not be excluded from the statistics, but rather should be reported in aggregate form so that its confidential aspects cannot be identified (see chapter 20). It is further desirable that national legislation define rights and responsibilities regarding access to microdata, highlighting the appropriate principles and procedures. The responsible agency should cooperate with the national legislature to establish such laws.

Box 2.1

Confidentiality Act of the Philippines

The confidentiality of data in the Philippines is based on provisions of Commonwealth Act No. 591, section 4. The Act states, *inter alia*, that data furnished to the Bureau of the Census and Statistics by an individual, corporation, partnership, institution or business enterprise shall not be used in any court or in any public office either as evidence for or against the individual, corporation, association, partnership, institution or business enterprise from whom such data emanates; nor shall such data or information be divulged to any person except authorized employees of the Bureau of the Census and Statistics, acting in the performance of their duties; nor shall such data be published except in the form of summaries or statistical tables in which no reference to an individual, corporation, association, partnership, institution or business enterprise shall appear. Any person violating the provisions of this section shall, upon conviction, be punished by a fine or by imprisonment, or by both.

Note: See www.census.gov.ph/content/commonwealth-act-no-591.

Box 2.2

Legal act on confidentiality: example of the European Union

Member states of the European Union must comply with regulation No. 223/2009 of the European Parliament and of the Council of 11 March 2009 on European statistics, which contains provisions on data confidentiality. Article 20 states, in particular, that confidential data obtained exclusively for the production of European statistics shall be used by the national statistics institutes and other national authorities and by the Commission (Eurostat) exclusively for statistical purposes unless the statistical unit has unambiguously given its consent to the use for any other purposes (article 20, point 2), and that statistical results which may make it possible to identify a statistical unit may be disseminated by the national statistics institutes and other national authorities and the Commission (Eurostat) in the following exceptional cases: (a) where specific conditions and modalities are determined by an act of the European Parliament and of the Council acting in accordance with article 251 of the Treaty and the statistical results are amended in such a way that their dissemination does not prejudice statistical confidentiality whenever the statistical unit has so requested; or (b) where the statistical unit has unambiguously agreed to the disclosure of data. (article 20, points 3 and 3(a)).

Note: See <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:087:0164:0173:en:PDF>.

F. Country experiences

Country experience: United States of America

2.21. The authority to collect statistics of international trade in services in the United States is ultimately delegated to the Bureau of Economic Analysis (BEA), a statistical agency within the Department of Commerce. The primary legal provision enabling the Bureau to collect information in a timely manner from relevant institu-

tions is known as the International Investment and Trade in Services Survey Act (22 U.S.C. 3101).³⁶ Provisions in the Act state that United States entities (i.e., businesses, universities, hospitals, etc.) engaged in international investment and trade in services are required to report their international transactions on a periodic basis to BEA. The Act specifies that the survey data may be used only for statistical and analytical purposes. Access to the data is limited to officials and employees (including consultants and contractors and their employees) of government agencies that are designated by the President to perform functions under the Act. Certain other government agencies may be granted access to the data under the Foreign Direct Investment and International Financial Data Improvements Act of 1990, but only for limited statistical purposes. BEA is prohibited from granting another agency access to the data for tax, investigative or regulatory purposes, nor can it publish or otherwise release the data collected in its surveys in a form that would allow the transactions of an individual reporter to be identified.

2.22. The other primary legal provision governing the collection of resident/non-resident trade in services statistics and FATS data is the Paperwork Reduction Act of 1995. By the provisions of the Act, United States government surveys must undergo an approval process in which the agency in charge of collecting the data is required to demonstrate to the approving authority (the Office of Management and Budget) the following three conditions: (a) the intended data are necessary; (b) they cannot be obtained from an existing source; and (c) their collection does not place an unreasonable burden on respondents. As part of the survey design and clearance process, BEA publishes notices about proposed surveys in the Federal Register. In those notices, BEA requests comments from users and respondents on all aspects of data collection, including the estimate by BEA of the burden imposed by the reporting requirements. BEA considers all comments before making final decisions on the scope and design of its surveys and makes every effort to balance the needs of data users for complete, accurate, detailed and timely data with the concerns of respondents about the burden imposed by the reporting requirements. By convention, approval of a given survey must be renewed within three years.

Country experience: Costa Rica

2.23. In Costa Rica, trade in services statistics are compiled and disseminated in accordance with the terms and conditions of the National Statistical System (SEN) law No. 7839 of November 4, 1998, and the Central Bank of Costa Rica (BCCR) organic law 7558 of November 3, 1995, (with subsequent revisions). The Central Bank's organic law does not specifically assign the task of compiling trade in services statistics to the BCCR. Article 15(d) of the National Statistical System law No. 7839 officially assigns to the BCCR the task of preparing the basic statistics needed to create national and other macroeconomic accounts. However, the BCCR has no legal basis to request information from the non-financial private sector in order to compile trade in services statistics. Thus, it is not permitted to impose sanctions on entities that do not provide data. In view of that limitation, the staff of the External Sector Statistics Area (AESE) and the Economic Surveys Area (AEE) have adopted procedures to motivate data providers to report their information, including letters explaining to respondents the importance of providing the requested data and sending them reports based on their statistical contributions, as well as conducting periodic in-person consultations. The average level of response to surveys is 90 per cent.³⁷

³⁶ See United States Department of Commerce, Bureau of Economic Analysis, *A Guide To BEA's Services Surveys* (Washington, D.C.). Available from www.bea.gov/surveys/pdf/surveysu.pdf.

³⁷ IMF Special Data Dissemination Standards website for Costa Rica. Available from <http://dsbb.imf.org/Pages/SDDS/CtyCtgList.aspx?ctycode=CRI>.

Country experience: India

2.24. In India, the collection of data of foreign liabilities and assets (FLA) of Indian companies is mandated by the Foreign Exchange Management Act of 1999. It is mandatory for Indian companies that have received FDI and/or made overseas investments in any of the previous years, including the current year, to submit an annual return on FLA to Reserve Bank of India (RBI).³⁸ Failure to file the return by the due date is treated as a violation of the Act.

³⁸ Further information on Reserve Bank of India's FLA annual return on foreign liabilities and assets is available from www.rbi.org.in/scripts/FAQView.aspx?ld=95.

2.25. Initially, the objective of the Foreign Exchange Management Act was to collect comprehensive information on the operations of Indian companies having foreign participation in equity capital, including counterparty country information for the participation of India in the annual IMF global coordinated direct investment survey. However, since 2012, the scope of the Act has been extended to collect information for the compilation of inward FATS.

Chapter 3

Institutional arrangements

3.1. Chapter 3 describes the need for and purpose of institutional arrangements in the context of the implementation of the statistical framework recommended in MSITS 2010 for measuring the international supply of services. It elaborates on the characteristics of effective institutional arrangements, as well as on good practices for setting up such arrangements under different country circumstances. The chapter contains the following sections: a summary of good practices (section A); the need for and purposes of institutional arrangements (section B); the characteristics of effective institutional arrangements (section C); and country practices (section D).

A. Summary of good practices

3.2. It is good practice for agencies involved in the collection and compilation of data on the international supply of services to establish institutional arrangements that involve the key producers and data users that properly reflect the country's needs, priorities and resources. Such institutional arrangements should present a clear division of responsibilities and work among the agencies involved in the compilation of statistics on services transactions between residents and non-residents, FATS and additional monetary and non-monetary indicators for analysing the international supply of services. It is essential to establish appropriate channels of communication and mechanisms for coordination.

3.3. The *Guide* emphasizes that institutional arrangements lay the groundwork for effective process management, from the identification of data sources to the dissemination of output, and for promoting communication between the staff of the different institutions involved. Institutional arrangements should be based on a legal framework, and they should elaborate upon that framework as necessary. Institutional arrangements should be periodically reviewed and improved to keep them relevant. An advisory committee, or similar body, should be established to support sound decision-making and to take into account the interests of stakeholders.

B. Purpose and types of institutional arrangements

3.4. The production of official statistics typically requires the participation of several agencies and, consequently, the establishment of institutional arrangements. In the area of trade in services statistics, agencies involved in the statistical process may include the national statistical office, the central bank, the ministries of trade, the economy and finance, tax and immigration authorities, the national tourism administration, border protection agencies, the customs administration, financial markets regulators, chambers of commerce and investment promotion bodies.

3.5. Institutional arrangements are generally understood as a set of agreements on the division of the respective responsibilities of agencies involved in the collection, compilation and dissemination of data pertaining to a given statistical domain.

Such arrangements ensure that official statistics meet the needs of users, follow quality standards and are compiled and disseminated in the most efficient way. Meeting the needs of users is especially important in such a relatively young and broad statistical domain as the statistics of international trade in services. The scope of institutional agreements can range from determining the complete process of statistical production and dissemination to regulating certain parts of that process.

3.6. National statistical systems are organized on the basis of statistical and other applicable national laws and regulations, which, to different degrees, specify the rights and responsibilities of the agencies involved, thus defining main features of the country's statistical system. Usually, two main types of national statistical systems are differentiated: centralized and decentralized statistical systems.³⁹ A national statistical system is referred to as centralized if the management and operations of the statistical programmes are predominantly the responsibility of a single autonomous government agency. A national statistical system is commonly referred to as decentralized if the statistical programmes are managed and operated under the authority of different institutions, with coordination normally provided by a single body.

3.7. Institutional arrangements should ideally complement the legal framework (see chapter 2). Especially in cases in which the legal framework is weak, institutional arrangements can play an important role in improving it and addressing current constraints. Different types of institutional arrangements can provide equally for statistics on the international supply of services that follow internationally recognized methodological guidelines, use all available statistical sources in an efficient way and apply appropriate compilation procedures. Practical examples from countries with different statistical systems are provided at the end of the present chapter to help in setting up institutional arrangements in the most effective way.

C. Characteristics of effective institutional arrangements

3.8. Institutional arrangements should involve the key producers and users of the statistics and can be set up in different ways, depending upon each country's needs, priorities and resources. They should contribute to establishing appropriate channels of communication, as well as mechanisms of coordination, to ensure efficiency in statistical production. Pre-existing institutional arrangements in related statistical domains (e.g., international merchandise trade and tourism statistics) should be taken into account and built upon, when possible.

3.9. As part of the BOP, resident/non-resident trade in services statistics are important to monetary policy analysis and, together with national accounts and other economic statistics, describe a country's economic development. Therefore, national statistical offices and central banks often share responsibility for the collection and compilation of those statistics.

3.10. Compilers should be aware of another important analytical aspect, namely, the need of countries' economic agencies, such as ministries of economic affairs and chambers of commerce, to conduct assessments of the competitiveness of countries and economic sectors for the design of economic policies and international trade negotiations based on GATS. Furthermore, the compilation of statistics on the international supply of services in some areas coincides with other mandatory regulations. For example, financial market authorities are typically responsible for banking and insurance supervision. Moreover, national statistical offices, national census bureaux and other institutions may play very important roles in collecting, producing and disseminating FATS, in accordance with the legal mandate in the statistics area assigned to each institution.

³⁹ For details see: *Guidelines on Integrated Economic Statistics*, paras. 3.33-3.39.

3.11. The success of institutional arrangements in most cases is dependent on the existence of a clear division of the responsibilities and mutually beneficial cooperation between national statistical agencies and central banks (and possibly other agencies), which have historically developed in different ways. In view of the growing need for information that is coinciding with rising cost consciousness, the agencies and banks should seek cooperation in focusing on their respective areas of expertise, making use of existing data and ensuring consistency in statistical production.

3.12. The process is further stimulated by the planned expiration in many countries of the bank settlements systems (traditionally the main data source of central banks for BOP statistics, which cover trade in services). Such systems are generally gradually being replaced by enterprise surveys as the main data source for the compilation of trade in services statistics. The transition is making evident the need for closer cooperation and coordination between central banks and national statistical offices, as the latter normally conduct enterprise surveys and maintain business registers.

3.13. National statistical offices and central banks should also look for close cooperation with chambers of commerce or other representatives of a country's private sector to obtain support in producing high-quality data. On one hand, chambers of commerce or other representatives of a country's private sector can inform enterprises about the importance of timely and accurate reporting and the use of electronic media and support communication between statistics producers and enterprises in the design of surveys and in the interpretation of results. On the other hand, national statistical offices and national census bureaux can make customized data sets available to the representatives of the private sector that reflect their specific economic interests.

3.14. Central banks and financial market authorities, sometimes centralized in a single institution, work closely together in carrying out their respective tasks for financial market stability. Therefore, they normally cooperate closely and no additional legal act is needed to ensure the sharing of information. However, in addition to institutional arrangements, central banks and national statistical offices should ensure that they have legal access to administrative data on banking and insurance transactions collected for supervisory purposes.

3.15. The following characteristics of effective institutional arrangements are recommended:

- (a) They should take into account the respective responsibilities of the institutions involved covering all stages of the statistical process, from the identification of user needs and the collection of raw data to data compilation, dissemination and evaluation;
- (b) The rights and responsibilities of the institutions involved should be clearly defined to avoid misunderstandings, the duplication of work or the omission of significant elements of work;
- (c) The terms of cooperation should be laid out in a legal document so that any changes to administrative procedures or statistical processes that could affect data compilation become an integral part of the terms of cooperation and can be dealt with in advance;
- (d) Institutional arrangements should leave room for flexibility in everyday statistical production;
- (e) Given the legal foundation for the cooperation of various agencies, one institution—the national statistical office, the central bank or a specially established interagency body—should have a clear mandate to monitor and coordinate the production of statistics on the international supply of ser-

VICES, disseminate the data and keep in contact with international organizations and other data users;

- (f) The main user groups should be included in the institutional arrangements and their needs should be accounted for, taking into account the legal obligations and resource restrictions of the institutions that produce statistics.

3.16. Further, the characteristics of effective cooperation are as follows:

- (a) The operationalization of the relevant international statistical standards and good country practices;
- (b) The development and implementation of a work programme for the collection and compilation of data in accordance with the statistical framework for describing the international supply of services, including the establishment of appropriate interagency data compilation arrangements;
- (c) The establishment of close contact and regular consultations with the user community to guarantee the analytical and policy relevance of the compiled and disseminated data;
- (d) The promotion of an integrated approach to data compilation, as well as of appropriate quality management, to ensure that high-quality data on the international supply of services meet increasing user demand and are made available, despite limited resources;
- (e) The dissemination of easily accessible and detailed statistics on the international supply of services to users, both domestically and internationally;
- (f) Consultations with enterprises on questions concerning the reconciliation and exchange of data.

3.17. Finally, guidelines for creating effective institutional arrangements and terms of cooperation include the following:

- (a) Adopt a strategic approach to multilevel planning for advancing the integration of economic statistics;
- (b) Implement effective process management, from the identification of data sources to the dissemination of outputs;
- (c) Periodically review institutional arrangements and initiate necessary adjustments to keep them relevant in the light of evolving user needs and emerging data sources;
- (d) Establish an advisory committee to ensure that the interests of all stakeholders are taken into account and that the committee members assist in the development of data by supporting sound decision-making;
- (e) Promote communication between the staff of the different institutions involved to develop an understanding of the entire production process of statistics compilation within the framework for describing the international supply of services, as recommended in MSITS 2010.

D. Country experiences

Country experience: Austria

3.18. **Statistics on resident/non-resident transactions in services.** In Austria, Oesterreichische Nationalbank (OeNB) is legally responsible for compiling and disseminating resident/non-resident trade in services statistics (Foreign Exchange Act 2004, section 6 (1)). In order to keep the cost of data compilation low, both for reporting and producing statistics, OeNB opted to cooperate closely with Statistics Austria.

The two institutions have signed a basic framework agreement on the basis of international and/or national legislation, to guide their cooperation in all fields of statistics related to the economy of Austria. The basic principle of cooperation governing the determination of specific areas of activity is that each institution concentrates on its respective expertise and data access. The agreement defines the compilation of services trade statistics as an area of “intensive cooperation”, as OeNB and Statistics Austria work jointly on a single statistical product, in contrast to areas of “vital interest”, in which one party is responsible for data production and the other is a principal user of the data. The details of cooperation in this area are laid down in an individual service contract which calls for one institution to provide input for a statistical product for which the other institution bears the legal obligation and responsibility. The contract specifies: (a) individual production stages, dates and interfaces; (b) classifications, revisions and quality measures; (c) access to non-published data (d) the use and reconciliation of existing registers and administrative data; (e) the evaluation of new statistical, technical, financial and legal requirements; and (f) coordination of the stance to be taken in national, European Union and international bodies.

3.19. **FATS.** In contrast to resident/non-resident trade in services statistics, the national statistical office is responsible for compiling and disseminating FATS in Austria. Those statistics are compiled in close cooperation with the OeNB, which has a service provider contract with the statistical office. Concerning inward FATS, OeNB determines which enterprises are foreign-controlled and the statistical office collects the respective variables as part of the structural business statistics. Concerning outward FATS, the respective variables are collected by OeNB as part of the survey on FDI. Through such an approach, FATS can be compiled with a minimal additional reporting burden for enterprises in Austria.

3.20. In addition to regular information sharing in the course of statistics production, OeNB and Statistics Austria have set up a committee consisting of at least two higher voting members of each institution. The committee meets at least once each quarter to monitor joint activities and recommend enhancements. It further initiates extensions and updates to the existing areas of cooperation, including the prolongation of and amendments to the basic cooperation framework agreement.

3.21. With the introduction of direct reporting in compiling external statistics, OeNB also initiated close cooperation with the Chamber of Commerce of Austria to support contacts with the business sector. The two institutions decided to enter into a basic cooperation framework agreement whose main focus is to enhance efficiency in producing and disseminating up-to-date and relevant statistical information. On the one hand, OeNB aims to minimize the cost of statistical production, including the cost of data reporting by both enterprises and the OeNB, by making the utmost use of administrative and register information. On the other hand, OeNB makes efforts to disseminate easily accessible and detailed statistical information to reduce the cost of accessing data. The Chamber of Commerce assists OeNB in fulfilling its tasks by supporting communication with enterprises in various ways, including offering access to internal media and events and arguing for the importance of statistical information in general. At the same time, the Chamber of Commerce fosters the use of administrative and existing statistical information to keep reporting obligations to a minimum and advocates the simplification of reports, including through the use of electronic media.

Country experience: Malaysia

3.22. In Malaysia, all statistics collected and published by the Department of Statistics Malaysia (DOSM) are governed by the Statistics Act 1965 (revised in 1989).

Under the terms of the Act, DOSM has the independence to determine the coverage, contents, methodology and periodicity of data collection. For the collection, compilation and dissemination of trade in services statistics (including FATS), DOSM has the lead responsibility. Memorandums of Understandings were established between DOSM and Central Bank of Malaysia (BNM) and Tourism Malaysia (TM) to facilitate and improve cooperation with those agencies. BNM, through its Statistical Services Department, is responsible for compiling BOP statistics from ITRS, while Tourism Malaysia collects tourism-related data to be used for statistics on the international supply of services. There are 14 additional agencies that contribute to the collection, compilation and dissemination of trade in services statistics.

3.23. To coordinate the dissemination of trade in services statistics, DOSM chairs the quarterly meetings of the Inter-Agency Planning Group to brief members on the data prior to publication. The members include the Economic Planning Unit, the Treasury, BNM, the Ministry of International Trade and Industry, the Malaysia External Trade Development Corporation and the Malaysian Industrial Development Authority. Technical meetings with BNM and other agencies are held as necessary. In addition, the high-level committee structure of the industrial master plan for Malaysia includes the Working Group on Services Statistics that monitors, in particular, the development of trade in services statistics.

Country experience: Spain

3.24. In Spain, Bank of Spain (BE) is responsible for the compilation and dissemination of the resident/non-resident trade in services statistics and the National Institute of Statistics (INE) is responsible for the production and dissemination of FATS. BE estimates travel services transactions between residents and non-residents on the basis of information from surveys developed by different institutions, including INE and the Institute of Tourism Studies (IET). A cooperation agreement among INE, IET and BE was established to outline the exchange of information needed to estimate the "travel" item. For its part, BE estimates the "other services" item of the BOP on the basis of a bank settlements system, combined with direct reporting for some large declarants.

3.25. The planned expiration in 2014 of the bank settlements system used by BE for compiling the "other services" item of the BOP led to a 2004 agreement with INE for the joint design of the international trade in services survey. INE is responsible for the design of the sample, the fieldwork and the tasks subsequent to data collection, including editing, imputing and grossing-up of the sampling data, while BE contributes the main framework of the survey and the reports of international services transactions obtained from its bank settlements system. In 2004, BE signed an agreement with INE for the joint design of the international trade in services survey. INE is responsible for the design of the sample, the fieldwork and the tasks subsequent to data collection, i.e., editing, imputing and grossing-up of the sampling data, while BE contributes the main framework of the survey and the reports of international services transactions obtained from its bank settlements system.

3.26. Since 2004, INE has also had a cooperation agreement with the Tax Administration Agency of Spain, which annually forwards the microdata of value-added tax (VAT) records for international goods and services transactions to INE, as well as the microdata of VAT records specifically on services transactions within the European Union. In accordance with that agreement, INE also receives annually the microdata on intra-European Union (Intrastat) and extra-European Union (Extrastat) trade operators that dispatch or bring in goods for processing or repair, which is use-

ful for identifying the population that engages in the processing and repair services category of EBOPS 2010.

3.27. For the compilation of outward FATS, the National Statistical Institute has a cooperation agreement with the Ministry of the Economy and Competitiveness under which the latter forwards microdata of the Foreign Investments Register to the Institute annually so that there is no need for a specific survey.

3.28. Inward FATS are compiled on the basis of structural business surveys conducted by the National Statistical Institute in relation to the industrial, services and research and development sectors, to which is added information from the Ministry of Development on the construction sector, information from the Directorate General for Insurance and Pension Funds of the Ministry of the Economy and Competitiveness on the insurance sector, and BE information on the financial sector. There are no ad hoc cooperation agreements with those administrative bodies for that exchange of information.

Part II

Data collection

Part II focuses on data collection, while part III deals with data compilation. It is recognized that the boundary between data collection and compilation is not always clearly defined. However, efforts were made to discuss in part II the main aspects of data collection, such as data sources and their advantages and shortcomings, as well as various aspects of the data collection process. Chapter 4 begins part II with an overview of data sources used within the modes of services supply framework, followed by a description of registers and survey frames (chapter 5), the elaboration of enterprise and establishment surveys (chapter 6), surveys of persons and households (chapter 7), the international transaction reporting system (ITRS) (chapter 8), administrative records (chapter 9) and other data sources (chapter 10). Part II concludes with a comparison of various data sources (chapter 11).

Chapter 4

Introduction and overview of data sources within the modes of services supply framework

4.1. Chapter 4 serves as an introduction to the following chapters of part II by briefly describing the main data sources that countries are encouraged to use in collecting the information necessary for the compilation of statistics on services transactions between residents and non-residents, as well as foreign affiliates statistics (FATS) and additional indicators on the international supply of services.

A. Data sources and data collection: an overview

4.2. Part II describes the main data sources used for compiling statistics of the international supply of services. While the international transaction reporting system was, in the past, the most prevalent source of data for resident/non-resident trade in services statistics, it is being increasingly supplemented by other sources, as demand for more detailed information on services categories and trading partners increases. Nevertheless, for balance-of-payments (BOP) services statistics, the international transaction reporting system (ITRS) remains an important data source in many countries, and it should be used. Increasingly, statistical business registers, which serve both as a source of information and the basis for the organization of various surveys, are being recognized for their central role in the implementation of an integrated statistics approach and are necessary for building a forward-looking programme of data collection in statistics of the international supply of services. The use of administrative and other sources is another essential part of such a programme, as those sources can complement statistical surveys and/or provide information when, for example, surveys are not cost effective or are difficult to organize.

4.3. Possible data sources for the compilation of statistics, according to the recommendations of MSITS 2010, and their definitions are listed in sections (a) through (g) below. Each data source is covered in more depth in each of the corresponding chapters:

- (a) **Statistical business register (chapter 5).** The statistical business register (SBR) is commonly understood as a register of economic entities active in the national economy. If various types of those entities and their characteristics are taken into consideration, then the definition can be further elaborated;⁴⁰
- (b) **Survey (sampling) frame (chapter 5).** The survey frame (also called the sampling frame) is the statistical tool used to gain access to the target population, that is, to all economic entities to be surveyed. There are two types of frames: list frames and area frames. The frame is the backbone of the statistical system,⁴¹ representing what must be regularly measured by the statistical system. Its coverage must be as complete as possible and reflect the organizational structure of all statistical units of the economy;

⁴⁰ See Eurostat publication *Business Registers: Recommendations Manual*, Eurostat Methodologies and Working Papers (Luxembourg, Publications Office of the European Union, 2010). Available from <http://ec.europa.eu/eurostat/ramon/statmanuals/files/KS-32-10-216-EN-C-EN.pdf>.

⁴¹ See *Guidelines on Integrated Economic Statistics*, para. 5.69.

- (c) **Enterprise and establishment surveys (chapter 6).** These surveys can be one of the following types:
 - i. *Census*: includes all members of the population;
 - ii. *Partial coverage collection survey*: includes all enterprises above a certain threshold measured in terms of their dimensions, such as nominal capital, or other variables, such as significant cross-border activity;
 - iii. *Random sample survey*: includes enterprises that are preferentially selected according to rigorous sampling procedures, with the results grossed up to reflect the entire population;
 - iv. *Stratified random sample*: groups population components according to the size of the selected activity so that enterprises within different strata have different probabilities of selection. Usually, that is a combination of the partial coverage and random sample options, but is more sophisticated and may produce a high level of coverage, while remaining relatively cost-effective.
- (d) **Surveys of persons and households (chapter 7).** Surveys of individuals or households, with household defined as a group of persons who share the same living accommodations, who pool some or all of their income and wealth and who consume certain types of goods and services collectively, mainly housing and food;⁴²
- (e) **International transactions reporting system (chapter 8).** A system of collecting data of individual international settlements and/or transactions from banks, enterprises and individuals. In most countries that maintain ITRS, the reporting is mandatory and settlement data have been collected;
- (f) **Administrative records (chapter 9).** Compiled for regulatory purposes or to support and document the administration of various government programmes, such as immigration regulations, social security benefits, education and health care;
- (g) **Other data sources (chapter 10).** Such sources include credit card records, mobile phone records, records of business associations, financial statements of companies, reports of chambers of commerce, records of investment promotion agencies, private databases and data compiled by trading partners. Some of these sources are part of the body of information referred to as “big data”.

⁴² See 2008 SNA, para. 24.12.

4.4. Chapters 5 through 10 describe the roles and characteristics, such as the design and maintenance, of the above-mentioned data sources; how they can be used in the context of data collection of resident/non-resident trade in services, FATS and modes of supply; and their advantages and limitations, when relevant. They also present country experiences in using such sources in statistical compilation.

4.5. In the case of enterprise surveys, chapter 6 describes in detail specific types of surveys used for the compilation of certain service categories, including surveys of transportation, manufacturing services, insurance and financial corporations, research and development, tourism activities and construction. It also covers structural business surveys for FATS collection, foreign direct investment surveys that incorporate key FATS variables and separate foreign affiliates surveys. Chapter 6 also presents country experiences in the use of enterprise surveys to collect data for modes of supply, manufacturing services, construction, education, computer software and information technology services and FATS, among others.

4.6. Chapter 7 highlights specific types of surveys dealing with persons and households and how they can be used to collect data on the international supply of services. In particular, population censuses can be used to gather benchmark information, specifically for compiling outgoing mode 4 data, or for household sampling. Household and border surveys can be used to collect data related to international travel; consumption of other services, such as Internet purchases/consumption of services; mode 4; and the international provision of services of members of households, in particular for self-employed persons (modes 1 or 4). Labour force surveys can be used to collect information on the mode 4 variable “number of persons or trips” and on outbound business travel.

4.7. Chapter 8 highlights the advantages and limitations associated with using an ITRS to compile trade in services statistics. It also presents issues to consider regarding ITRS reporting thresholds (different approaches for dealing with missing values due to ITRS thresholds are discussed in part III, chapter 17).

4.8. Chapter 9 covers administrative records, including tax records; customs records for estimating the value of trade-related transport and insurance services; immigration records and entry and departure cards; work permits collected by immigration authorities; and population records. Administrative records or commercial databases on foreign affiliates are also useful for FATS, but their forms and questionnaires cannot easily be designed to provide data useful for statistical and analytical purposes. Rather, they could be used as supplements to the survey on foreign affiliates. Chapter 9 also covers in detail how such sources can be used to collect data under modes 2 and 4.

4.9. Chapter 10 focuses on other data sources and discusses the potential uses of big data, payment card data, mobile phone data, external party sources and linked microdata. The chapter also presents country experiences to explore the potential uses of such data sources to compile trade in services statistics.

4.10. For compiling statistics by partner country, the compiler will have access to a number of external sources of information, which can be useful for improving the quality of compiled statistics. Such sources include bilateral data compiled in other economies that represent the counterparts to the transactions of residents of the compiling economy.⁴³ A similar approach can be adopted for other sets of data covered in the present *Guide*, such as FATS.

⁴³ *Ibid.*, A5.21.

4.11. When such sources are used, the compiler should make every effort to ensure that partner country information is classified correctly. The compiler must also decide on the principle of classification and the list of countries or country groupings to be shown. The country classification should be based on the countries of residence of the provider and the recipient of the services.⁴⁴ The same country classification should be used across all sources of data collection. If it is not possible to obtain correctly classified data from the source, the compiler should, at least in significant cases, investigate alternative sources to obtain supplementary information.⁴⁵ If countries provide and/or receive services from international organizations, these should be used as a separate partner group, as such organizations are resident in an economic territory of their own, and not the economy in which they are physically located (see MSITS 2010, para. 3.28).

⁴⁴ *Ibid.*, A5.3.

⁴⁵ *Ibid.*, A5.23.

B. Sources for modes of supply data

4.12. When considering sources for modes of supply data, compilers should carefully evaluate how residence is defined in their country, be aware of the laws and

regulations for migration and trade in services and assess how such information can be used in a statistical context. Mode of supply data for trade in services can either be collected through direct reporting (surveys) or estimated/modelled. In many cases a combination of the two approaches should be used to obtain the required aggregates. Using surveys to collect modes of supply data is advantageous in that the compiler has significant control over the data that can be obtained and the surveys can be tailored to answer specific policy questions. Modes of supply data are unlikely to change significantly in the short-term, so the extra questions may not need to be included each time the survey is run. However, the advantage must be weighed against other considerations, such as cost, respondent burden and difficulty in implementing the survey, such as respondents understanding the concepts so that they will report correctly.

4.13. Sources for mode 2 movements of persons are likely the same as those used for the collection of travel information, such as household, border and labour surveys. For incoming mode 2 persons, specific surveys targeting students, medical personnel and tourists could be used in addition to border surveys. Values calculated from household surveys must be accompanied by sufficient metadata since there are likely to be large sample errors associated with such values. Often the data will need to be combined with other sources, such as administrative data on border counts or entry and departure cards, to obtain relevant data on the number of mode 2 movements and persons.

4.14. Regarding mode 4, persons, border and household surveys, enterprise surveys and, potentially, inward FATS surveys (if they include variables measuring exports and imports of services of the foreign affiliate) are important sources both for incoming and outgoing employees and for self-employed persons providing services under a contract. Regarding mode 2, the data will most probably need to be combined, in particular for compiling breakdowns, to obtain relevant data on the number of mode 4 movements and persons, for example through the use of data on characteristics sourced from surveys of persons or households, combined with counts of those crossing borders. Use of data from partner countries may make it easier to capture the relevant information for sending countries.

4.15. For compilers using an ITRS, modelling the relevant mode of supply may be the only option. Data on mode 3 (commercial presence) will need to be collected in addition to existing data on the resident/non-resident services trade, as that mode of services supply falls outside the scope of service transactions measured under the BOP framework.

C. Comparing data sources

4.16. Chapter 11 provides comparison tables on the advantages and disadvantages of each type of data source in the context of compiling specific service categories, FATS and the number of mode 2 and mode 4 movements. The chapter addresses the coverage and relevance of each data source, the accuracy of reporting, the timeliness and frequency of the source and the burdens of reporting and processing the data involved. In guiding compilers in determining which data sources are most appropriate to use on a case-by-case basis, the chapter also lays the foundation for the discussion of the integration of data from different sources, introduced in part III, chapter 13. Integrating data from different sources is advised as the principal way to ensure the production of more detailed and comprehensive statistics, as well as to reduce the burden on survey respondents. Compilers are advised, therefore, to keep that goal in mind while reading part II.

Chapter 5

Statistical business registers and survey frames

5.1. A statistical business register (SBR) is commonly understood as a register of economic units resident in the national economic territory. An SBR is established and maintained for statistical purposes; for example, it provides a central sampling frame for business surveys and plays a central role in the integrated collection and compilation of economic statistics, from which detailed and interlinked indicators can be derived. Chapter 5 focuses on how business registers and survey frames can be used in the context of data collection of resident/non-resident trade in services, FATS and modes of supply. It consists of four main parts: a summary of good practices (section A); the roles and characteristics of SBRs and survey frames (section B); a satellite register for trade in services and the use of business registers to identify potential mode 4 self-employed service suppliers (section C); and country examples (section D).

A. Summary of good practices

5.2. Compilers of data in accordance with the statistical framework for measurement of the international supply of services are advised to use an SBR as the central sample frame for their survey programme in order to obtain better coverage, harmonize surveys, integrate trade in services statistics with other economic statistics, reduce costs and the response burden, prevent the double counting of statistical information and, above all, achieve better quality and more coherence in official trade in services statistics. A high-quality SBR helps to improve the efficiency and coherence of the national statistical system.

5.3. International guidelines for SBRs have recently been developed and are being continuously updated.⁴⁶ Compilers are advised to refer to those guidelines for more detailed information on setting up and maintaining a statistical business register. The *Compiler's Guide* focuses mainly on the role of the SBR as a central sample frame for surveys related to international trade in services.

5.4. The maintenance and development of an SBR should be well coordinated. It is good practice to have a clear agreement on the responsibilities of the agencies involved in the maintenance and development of the SBR in the national statistical system. It should be noted that in some countries, that process is handled by one dedicated unit in the national statistical system, instead of several units within the various substantive areas. The *Guide* advises that an appropriate legal framework be put in place for enabling statistical authorities to access and use administrative records, especially tax and social security records, to maintain the SBR.

5.5. It is good practice for the SBR maintenance process to be based to a large degree on the use of administrative sources, such as the administrative company register, the register of sole proprietors, the register of government units and the VAT register, as well as tax records and records of the social security administration. To ensure

⁴⁶ See *Guidelines on Integrated Economic Statistics*, United Nations publication, chap. 5, sect. C; see also information on the Task Force established to draft international guidelines on statistical business registers, available from www.unece.org/task_force_business_registers.html.

that the SBR provides a solid basis for the collection of the data needed for measuring the international supply of services, it is further advised to update the SBR on the basis of such sources as settlements and international payments databases, trade registers, the foreign direct investment (FDI) register, balance sheet information and other specific registers available from trade associations or regulatory bodies.

5.6. It is very important that the SBR use the definitions from the 2008 SNA for its statistical units. To ensure a more efficient collection of data on the international supply of services by various modes, the *Guide* advises the inclusion in the SBR of additional indicators providing information on international transactions of the registered entities, as well as on turnover, economic activity, number of employees, balance sheet variables and data on foreign ownership, in order to properly carry out the selection and stratification of the statistical units, sampling and estimation. It is also good practice to use the SBR to identify the mode 4 self-employed population, as merchants and small manufacturers, including self-employed and sole-proprietor companies, should be registered in it.

5.7. While it is good practice for the national statistical system to aim to maintain one multipurpose SBR, in practice, it may be useful to have a tailor-made satellite register consisting of all enterprises that are engaged in the international supply of services. If established, it is good practice for such a satellite register to be maintained by a dedicated unit within the agency responsible for the compilation of trade in services statistics. Such a unit should, in particular, systematically update the satellite register, using the information available in the central SBR, and actively participate in the harmonization of the content of the two registers.

B. Statistical business registers

B.1. Roles of statistical business registers

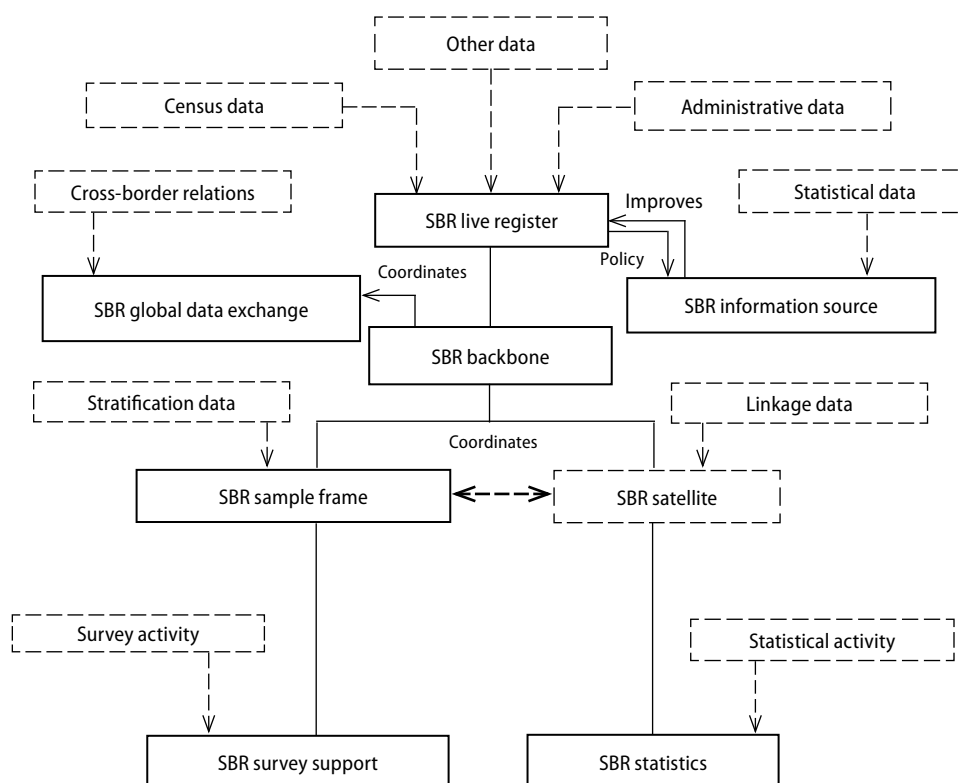
5.8. The Statistical Commission recommends the 2008 SNA to obtain a comprehensive and coherent set of statistics of the national economy. Implementation of the 2008 SNA begins with setting up a basic data-collection system for all economic activities. That effort goes hand in hand with setting up a system for integrated economic statistics, based to a large degree on the use of a statistical business register (SBR) as the central frame for all business surveys. Therefore, a number of regional and international agencies have been actively engaged in establishing and improving SBRs, especially in Africa,⁴⁷ Asia and Europe. Those improvements will benefit the collection of data by means of business surveys, as well as the collection of some administrative data, for the compilation of trade in services statistics.

5.9. An SBR is a means to an end rather than an end in itself. As such, it is a vital component of an integrated programme of economic surveys. The ultimate goal is the production of comprehensive, coherent and high-quality economic statistics. Figure 5.1 illustrates the various roles of an SBR. One of its important roles is to maintain and keep track of the changes in statistical units and their characteristics owing to real-life events (see section B.3). This is a continuous process of modification. The frequency of modification depends upon the update strategy of the SBR. In this respect, the SBR can be considered as a kind of “live register”, in which the composition of units changes constantly over time.⁴⁸

⁴⁷ African Development Bank, *Guidelines for Building Statistical Business Registers in Africa: Laying the Foundation for the Harmonization of Economic Statistics Programs* (Tunis, 2014). Available from <http://www.afdb.org/en/knowledge/publications/guidelines-for-building-statistical-business-registers-in-africa>.

⁴⁸ Further details on the European experience in that respect can be found in Eurostat, *Business Registers: Recommendations Manual*.

Figure 5.1
Roles of the statistical business register



B.2. The statistical business register as the central sample frame

5.10. The primary benefits of maintaining one sample frame are better coverage, the harmonization of surveys, the integration of survey data, the reduction of costs and response burden, the prevention of double counting of statistical information and, above all, better quality and more coherence in official statistics. Of course, such benefits can be realized only when one central register is used to derive a sample frame.

5.11. There are three reasons for the desirability of the construction and use of an SBR as the central sample frame. First, if survey frames are independently created and maintained, there is no means of guaranteeing their harmonization. As a result, there may be an unintentional duplication and/or omission of activities. Second, an SBR enables the practical application of standard statistical units and their classifications, which is a crucial requirement for the integration of survey outputs. Third, it is more efficient for a single organizational unit to maintain an SBR as a source of frames for all business surveys, than for each survey team to independently maintain its own frame.

5.12. An up-to-date survey frame is required for each repetition of a regularly conducted survey. It is more efficient to maintain a frame so that it can support the sequence of repetitions of a survey than it is to create the frame afresh with each repetition. This is particularly true in the case of subannual surveys, where the overlap of sampled units from period to period is essential. Survey frame maintenance is best achieved through the development of a single SBR, which is used as the source of frames for all business surveys.

5.13. The SBR also serves as the basis for grossing up the results from the surveys to produce estimates for the entire business population, and it is the main source for data on business populations and their demographics. An SBR should preferably cover as much national economic activity as possible. However, the high cost-to-benefit ratio involved in covering the smallest units means that some sort of cut-off is usually applied in practice. In addition to its role as a sampling frame, a high-quality⁴⁹ SBR can also improve the efficiency of the national statistical system by coordinating and spreading the samples of the various statistical surveys, helping to reduce the response burden and improving the coverage and congruence of the survey results. Finally, a comprehensive and up-to-date SBR plays a central role in achieving the integration of economic statistics, and is essential for the full coordination of source data that use the same basic information about business units.⁵⁰

⁴⁹ Overall quality is not easy to measure, although several of its specific aspects can be used as indicators, e.g., coverage, accuracy of the data held, frequency of updates and consistency of processes (see also chapter 20).

⁵⁰ See *Guidelines on Integrated Economic Statistics*, para. 3.29.

B.3. Characteristics of a statistical business register

5.14. An SBR typically lists the *economic entities* that are of interest for economic statistics. Economic entities have numerous characteristics, but some of the most important ones are their classification by (a) institutional sector (as defined in the 2008 SNA), (b) economic activity (as defined in the International Standard Classification of All Economic Activities (ISIC), rev.4) and (c) location. Most countries provide laws that enable economic entities to define and register themselves as legal entities: entities that are recognized by law or society, independently of the persons or institutions that own them. A legal entity can own goods or assets, incur liabilities and enter into contracts. The legal entity (or unit) always forms, either by itself or in combination with other legal units, the basis for the statistical unit.⁵¹ A statistical unit is an entity about which information is sought and for which statistics are ultimately compiled. It is the unit that provides the basis for statistical aggregates and to which tabulated data refer.⁵² Those may be identifiable legal or physical entities or statistical constructs.

⁵¹ See *International Recommendations for Industrial Statistics 2008* (IRIS 2008), Statistical Papers, Series M, No. 90 (United Nations publication, Sales No. E.08.XVII.8), para. 2.15.

⁵² *Ibid.*, para. 2.12.

⁵³ In addition to the 2008 SNA, IRIS 2008 and the fourth revision of the *International Standard Industrial Classification of All Economic Activities*, see Statistics Division "Statistical Units" (October 2007), available from http://unstats.un.org/unsd/industry/docs/stat_2008_6.pdf.

5.15. The 2008 SNA provides the standard definitions of the statistical units that are recommended by the Statistical Commission for use in setting up data collection in all economic areas.⁵³ As mentioned above, the MSITS conceptual framework is grounded in the 2008 SNA. The 2008 SNA definitions of statistical units should therefore be used for trade in services statistics purposes, as well. Box 5.1 lists and briefly defines the main types of statistical units. The statistical units used in an SBR should be described by at least three sets of variables and characteristics, namely:

- (a) **Identifier variables:** identity number, name, address (including postcode), telephone and fax numbers, electronic mail address and information to permit the electronic collection of data, value added tax (VAT) registration number or other administrative identity numbers;
- (b) **Economic/stratification characteristics:** characteristics related to activity classification (principal and secondary), size (e.g., number of persons employed, turnover, value added) and location variables (e.g., country of global decision centre (ultimate controlling institutional unit (UCI)), countries in which enterprises or local units are located and information on whether or not the unit is engaged in international trade).
- (c) **Demographic characteristics:** recording calendar dates for important events like commencement of activities, termination of activities and joining or ceasing to be part of an enterprise (group) permit an initial demographic analysis of the population of enterprises, local units and enterprise groups.

Box 5.1

Different types of statistical units

The *institutional unit* is an economic entity that is capable, in its own right, of owning assets, incurring liabilities and engaging in economic activities and transactions with other entities. Two main types of units may qualify as institutional units: persons or groups of persons in the form of households, and legal or social entities.

An *enterprise* is an institutional unit in its capacity as a producer of goods and services. An enterprise is an economic transactor with autonomy in respect of financial and investment decision-making, as well as authority and responsibility for allocating resources for the production of goods and services. Enterprises under the control of the same owner form an *enterprise group* to achieve economic advantages, such as economies of scale, control of a wider market and an increase in domestic productivity through more effective business management.

An *establishment* is an enterprise or part of an enterprise that is situated in a single location and in which only a single productive activity is carried out or in which the principal productive activity accounts for most of the value added. Note that the 2008 SNA also defines industries in terms of establishments.

There are two other statistical units that are often referred to in data sources relevant for statistics on the international supply of services: A kind-of-activity unit is an enterprise or part of an enterprise that engages in only one kind of productive activity or in which the principal productive activity accounts for most of the value added; and a local unit, which is defined as an enterprise or a part of an enterprise (for example, a workshop, factory, warehouse, office, mine or depot) that engages in productive activity at or from one location.

Sources: 2008 SNA and *International Recommendations for Industrial Statistics* (IRIS) 2008.

B.4. Creation and maintenance of a statistical business register

5.16. The circumstances and factors within which an SBR is built can clearly be vastly different across countries. The legal frameworks for acquiring data, as well as the access to human, financial and technical resources, will ultimately determine how countries can proceed. There are, however, some key recurring themes, including the following:

- (a) The requirements for building effective partnerships with data suppliers, funding providers and users of the SBR are, first, making sure that the critical role of the SBR in delivering a coherent and reliable national economic statistics programme is well recognized, and, second, putting in place robust governance structures and partner engagement mechanisms;
- (b) It is necessary to manage the implementation, operation and focus of the SBR in a manner that enables it to achieve its mission-critical purpose of identifying the population of businesses of a country so that they can be surveyed to acquire useful economic data. There are other secondary, yet highly desirable, roles that an SBR can fulfil, such as acting as a data collection management and tracking tool. The original design and implementation plan should allow for adding in such components, but only once the SBR has fully matured in its role as a high-quality statistical frame;
- (c) Generally, the approach should be to maintain simplicity to the extent possible. Conceptual and technical complexities should be added only when they serve a practical purpose, and should never prevent the SBR from meeting its larger goals.

5.17. Although the primary purpose of an SBR is to provide a central frame for economic surveys across statistical programmes, the longer-term vision should allow for the addition of features and components that will further enhance the value of an SBR, including the following examples:

- (a) An SBR can serve as a source of register-based statistics. This requires the seamless integration of administrative data, as well as adequate quality assurance, raw data treatment and programming resources;
- (b) A module to track respondents and response burden can be added. Such a module requires human information technology resources to develop and maintain servers and databases. The module may or may not be efficient or necessary when using an SBR in the early stages since population coverage would be limited and resources would be directed towards the economic entities with the largest impact;
- (c) A receptacle for tracking survey collection outcomes and response rates and a survey feedback mechanism can be established to facilitate analysis of the survey's efficiency and results, as well as to update the SBR on a more regular basis.

5.18. Information technology professionals who design the data structures and larger system will benefit, in particular, from the clear definition of the longer-term vision, facilitating the addition of such modules as the SBR evolves. To reiterate, the SBR must first and foremost be a solidly reliable listing of businesses from which statistical surveys can accurately measure the economic trends of a country. Creating it will be a challenging task, as will keeping it up to date once it is in use. The challenges entailed in the creation and ongoing maintenance of the SBR will be greatly facilitated by adhering to the following principles:

- (a) **Do not overextend resources in the early stages by trying to cover all types of businesses.** While a highly developed SBR may cover a vast swathe of the economic population, a new SBR must focus on covering the population that is both most important and can be most reliably captured and reflected. The need to maximize limited human and technological resources, and to use available funding efficiently, should limit the scope of the initial SBR population. Reflecting the informal economy, which is highly diversified and for which no administrative data exist, cannot be a focus of an SBR development project. Typically, for the macroeconomic indicators that are the driving objective for the statistical programmes to be served, acceptable margins of statistical error can be obtained by excluding the numerous businesses that are at the smallest end of the size spectrum. Including such "micro" businesses would add large volumes of records to be maintained, while adding only very small increments to the statistical aggregates (such as the main components of the gross domestic product (GDP) or BOP) being produced. This is not to say that having such businesses would not be useful, as they can inform important policy analysis pertaining to business formation strategies, small-business financing and other microeconomic issues. Again, the addition of the smallest businesses is a desirable feature that is worth adding, but only once the core objective of adequately supporting the key indicators produced by the national accounts and balance of payments has been met;
- (b) **Plan for a system that provides both live and snapshot versions of the register.** It will likely be necessary to have two versions of the SBR: (1) a live version that allows the instant recording of record updates entailed by

ongoing frame maintenance activities and (2) a snapshot version, produced from the live version on a monthly, quarterly or annual basis, that can be used to create particular survey frames. The snapshot version also provides a basis for period-to-period comparisons of frame quality.

B.5. Governance of a statistical business register

5.19. Governance and organizational structure is very important, not only for developing the SBR programme itself, but even more so for the ongoing maintenance of the SBR and support for its users. An SBR should be, where possible, an independent entity with a dedicated manager. It is good practice for the manager's unit to assume the following responsibilities:

- (a) Defining and documenting all concepts, in line with the standards of international, national and local statistical offices;
- (b) Planning and directing the development of SBR system processes and functionalities;
- (c) Planning and implementing a quality assurance program for the SBR with the goal of:
 - i. Assessing quality and ensuring the frame's continued integrity;
 - ii. Defining and producing quality measurements for the SBR;
 - iii. Identifying system improvements, or recommending adjustments to the training programme or procedures, if required;
- (d) Profiling businesses to delineate those that are larger and more complex, to properly represent their production output;
- (e) Ensuring that businesses are classified within the proper standard industry classification;
- (f) Assigning or deriving statistical indicators, or creating statistical units, from administrative registers to create a complete and unduplicated SBR aligned with the needs of the system of national accounts and basic economic statistics;
- (g) Validating new development strategies, specifications and procedures;
- (h) Developing and delivering courses and materials to educate SBR users, including profilers, survey frame specialists, analysts, data coders and the staff of survey divisions and collection units/areas (training could follow a certification process so that those wishing to access the register must first complete the appropriate level of instruction);
- (i) Supporting SBR data users by, for example, providing assistance in evaluating the design needs of their surveys;
- (j) Providing direction and support on legal issues related to the survey frame, such as access to the SBR and dissemination of SBR-based data;
- (k) Maintaining a dedicated group tasked with producing files for users and processing all files related to updating the frame.

5.20. The creation and maintenance of a unified comprehensive SBR is a long-term objective and a challenging task,⁵⁴ and it is recognized that resources devoted to that purpose vary among countries. In spite of this, there are a number of common issues that many national statistical offices may encounter in assessing the suitability of an SBR for trade in services statistics purposes.⁵⁵ For instance, a legal framework should be in place to allow access to and use of such administrative records for the purposes of the SBR. In the maintenance process, as many administrative sources as possible should be used to update the SBR, including, for example, the administrative

⁵⁴ *Guidelines on Integrated Economic Statistics*, para. 5.67.

⁵⁵ Compilers interested in learning more about the detailed aspects involved in the establishment of an effective statistical business register should consult Eurostat, *Business Registers: Recommendations Manual*.

company register, the register of sole proprietors, the register of government units and the register of non-profit units, as well as tax information such as corporate tax, VAT and social security information.

5.21. Ideally, there should be a unit in the national statistical office that is responsible for developing and maintaining the SBR. Decentralized systems could benefit from the development of a system for reconciling the more significant inconsistencies in the data produced by multiple business registers, to improve the accuracy of the data through more consistent classification of key enterprises and the elimination of overlaps and gaps in coverage.

B.6. Maintenance of an statistical business register

5.22. An SBR must be continuously updated to reflect changes in the population of economic entities as accurately as possible. In particular, the number and characteristics of economic units engaged in trade in services normally shift very rapidly, potentially resulting in the rapid aging of SBR data, which soon becomes useless. The SBR should be updated at least annually to record unit creations and deletions, as well as changes in address and stratification variables.

5.23. New enterprises should be recorded in the SBR as soon as information about them is available, preferably before they start trading, so that information about investment in new buildings and plants can be collected. In addition, changes in the data necessary for the conduct of surveys, such as the addresses of reporting units, should obviously be reflected in the SBR as rapidly as possible.⁵⁶

⁵⁶ Eurostat, *Business Registers: Recommendations Manual*, para. 4.4.

C. Satellite register for trade in services and the use of statistical business registers to identify potential mode 4 self-employed service suppliers

C.1. Satellite register for trade in services

5.24. A satellite register of an SBR is a register that covers a subpopulation of the SBR with specific characteristics. For instance, a satellite register for trade in services (TIS-R) contains all economic units engaged in the international supply of services. That subpopulation is identified by linking the SBR with data from other sources, helping the statistician to determine the target subpopulation in the published indicators. Subsequently, survey samples can be drawn from the TIS-R.

5.25. It is good practice for the TIS-R to be maintained by a dedicated unit within the agency responsible for the compilation of trade in services statistics in the country. However, it is strongly advised that the core information on the economic units in the TIS-R be automatically updated from the central SBR and that its content be harmonized with it. The harmonization of the TIS-R and the SBR entails forwarding to the SBR managers the information on the statistical units identified as engaged in the international supply of services but not yet included in SBR. For example, a TIS-R can include and provide to an SBR information on units, which are identified by the central bank as being active in resident/non-resident services transactions but are not yet registered in the SBR. The international supply of services is, in principle, a possible activity for all units in an economy. Therefore, drawing efficient samples requires the inclusion in the sample frame of all those units that supply services internationally and the exclusion of those that are not engaged in such activity. In that context, in practice, it is useful to have a tailor-made TIS-R for trade in services.

C.2. Objectives of a satellite register for trade in services

5.26. The objectives of a TIS-R can be described as follows:

- (a) The TIS-R must enumerate all the resident economic units that have had, in the recent past, international transactions in services. Ideally, the services subregister should enable an immediate differentiation of its population by major kinds of services and distinguish the population of services exporters from that of importers, insofar as those populations may have significantly different features;
- (b) The TIS-R needs additional indicators that provide information on international transactions, which are generally not included in an SBR. An SBR is a necessary, but not sufficient, source to determine the TIS-R population;
- (c) The selection of the population of economic units of interest to statistics on the international supply of services will be an extract of the TIS-R. It generally includes all big players, as well as small and medium-sized enterprises, selected for participation in a sample survey. In other words, we are distinguishing three sets of economic units: the overall population of the SBR, the subset population of the TIS-R and the surveyed sample of the TIS-R.

5.27. **Variables.** Turnover, economic activity, number of employees, balance sheet variables, foreign trade data, data on foreign ownership and other economic data are necessary auxiliary variables for carrying out the selection, stratification, sampling and estimation of economic units. It is also good practice to use business registers to identify the self-employed population that could potentially be supplying their services through mode 4 because merchants and small manufacturers, including the self-employed and single-proprietor companies, are usually registered in them. An indication of cross-border trade activities might also be available and should be reflected in the TIS-R.

5.28. **Sources.** The sources used to build and update a TIS-R should be used in two ways: (1) to identify the population, as well as the variables used to identify it, and (2) to select the enterprises to be surveyed. Potential sources to be carefully tested include the following:

- (a) *The general SBR* lists the businesses active in the country, whatever their activity, domestic and/or international. It may contain relevant information for building and updating the TIS-R: identification variables, stratification variables relating to the activity and size of the enterprises, demographic variables and relationships variables (links between units);
- (b) *Settlements and international payments databases* exist in many countries and contain the detail that can be derived from an ITRS on the resident units carrying out international payments through accounts held in resident banks, with an item breakdown (including trade in services);
- (c) *Trade registers* include a list of resident operators involved in international trade in goods. Generally, a link can be established between trade in goods and trade in services (e.g., through information on international freight);
- (d) *VAT registers* are an important source for updating other registers existing in the country. The basic information in the VAT register includes, in general, such variables as turnover, employment, main activity and total goods and services exports and imports, which may be useful for a TIS-R;
- (e) *Other sources* include the register of partial direct reporting companies, the FDI register, balance sheet information and specific registers available from trade associations or regulatory bodies, including insurance companies, postal and telecommunications operators, trusts, securities dealers, the press and other media.

C.3. Using business registers to identify potential mode 4 self-employed service suppliers

5.29. In some countries, foreign individuals must register with a supervision office. All new entries and changes are recorded and could eventually be published nationally. This means that potential mode 4 persons could be observed, if that information feeds the business register, and subsequently be linked to the trade in services variable. Therefore, the demographics of businesses, including in relation to mode 4, can be derived.

5.30. In countries in which compilers have direct access to the business register, or can link their own BOP register with the business register, the self-employed category could be accessible. For example, in the European Union, very small enterprises are usually included in the business registers. Therefore, it is recommended that this legal type (that is, physical persons acting on the basis of small business authorization) and size class (microenterprises) be used as a first indication of potential mode 4 self-employed persons.

5.31. Chapter 7 of the Eurostat *Business Register Recommendations Manual* stipulates which legal units must be recorded in business registers in European Union member states, while chapter 8 provides relevant information for mode of supply: external sourcing of ancillary services, in section 8.D, and activities of workers under exclusive contracts, in section 8.E, which states that “[t]here are many activities that involve the services of workers under exclusive contracts: commercial representatives, travelling salesmen, insurance agents. Such workers may or may not be treated as employees of the enterprise, depending on the nature of the contract binding them to the enterprise”. Therefore, for countries interested in the self-employed under mode 4, it is advised to take into account the experience of the European Union and to incorporate similar information in their registers to enable compilation of the supply of services by mode 4 persons.

D. Country experiences

5.32. Section D contains descriptions of three country experiences, each of which represents a specific practice adopted by a given country. The experience of Italy shows that persistent difficulty with access to the general statistical register, in addition to other statistical problems with obtaining a survey frame relevant for cross-border phenomena, may lead to a decision to create a specific SBR to support the compilation system for external sector accounts. The case of Spain demonstrates the complexity of issues that must be overcome to build a tailor-made TIS-R when the general SBR, traditionally used as the statistical frame for almost all business surveys, does not contain the variables needed for the direct identification of exporters and importers of services. The experience of Uruguay proves that sustained efforts can result in developing a register that can provide a basis for the compilation of statistics on the international supply of services under the circumstances that developing countries usually face.

Country experience: Italy

5.33. In the period 2007-2011, the Bank of Italy modernized its BOP system. The SBR developed by the Bank plays a central role in the new system. It is used particularly to facilitate direct reporting via surveys covering different parts of the BOP and the index of industrial production. Although the use of a single national business register across all domains of economic statistics (not just BOP) would be ideal, the Bank had to create its own SBR because, despite close cooperation in statistics between

the national statistical institute and the Bank, legislative constraints prevent the Bank from accessing the institute's business register.⁵⁷

5.34. The SBR of the Bank of Italy contains information for the entire corporate sector (about 1.5 million units), with the exception of small, sole-proprietor firms. The coverage of the SBR, in terms of turnover, is nearly 90 per cent, and even higher for cross-border operations.⁵⁸ Given the tight deadline for the production of BOP data, timeliness is a particularly critical factor for the Bank's SBR. The register is therefore updated daily with online data transmissions. This allows for the timely accounting of changes in the population of firms, which in some cases may significantly affect the external sector statistics, especially FDI. An SBR that is always up to date also contributes to the smooth running of back-office activities, such as the help desk, formal communications to enterprises and sanction procedures.

5.35. Enterprises have engaged in cross-border transactions are flagged in the SBR on the basis of information from quarterly bank reports on firms that have carried out cross-border settlements. Such an integration of sources significantly improves the efficiency of the sample selection. The Bank of Italy's SBR is built by aggregating various source data (mostly received from external data providers) and converting them into normalized tables. The latter are integrated to form a relational database through a "bridge table" that contains all the identification keys used by the various data providers. The relational database consists of three tables: a *structural data table*, which contains information, such as a firm's name and address; a *quantitative data table*, with balance sheet data and a flag for the presence of cross-border payments; and an FDI table, concerning enterprise ownership features.

5.36. The final *population list* used for direct reporting purposes is extracted from the SBR according to well-defined criteria. The complete population list is usually too large to be used efficiently in a survey strategy. Therefore, a threshold is applied, according to which only firms with total assets or turnover greater than €1 million are included in the subpopulation. In the direct reporting system of Italy, the SBR not only allows for the identification of the target population, it also contributes auxiliary information and uses a cut-off strategy to reduce the population in order to stratify it in homogeneous clusters and to derive model-based estimators directly in the estimation process.

Country experience: Spain

5.37. Since 2005, the National Institute of Statistics has been entrusted to conduct an international trade in services survey, with the aim of helping the Bank of Spain to estimate the "other services" item of the BOP. The survey is sent to enterprises, sampled from the business registers of various institutions, because the Institute's Central Business Register (DIRCE) does not contain a variable for identifying exporters and importers of services. Populations that are considered are obtained from different registers, including regular declarants of foreign services transactions enterprises from the monthly VAT records of large companies and a sample of enterprises (with 10 employees or more) from DIRCE; care is taken to exclude double counting of the same units. More detail on those populations is available in the online version of the present *Guide*.

5.38. The results obtained by the international trade in services survey between 2005 and 2012 showed significant differences in level (but not in trend) from those obtained by the Bank of Spain settlements system. Since 2013, the populations and statistical frameworks used in the surveys have remained very diverse. The intention is, however, to reduce to the maximum the number of survey respondents who may state

⁵⁷ At the time of writing of the present *Guide*, the two institutions are working together to overcome the mentioned legal obstacles.

⁵⁸ In terms of number of enterprises, the coverage of the Bank of Italy business register is about 33 per cent. The apparently low percentage is explained by the fact that the numerous "individual firms" are excluded. In other words, the true population frame of the register is actually the corporate sector, for which the coverage is complete (100 per cent). In any case, the cross-border transactions of individual firms are covered through the tax authority's data; their cross-border transactions represent about 5 per cent of the total in the "other services" aggregate.

in the questionnaire that they do not carry out such transactions. In the new sampling design, DIRCE does not form a statistical frame by itself. Instead, its main function is to characterize the companies of the different populations by main economic activity and size, to enable the substratification of each stratum by those two variables.

5.39. In the case of FATS, the set of inward FATS is compiled from the National Institute of Statistics' structural business surveys, the majority of which use DIRCE. DIRCE records the "group of enterprises" as a statistical unit. The system is updated on a yearly basis in a similar manner as the other statistical units. The maintenance processes affect the basic features of the groups, as well as the units forming them. In those processes, access to a complete set of administrative databases (corporation tax groups) and private databases (Dun and Bradstreet database or Iberinform shareholder database) is absolutely crucial.

5.40. The variables available in DIRCE for identifying the inward FATS population include, for each listed company, its nationality and whether it operates independently or under a group of companies. The set of outward FATS statistics is obtained directly from an administrative register from the Ministry of the Economy and Competitiveness, called the Foreign Investments Register (RIE). Its main variables include the identification of the company, its legal status, its main business activity, the number of employees, the turnover rate and other economic variables, the percentage of foreign participation and the country involved and the percentage of Spanish participation, among others.

Country experience: Uruguay

5.41. The National Statistics Institute (INE) of Uruguay is in charge of the creation and maintenance of the SBR. Information sources used for the maintenance of the register are divided into administrative sources (such as the tax authority, social security agencies, internal economic surveys and information from other ministries) and other sources (including phone directories, web pages, members of commercial chambers and press releases and other information on publicly traded companies). The first version of the business register was created after the economic census of 1996. In 2007, a new agreement between the Institute, the tax authority (DGI) and the Social Security Agency (BPS) resulted in a new version of the business register, with those institutions as the main sources of data. In addition, the Ministry of Tourism provides data on hotel occupation. Information from companies operating under the free zone regime is obtained through a census of those companies.

5.42. In the new version of the register, INE includes information on foreign ownership and on involvement in trade (in services), following the guidelines designed in the Inter-American Development Bank project for the Latin American Business Register and MSIT 2010. In Uruguay, the SBR will serve as the main tool for detecting enterprises engaged in international trade in services. As part of its new design, information on main and secondary activities, goods and services produced and the destination of the sales (national or foreign and country of destination), the origin of capital (national or foreign) and foreign ownership will also be included. A new survey will subsequently be designed to better estimate international trade in services and FATS. More information on the definition of statistical units used in the SBR of Uruguay is available online.

Chapter 6

Enterprise and establishment surveys

Introduction

6.1. Chapter 6 describes enterprise and establishment surveys, which are needed to collect data for the compilation of statistics on resident and non-resident transactions in services and FATS. The chapter promotes an integrated approach to the organization and conduct of the surveys, keeping the response burden as low as possible and linking trade in services and business statistics. The chapter contains the following sections: a general description of enterprise and establishment surveys (section A); surveys of resident/non-resident services transactions (section B); FATS and the international supply of services (section C); and trade in services surveys with links to FATS and FDI (section D).

A. Summary of good practices

6.2. Enterprise and establishment surveys can be used to provide data for the full range of resident and non-resident services transactions, as well as for FATS and additional indicators on the international supply of services. Such surveys should always be based on clearly defined objectives, a sound sampling framework and collection methodology and a well-established legal basis. Compilers are advised to take into account the suggestions for creating and updating a survey frame, in chapter 2 of the *BPM6 Compilation Guide*, the steps for developing and conducting an enterprise survey, in box 2.1, and the model survey forms provided in appendix 8. It is good practice to provide clear and simple instructions and explanatory notes to respondents on the information to be submitted.

6.3. Compilers can conduct general enterprise or establishment surveys, which usually cover most or all services that can potentially be delivered or consumed by enterprises, but it is good practice to consider the need for and use of focused surveys for specific service categories, such as manufacturing services, transportation, research and development, and finance and insurance. Such focused surveys allow the compiler to capture very detailed information for a specific service category and related transactions without imposing a response burden on enterprises or establishments that are not involved in a particular service. In such focused surveys, compilers are advised to ensure that forms take into account the specificities of individual services categories, such as, for transportation services, the mode of transport.

6.4. It is suggested that FATS compilers collect data via structural business statistics (SBS) (inward FATS only), FDI or designated FATS surveys, weighing their respective costs and benefits, as described in chapter 15, and to include in their survey forms at least the main FATS variables of interest, as identified in MSITS 2010 (including revenues or turnover, employment and value added). Given that output is a preferred measure to sales or turnover, it is also important for relevant information to be collected to enable the compilation of that item. Compilers should ensure that

the data sources enable, at a minimum, the relevant breakdowns of information by services activities and country of origin or destination of control. In addition, compilers should consider, for revenues or output, that services products (at least a total) and the destination of sales in the country of establishment of the affiliate can be separately identified. For compilers for whom the collection of such details is difficult when starting the collection of FATS, it is important to establish a gradual approach, focusing first on the information of primary interest to the economy.

6.5. Compilers should consider that, for certain services sectors, it may be logical to use a single survey to respond to various information needs, such as trade in services and FDI and FATS). This could be applicable, in particular, for construction activities.

B. General purpose and description of enterprise or establishment surveys

6.6. Business surveys can be conducted at the establishment or enterprise level and can provide coverage across the full range of services. They have proven successful for the collection of trade in services data and FATS in many countries. Detailed descriptions of the types of surveys and their design, as well as sampling techniques and related data editing and compilation procedures, are described in a number of publications,⁵⁹ most notably in chapters 2 and 3 of the *BPM6 Compilation Guide*, which compilers are advised to consult when developing enterprise or establishment surveys for trade in services and balance of payment purposes.⁶⁰ Compilers also are advised to make sure that the national definitions of the statistical unit (see chapter 5) comply with the standard definitions, and document any deviations in metadata.

6.7. One of the first decisions to be made in collecting data is whether to undertake a census, or to compile data from a sample survey that balances data quality with other considerations, such as reporting burden (see chapter 11 for a comparison of data sources). In determining the reporting population, various approaches are possible, including a census, a partial coverage collection survey, a random sample survey and a stratified random sample survey. In practice, compilers in many countries use a combination of two or three approaches when collecting data from enterprises, benefiting from their respective different advantages.⁶¹

6.8. Surveys should always be based on clearly defined objectives, sound collection methodology and a well-established legal basis. Properly designed collection forms, full coverage of the population and well-defined data structures and classifications, as well as effective data validation and aggregation procedures, are also required.⁶² The principal steps of good survey design include the following:

- (a) Specification of the objectives and coverage;
- (b) Establishment of the sampling unit and the information to be collected;
- (c) Determination of the appropriate sample size, if a sample will be used;
- (d) Development of a sampling frame, i.e., an exhaustive list from which sampled units are selected;
- (e) Development of the sample design, i.e., how the sample is selected from the frame;
- (f) Determination of the method of collection (paper or electronic form, interview, etc.).

6.9. **Sampling techniques and contacts with respondents.** Compilers can choose from a wide variety of sampling techniques; generally, these are either proba-

⁵⁹ For example, see Ad Willeboordse, ed., *Handbook on the Design and Implementation of Business Surveys*, available from http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/CA-09-97-818/EN/CA-09-97-818-EN.PDF; and Eurostat, *Survey Sampling Reference Guidelines: Introduction to Sample Design and Estimation Techniques*, Eurostat Methodologies and Working Papers (Luxembourg, Office for Official Publications of the European Communities, 2008, available from <http://ec.europa.eu/eurostat/ramon/statmanuals/files/KS-RA-08-003-EN.pdf>). Many countries have published their guidelines, as well.

⁶⁰ See *BPM6 Compilation Guide*.

⁶¹ *Ibid.*, pp. 13-14, for a more detailed explanation about survey forms and their advantages and disadvantages.

⁶² *Ibid.*, para. 2.3.

bilistic or non-probabilistic. In probability sampling, every unit in a population has a calculable probability of being selected in the sample. That approach is objective and defensible. There is a theoretical basis for the process of extending the sample results back to the population. In probability sampling, estimates of sampling error can be calculated, and inferential statistics can be derived. Non-probability sampling methods should be used with caution, because there is no way to measure their precision. The only way to address the quality of the survey data produced in non-probability sampling is to compare the results of the survey to some known information about the population. A frequently used non-probability sampling method is cut-off sampling (see box 6.1).

6.10. Whether selecting a sample using probability or non-probability techniques, compilers must define the universe (population) from which they will sample, that is, in practical terms, construct a sampling frame. In most countries, it is possible to define the population using various lists of enterprises (business registers), compiled for administrative purposes. For more information on sampling techniques, sample frame, sample structure and sample allocation (how to allocate the data collection among the strata), it is suggested that compilers consult chapter 5 of the *IMF Producer Price Index Manual*.⁶³ While the *Manual* focuses on price collection, much of the information can be applied more generally to enterprise or establishment surveys.⁶⁴

6.11. Collaboration with respondents to surveys is essential for the production of good-quality statistics, as explained in more detail in chapter 2 of the *BPM6 Compilation Guide*. It is recommended that compilers hold consultation meetings to make respondents aware of the purpose of the survey and to help the statistical agency design the survey.⁶⁵

⁶³ IMF, *Producer Price Index Manual: Theory and Practice* (Washington, D.C., 2004). Available from <https://www.imf.org/external/pubs/ft/ppi/2010/manual/ppi.pdf>.

⁶⁴ Likewise, the *Eurostat Survey Sampling Reference Guidelines* provide more detailed information on that topic.

⁶⁵ See *BPM6 Compilation Guide*, para. 2.29.

Box 6.1

Cut-off sampling

Cut-off sampling is a strategy frequently used by countries to select samples. In that approach, a predetermined threshold is established, with the inclusion in the sample of all units at or above the threshold (selected with certainty). Units below the threshold are not included (zero probability of selection). Cut-off sampling is a common technique in economic surveys in cases in which most economic activity is generated by the largest firms. It can be used to reduce the number of firms required to report in non-benchmark years, thus reducing the burden on a set of firms by their exclusion and reducing processing costs.

Cut-off sampling generally results in a high degree of coverage among a small number of prospective units because the distribution of the selection variable, such as production or sales, is concentrated in a small number of large establishments. Limiting the target population enables the exclusion of small enterprises and/or enterprises that are not primarily engaged in providing services. That method is resource efficient and ensures that large firms are included. However, there is no way to determine if firms that fall below the cut-off behave in similar ways to the firms in the survey.

Sample frame cut-offs are reevaluated regularly. If benchmark surveys are conducted, cut-offs are typically left unchanged between benchmark surveys, and for a number of reasons are often increased at each benchmark. First, since cut-offs are set in nominal terms, inflation will eventually cause enterprises that did not grow in real terms to exceed cut-offs. Therefore, small enterprises may face a higher reporting burden owing simply to price changes. Second, industry consolidation may increase the share of economic activity of the largest firms. Therefore, it may be possible to increase thresholds without significant loss of coverage.

Compilers must consider resources when using cut-off sampling. Lower cut-offs reduce the amount of data that must be estimated. Since more enterprises are required to respond, a greater share of the estimates are actual data from reports. Estimates with lower cut-offs are likely to be more precise. However, lower cut-offs also impose a number of costs on both respondents and the compiling agency. Requiring more firms to respond imposes a burden on respondents since firm employees must devote time and effort to gathering information and filling out forms. These costs are proportionally higher at small firms compared with large firms. Once a report is received, it requires substantial effort by editors to process. Processing more reports is more costly and slows the issuance of data. Cut-off sampling significantly reduces the costs of a survey by reducing the number of both reports and items filled out and processed.

C. Enterprise and establishment surveys for trade in services statistics purposes

6.12. Enterprise or establishment surveys are often used to collect data needed for the compilation of resident and non-resident trade in services statistics. They may take various forms, such as an extensive survey covering many or all services, often excluding most of the data needed to compile transport, travel and government goods and services n.i.e. (not included elsewhere), or a specialized survey which may be developed for various reasons, such as to avoid an unnecessary burden on firms that are not likely engaged in trading certain specific services, or for sectors that are important enough for the development of a dedicated survey, such as manufacturing services or business process outsourcing services. Existing enterprise surveys, such as structural business surveys or research and development surveys, may also be used to collect trade in services data.

6.13. Surveys that collect data on trade in services cover the value of exports of services (credits) and imports of service (debits) broken down by type of service, at least, for the services sectors of primary interest to the compiling economy, with an identification of the country of the counterpart in the transaction, i.e., the partner country. Other recommended elements for data collection on the value of exports and imports of services include the identification of trade between related parties (intra-firm trade) and of the way those services were traded (mode of supply).

6.14. Various options exist for collecting data according to the above-mentioned elements via surveys. Given the complexities surrounding trade in services, surveys should always be accompanied by explanatory notes to help respondents understand the type of information required. The frequency of data collection and the associated level of detail will depend on the needs identified before the data collection is established (see chapter 3, on institutional arrangements). While the present chapter covers the aspects more directly related to trade in services data collection, readers can also refer to the *BPM6 Compilation Guide* for further information. In particular, the model survey forms shown in appendix 8 provide useful guidance as to the type of information and questions to be included in trade in services survey forms. The model forms of interest include: international trade in services, manufacturing services, resident transport operators, transactions with non-resident transport operators, construction, international insurance transactions and international pension services.

6.15. In all surveys, questions should be clearly phrased, using wording that businesses understand, while ensuring that they fit the Extended Balance of Payments Services Classification (EBOPS) 2010 definitions, including complementary

groupings, so that the data can be used in subsequent compilations of trade in services statistics. In some instances, such as for insurance or financial services, the information to be collected cannot be the value of the service rendered itself, but will have to be deduced from data reported in the survey forms, often derived from accounting records of such data as insurance premiums and claims. This would also apply if, for some services categories, a more detailed list than that of EBOPS 2010 is included in questionnaires.⁶⁶ When elaborating survey forms and notes, the present *Guide* strongly encourages compilers to refer to the Central Product Classification (CPC) to define the service items in terms of levels of details, or for the explanatory notes. A correspondence table between EBOPS 2010 and CPC version 2 is provided in an online annex to MSITS 2010.⁶⁷

⁶⁶ This would be particularly relevant for specific services surveys.

⁶⁷ Available from <http://unstats.un.org/unsd/tradeserv/TFSITS/msits2010/ebops2cpc.htm>.

6.16. Section C first presents general guidance on the use of generic trade in services surveys (C.1), and then describes the use of specific surveys, namely, transportation surveys (C.2), manufacturing services surveys (C.3), surveys to insurance and financial corporations (C.4), research and development and innovation surveys (C.5), surveys of tourism related activities (C.6), construction surveys (C.7) and other specific surveys (C.8) that can also be used to derive trade in services information.

C.1. Generic trade in services surveys

6.17. A generic trade in services survey covers most or all services that can potentially be delivered or consumed by enterprises. It does not usually cover the data on services transactions that correspond to imports of services by households or individuals, e.g., travel-related transactions, or certain specialized services for which the number of transactors may be more limited, such as in exports of transport services and construction, and for which a more targeted survey may be more efficient. A generic trade in services survey covers enterprises with potentially relevant balance-of-payments transactions with non-resident households, corporations and Governments. Enterprise trade in services surveys have traditionally been used to capture data used for the compilation of the balance-of-payments and international investment positions (IIP),⁶⁸ but they should, to the extent possible, also serve more detailed needs, as identified in MSITS 2010. In particular, they can be used to collect data by service type and counterpart country, as well as by relationship between the parties (affiliated and unaffiliated trade). They can also be useful for identifying the mode of supply in resident/non-resident transactions in order to develop modes of supply estimates.

⁶⁸ See *BPM6 Compilation Guide*, para. 2.2.

6.18. The organization and conduct of generic trade in services surveys is a complex task that countries approach in various ways, depending on their needs and circumstances. Some countries have had to develop survey systems because of the lack of necessary information from bank records on payment transactions (settlement system). The country experiences presented in this chapter provide valuable lessons for compilers who might decide to develop new surveys for collecting trade in services data, or to improve existing ones. It is preferred practice for compilers to take into account the set of steps for developing and conducting an enterprise survey that is described in box 2.1 of the *BPM6 Compilation Guide*, as well the suggestions for creating and updating the survey frame.⁶⁹ A model survey questionnaire (form 6) is available in appendix 8 of the *BPM6 Compilation Guide*. To respond to the trade in services information needs, such a model questionnaire will have to be amended with some additional breakdowns and questions. Box 6.2 illustrates how such additional information could be collected. The different dimensions, content and design of the survey forms, as well as the questions, will have to be chosen according to the identified needs.

⁶⁹ *Ibid.*, p. 11.

Box 6.2

Sample questions for collecting trade in legal services data, broken down by partner, affiliated/non-affiliated trade and mode of supply

	Revenue for year _____			
	Country A	Country B	Country C	Other countries
Total revenue from the provision of legal services to related and unrelated parties (in currency)				
– Revenue from legal services provided to related parties				
– How were your legal services delivered (percentage of total):				
- From your territory to a non-resident overseas?				
- To a non-resident customer temporarily in your territory?				
- Delivered to non-resident customer by a resident employee, temporarily working abroad?				

6.19. Compilers seeking to incorporate mode-of-supply data in generic trade in services surveys are advised to first consider the costs, burden and priorities for such a breakdown, as compared with other needs (e.g., partner country) and if that breakdown is needed for all services items or only for a selection of them. Decisions could be made using a step-by-step approach; in light of policy needs, priority may be given to breaking down exports of services by mode of supply (for all items, or in first the instance, for a selection of aggregates). Imports of services by mode might be done in the second stage of the survey development. Alternatively, simplification rules could be used, such as those described in chapter 5 of MSITS 2010: a service transaction could be associated to one or two dominant modes. Only the identification of one mode or two may therefore be requested, assuming that the residual mode can be derived from the information provided.⁷⁰ Another option would be simply to ask respondents to identify one dominant mode in a service transaction, for example, by checking a box).

6.20. It is good practice to provide clear and simple instructions and explanatory notes to respondents on the information to be submitted, in particular, on how to determine the modes of supply if relevant questions are included in the forms. In electronic surveys, prompts and restrictions can be used to help improve the accuracy of the reported data, for example, by asking respondents to confirm their answers if they enter a mode of supply that is unlikely to be associated with a particular service type. It should be considered that respondents are generally more comfortable estimating proportions of a value already provided, rather than giving exact monetary values by mode of supply.

6.21. While processing survey results, imputations should be part of the work. Compilers can use table V.2 of MSITS 2010 as the basis (for lower value answers), or by contacting respondents directly for clarification (for higher value answers). Experience shows that respondents are very likely to be able to provide mode of supply information when contacted directly.

6.22. It is also important to note that trade in services enterprise surveys can be the source for mode 4 (contractual services supply) and quantitative indicators (i.e., number of persons or trips). Firms normally keep staff records that may include infor-

⁷⁰ For example, a systematic identification of the proportion of mode 4, assuming that the residual will be either be mode 1 or 2, depending on the type of service considered.

mation on the type of work performed and/or whether the staff member received special compensation for working abroad; however, such records will not necessarily be kept by the same department as the department that reports data on transactions, i.e., personnel versus accounting departments. Such information could serve the needs for mode 4. Within enterprise surveys, and if deemed relevant, one could also consider including explicitly mode 4-related questions along the lines proposed in the trade in services surveys, or other questions designed to identify mode 4 activities.

Country experience: Austria⁷¹

6.23. In Austria, Oesterreichische Nationalbank (OeNB) is responsible for compiling and disseminating information on trade in services between residents and non-residents. Since 2006, trade in services statistics have been compiled by taking samples from enterprises, institutional investors and banks (households are not included), instead of using the ITRS system as previously. To keep the costs of data collection low and make utmost use of existing data, OeNB works in close cooperation with Statistics Austria, with OeNB concentrating on financial corporations and Statistics Austria focusing on the real economic sector.

6.24. On behalf of OeNB, Statistics Austria compiles quarterly data on service exports and imports from non-financial corporations. The survey covers information on individual partner countries and all business activities according to EBOPS 2010, except for travel, which is measured separately. The survey is supplemented with information on cross-border government services, obtained from public institutions and on international aid services, such as education and health services, obtained from 120 non-profit organizations.

6.25. The survey collects data from a stratified sample within the scope of the structural business survey, drawn from the total population of enterprises engaged in trade in services. To identify that population, Statistics Austria conducts a survey on services exports and imports in the enterprise sector every five years and complements that information with prior settlement data (for unit non-response) and estimates of values below survey thresholds. Since OeNB decided that the regular survey should cover at least 90 per cent of service exports and imports in every two-digit division of the Nomenclature générale des activités économiques dans les Communautés européennes (NACE), approximately 4,800 non-financial enterprises were selected, reflecting an initial reporting threshold of €200,000 for both annual services exports and imports. From 2013, the reporting threshold was raised to €500,000 after administrative data sources became available within the European Union through the VAT Information Exchange System.

6.26. OeNB conducts the financial sector surveys. The report on service exports and imports by Austrian banks, as well as imports by insurance companies, mirrors the enterprise report run by Statistics Austria and covers all EBOPS 2010 items. In addition, OeNB makes use of administrative data from the Financial Market Authority (FMA) on insurance service exports, in particular. Quarterly data on premiums and claims from insurance service exports are reported to OeNB, whereas yearly data include financial claims and liabilities from insurance transactions and insurance technical reserves. FMA also gathers mirror data from other European Union countries on insurance service imports in Austria. Those data become available only with some delay, but they are especially important for the calculation of life insurance imports.

⁷¹ Extended country examples are available from <http://unstats.un.org/unsd/trade/publications/msits2010-cg.asp>.

Country experience: New Zealand: collecting data on modes of supply

6.27. Most of the trade in services data of New Zealand come from surveys. Modes of supply data for exports were collected directly through the 2011 Census of International Trade in Services and Royalties, which collected data on 55 different service types, excluding transportation, travel, insurance and government services. Respondents were asked to estimate the proportion of their services exports that were delivered through modes 1, 2 or 4. A detailed guide accompanied the census to provide further help, along with examples.

6.28. Respondents were asked to report their services exports in the upper sections of the survey, and then to estimate the percentage of the value that was delivered through modes 1, 2 and 4. It was felt that the respondents would be more comfortable estimating proportions of the value already provided, rather than giving exact monetary values by mode of supply; fewer respondents should leave that section blank that way. Testing showed that most respondents understood the modes of supply concepts, although feedback suggested that the guide was helpful as well.

6.29. For policy reasons, the Ministry of Foreign Affairs and Trade of New Zealand was interested mainly in exports of services, which is why only exports data was collected for modes of supply. However, modes of supply information could be compiled for imports of services in the same way.

C.2. Transportation surveys

6.30. Enterprise and establishment surveys of resident and non-resident carriers are important sources of transport services data. Often the agents of the operators will have to be approached to collect relevant data, in particular for imports of transport services. When considering data collection, it is important to note that MSITS 2010 follows BPM6 in recommending a cross-classification of transport services by mode of transport and by kind of service. There are different modes of transport to consider, such as maritime/sea, air, rail, road and internal waterway transport. The types of services covered are the transport of passengers, freight and other supporting and auxiliary transport services. Some modes of transport, given the smaller number of operators or agents, may be easier to survey (air, maritime, rail or inland waterway transport) than others (road). In addition, given their specific nature, special forms or enquiries may need to be designed for space or pipeline transport, as well as for electricity transmission. For those three sectors, the number of entities to which the surveys should be addressed is also often limited.

6.31. An important point to consider is that operators, which are the providers of the transport service, in many cases differ from the owner of the transport equipment. In addition, when defining the residence of the operator, the country of registration of ships and aircraft may also differ from that of the operator or the owner. Charters or vessels *without* crew (i.e., operational leasing services) also need to be differentiated from charters of vessels *with* crew (i.e., transport services). Such considerations render the collection of data complex, but clear notes referring to relevant information can be collected. Specific surveys should be sent to the operators (i.e., as the providers/exporters of the transport service) of each category of modes of transport and, if relevant, with a distinction between the transport of passengers and the transport of goods. Exports of such services are identified in resident operators' activities, while imports are identified in non-resident operators' activities. Compilers may face difficulties in getting a representative coverage of the non-resident carriers' activities. However, when transport is regulated in a country, air transportation being the

best example, non-resident carriers must be registered to operate, and they typically establish branches or agents in that country. Such entities, in principle, know or have access to the information necessary to the compilers. Thus, compilers could send survey questionnaires to those branches or agents to collect information on imports of services. Transport surveys are often also used to gather related information, such as on auxiliary and supporting services and leasing services or on fuels and provisions provided to carriers (goods). The *BPM6 Compilation Guide* proposes model forms 8 and 9 (appendix 8) that could be used as a guide for designing survey forms related to transport services. (See *BPM6 Compilation Guide*, paras. 3.21 through 3.52 for more information.) In designing the survey forms, it will also be necessary to factor in the country of residence of clients (for exports) and of operators (for imports), as well as other dimensions, if identified as necessary.

6.32. Many users, in particular for the purposes of the General Agreement on Trade in Services (GATS) purposes, would need information on the real value of international freight transport services contracts (i.e., with no adjustment for either the free on board (FOB)/FOB valuation of goods in BOP, or the FOB/cost, insurance, freight (CIF) valuation in merchandise trade statistics). These are, in fact, the data that are collected in transport surveys. Compilers are encouraged to use the raw data that may be collected from freight transportation companies or their agents to make publicly available supplementary estimates of the “real” trade in freight transport services taking place between residents and non-residents.⁷²

⁷² See chapter 14 and MSITS 2010, paras. 3.107-3.110.

Country experience: Chile

6.33. Data on international transport services are collected by the Central Bank of Chile (CBCH) through quarterly questionnaires to resident sea and air international transport companies and to the agencies or representatives of foreign companies in Chile. The transportation questionnaires are prescribed by the Compendium of International Exchange Regulations (CIER). The response to the transportation questionnaires is mandatory and data are directly reported in United States dollars.⁷³

6.34. Both the questionnaires addressed to Chilean resident companies and those addressed to agencies or representatives of foreign companies in Chile request information on all acts or conventions that create, modify or extinguish obligations payable in foreign currency. In general, transport services accompanying settlements in foreign currency are distinguishable in resident companies’ commercial accounting, as it distinguishes revenues and expenses in foreign currency from those in national currency for income statement purposes. In the case of agencies or representatives of foreign companies, their purchase books or expense books distinguish transport services accompanying settlements in foreign currency.

6.35. The first block of information in the questionnaire includes general background, which is used to identify the enterprises, the reporting period and the name of those responsible for the information (to be able to consult respondents about the reported data). The second block inquires about income and expenses related to international transport business. Most of the information collected in that section is used in estimating transport services, but is also used for the estimation of certain other services categories. For example, rentals of transportation equipment without crew or major repairs abroad are used to estimate “operational leasing services” in “other business services” and “repair of goods”, respectively (see details in the elaborated example online).

⁷³ The instructions for completing the questionnaires and forms are set out in chapter VIII, annexes 1.1 and 1.2 of the Compendium of International Exchange Regulations and are available on the Central Bank of Chile website (<http://www.bcentral.cl/normativa/cambio-internacional/manual-procedimiento/pdf/capviiiianexo1.pdf>).

C.3. Manufacturing services surveys

6.36. Manufacturing services on physical inputs owned by others (or manufacturing services in short) include activities such as processing, assembly, labelling and packaging, undertaken by enterprises without ownership of the goods. The *BPM6 Compilation Guide* provides a sample questionnaire on manufacturing services (model survey form 7, in appendix 8).

6.37. If imports of manufacturing services are important for the compiling economy, a survey can be used to collect data from the owners of the goods on the processing fee they paid to non-resident processors, which may incur a cost for materials procured by the processors for use in production. In addition, data on the costs and origins of materials supplied by the resident enterprises (owners) to the non-resident enterprises (processors) for outward processing should also be collected. This covers both cases in which the owner's materials are sent to the processor's economy directly from a third economy and from the owner's home economy. It may be difficult to identify the population involved in such activities. To identify enterprises possibly involved in processing activities, exports declarations (when sending goods for processing) or import declarations (when receiving processed goods) from the customs authorities could be used. The identified enterprises can then be surveyed to collect various data on the fee and the goods involved in outward processing.

6.38. The enquiries also need to identify the cases where processed goods do not enter or return the economy of the owner (i.e., they are sold in the economy of the processor or to a resident of a third economy). If relevant, the survey could go beyond manufacturing services and also cover merchanting, as well as other trading type activities in which there may or may not be some processing component. The sales values and various cost components of the goods for different types of global production arrangements could therefore be captured for all types of cases, including those in which such transactions with non-residents are completed offshore.⁷⁴

6.39. For *exports* of manufacturing services on goods owned by non-residents, the data collection must cover at least the processing fee and the identification of the country of the client as well as the costs and origins of materials procured by the resident processors. If it is available, information on the destination of the processed goods is useful. In principle, a survey of processors should be easier to establish as (a) the number of service providers should be small and (b) many of those are often located in special zones, such as export processing zones, and are generally subject to special tax regimes. The survey will have to distinguish the rendering of manufacturing services to non-residents from manufacturing on the processor's own account and for other residents.

Country experience: Hong Kong, China

6.40. Hong Kong's outward processing activities (the processing by non-residents of goods owned by Hong Kong residents) are substantial and are predominantly carried out in mainland China. The goods processed in mainland China may be sold in Hong Kong, but are also frequently sold directly to other markets. To support the collection of data on manufacturing services and related activities, the monthly survey on trade involving outward processing in mainland China (OPS) and the annual survey on imports and exports of services (ASIES) have been enhanced, and a new quarterly survey on merchanting and other trading activities (QSMTA) has been launched. Two main cases are identified:

⁷⁴ For a more elaborate discussion and guidance, see ECE, *Guide to Measuring Global Production* (forthcoming) and the handbook entitled *The Impact of Globalization on National Accounts*.

Case I. Outward processing in mainland China with processed goods returned to Hong Kong

6.41. The OPS survey uses the import/export declarations of Hong Kong's trade with mainland China as the unit of observation. The declarations are stratified by trade type (including domestic exports and re-exports to mainland China, and imports from mainland China) and by commodity group. For cases pertaining to imports, from a customs-based perspective, from mainland China that involve the outward processing of goods under a "processing and assembling" arrangement, data are collected on (a) the value of raw materials and semi-manufactures sent from Hong Kong to mainland China; (b) the value and origin of raw materials and semi-manufactures purchased and delivered directly from places other than Hong Kong to mainland China; and (c) the value of manufacturing services on goods owned by Hong Kong, distinguishing between the processing fees paid by Hong Kong and the value of raw materials and semi-manufactures procured directly by mainland China processors.

6.42. A significant proportion of OPS respondents are logistics companies (rather than the owners of imported processed goods), which generally do not have readily available information pertaining to the additional data required. Therefore, efforts have been made to establish a rapport with major logistics companies, so that those companies can either acquire the relevant information from the goods owners themselves or provide the contact details of the goods owners for subsequent follow-up. This practice has successfully reduced the non-response rate.

Case II. Offshore trade activities involving outward processing with processed goods sold offshore

6.43. Some of the offshore trade activities involve outward processing, in which goods owned by Hong Kong companies are processed in mainland China or elsewhere before they are sold offshore directly to non-residents. Those offshore trade activities cannot be collected from import/export declarations and are captured through ASIES and QSMTA.

6.44. In ASIES, offshore trade activities involving outward processing are distinguished from conventional merchanting activities. For manufacturing services and related activities, data are collected on similar items as in the OPS survey, as well as on the sales value and cost of processed goods sold offshore by origin, destination and commodity group.

6.45. The value and destinations of exports of manufacturing services on goods owned by companies abroad (inward processing of goods by Hong Kong) is also collected in ASIES. The new QSMTA collects similar data at quarterly intervals to support the timely compilation of relevant macroeconomic aggregates (namely balance of payments and gross domestic product (GDP)).

C.4. Surveys of insurance and financial corporations

6.46. **Surveys of insurance corporations.** The collection and compilation of data relating to insurance are described in appendix 2 of the *BPM6 Compilation Guide*. In order to obtain source data for insurance services, in particular for exports of such services, surveys on insurance corporations represent the preferred source. To ensure an appropriate coverage of the domestic insurance sector, a survey frame should be available that includes a list of insurance companies. Insurance agents and brokers are usually required to register with insurance authorities; therefore, a list of those businesses should

be readily available from official sources. Surveys of insurance corporations could also be used to capture information on exports and imports of reinsurance services.

6.47. The insurance service provided to residents and non-residents is derived by determining the output of the insurance in a way that mimics the accounting practices based on premiums earned and losses incurred pertaining to the accounting period. An extended model form (form 12) can be found in appendix 8 of the *BPM6 Compilation Guide*. For a survey of insurance companies to be useful for compiling trade in services statistics, it should include, among other things, questions about premiums written to, premiums earned from and claims paid to non-residents for different insurance categories (i.e., life insurance), and to also specify reinsurance ceded to and accepted from non-resident issuers, and vice-versa. Information on technical reserves dues to non-resident policyholders is also necessary.

6.48. The export of freight insurance can be identified by surveys of insurance corporations, though small insurers or small lots of exports might not be fully captured. It is important to note that premiums payable on internationally traded goods before they reach the customs frontier of the economy of the exporter are included in the FOB price of the goods. Freight insurance premiums payable subsequent to the departure of the goods from the customs frontier of the exporter's economy are treated as payable by the importer. That means that relevant detailed questions must be included in forms so that the compiler can derive the freight insurance services that should be included in the compiling economy's balance of payments, in order to compile relevant estimates of the exports of insurance services.

6.49. The export of freight insurance can be identified by surveys of insurance corporations, though small insurers or small lots of exports might not be fully captured. In contrast, the import of freight insurance is often estimated from the price of imported goods, in conjunction with the estimation of transportation services (see chapter 14, para. 14.45).

6.50. **Surveys of financial corporations.** In order to obtain source data for financial services, and their exports in particular, conducting surveys of financial corporations is very useful. In this respect, it is often financial intermediaries that are engaged in international transactions. Mandatory reports of assets and liabilities of such corporations may be required for countries' prudence policy. However, such call reports may not contain sufficient information on the international trade of financial services.⁷⁵ Appendix 8 of the *BPM6 Compilation Guide* contains a model survey form (form 17, part E, in particular) with questions that can be useful to ask financial corporations to obtain information on financial services. To estimate the financial intermediation services indirectly measured (FISIM), it is useful to ask information on positions and interest payments related to loans to and deposits from (exports) and loans from and deposits to (imports) non-resident non-banks (see *BPM6 Compilation Guide*, p. 368).

6.51. To ensure appropriate coverage, a survey frame should be based on a list of financial intermediaries. In this respect, depository corporations and securities dealers are usually required to register with supervisory authorities; therefore, a list of those businesses should be readily available from official sources. In contrast, a list of other financial intermediaries, other than depository corporations and securities dealers, such as securitization companies, may not be available in some countries. In that case, it is important to develop the country's business profile so that such intermediaries are identified. A full list of financial intermediaries will make it easier to conduct surveys for specific businesses in the financial sector.

⁷⁵ See also *BPM6 Compilation Guide*.

Country experience: collection of insurance data in the United States

6.52. The main source of the exports and imports of insurance services of the United States is a survey of its insurance enterprises entitled Quarterly Survey of Insurance Transactions by U.S. Insurance Companies with Foreign Persons (BE-45).⁷⁶ The survey, conducted by the Bureau of Economic Analysis (BEA), collects quarterly data on reinsurance premiums sold to and purchased from entities abroad and annual data on reinsurance claims paid and received, primary insurance premiums sold and claims paid, and auxiliary insurance services. There is a reporting threshold for the quarterly survey. That form distinguishes transactions with foreign affiliates, transactions with foreign parents and other members of affiliate foreign groups, and transactions with unaffiliated foreign persons.

⁷⁶ All the forms are available from www.bea.gov/surveys/iussurv.htm.

6.53. For the quarterly survey, filing is mandatory if, with respect to such transactions, any of the following eight items was greater than positive \$8,000,000 or less than negative \$8,000,000 for the previous calendar year, or can expected to be in the current calendar year, on an accrual basis: (a) premiums earned and (b) losses on reinsurance assumed; (c) premiums incurred and (d) losses on reinsurance ceded; (e) premiums earned and (f) losses on primary insurance sold; (g) sales of and (h) purchases of auxiliary insurance services.

6.54. Every five years, BEA conducts the Benchmark Survey of Insurance Transactions by United States Insurance Companies with Foreign Persons (BE-140), a benchmark survey of insurance enterprises, to collect information on enterprises that fall below the reporting threshold on the quarterly survey.

6.55. To ensure complete coverage of imports of insurance services, BEA asks non-insurance enterprises in the United States to report premiums paid to and losses recovered from foreign insurers on the Survey of Transactions in Selected Services and Intellectual Property with Foreign Persons. BEA conducts that survey quarterly and also as a benchmark survey every five years.

Country experience: France: collection of data for financial services

6.56. Over the last three years, Banque de France (BdF) has improved the way it collects data on financial services. As of 2013, data on financial services are collected through four channels:

- (a) The *relevé de transactions économiques* (RTE), a monthly report concerning a sample of 408 non-financial companies that generate the most important flows with entities abroad. In 2012, 58 of those companies reported that they were involved in financial services flows with non-residents;
- (b) The *enquête complémentaire sur les échanges internationaux de services* (ECEIS), an annual survey of data from non-financial companies that have generated service flows with non-resident entities. In 2011, 162 among 3,921 companies reported significant financial services flows with non-residents;
- (c) The *compte rendu de transactions* (CRT), a report by financial intermediaries. Data is collected on an annual basis for 1,523 companies, or on monthly basis for the 37 most significant companies; these reports account for over 75 per cent of the overall flows of financial services with non-residents;
- (d) A monthly pro forma report concerning the financial services of the Government.

6.57. The above-mentioned reports enable Banque de France to meet the breakdowns required in BPM6 and produce an estimate based on monthly data, with relevant coverage for monthly financial services flows.

6.58. The national accounts incorporate an FISIM measurement of imports and exports. A joint workflow with the National Statistical Institute (INSEE) is currently being developed to base the balance of payments FISIM on national account data for the production process and for back data. This will ensure the consistency of the BOP FISIM data with those of the national accounts. The FISIM geographical breakdown will be based on the geographical breakdown of the stock of loans and deposits.

6.59. Regarding financial services embedded in margins from buy-sell transactions, and asset management costs deducted from property income, methodological work is being carried out on the basis of case studies with the industry.

C.5. Research and development and innovation surveys

6.60. Research and development and innovation surveys may include variables that are relevant for the estimation of trade in certain service categories, notably related to computer software and information services; research and development services; architecture, engineering, scientific and other technical services; audiovisual and related services included in personal, cultural and recreational services; and charges for the use of intellectual property n.i.e. In particular, questions related to the origin of funding of research and development activities, and payments for the sales of the products and services derived from them can be used to arrive at better estimates of trade in services in those service categories.

6.61. When developing and conducting research and development and/or innovation surveys, compilers should consult the *Frascati Manual*, which is the internationally accepted standard for such surveys. Note that at the time of writing of the present *Compiler's Guide*, the *Frascati Manual* was being revised and was expected to include a chapter dedicated to the globalization of research and development. Since 2011, the manual has included an online annex designed specifically to address the features and needs of developing countries. That annex is being integrated into the revised core manual.

When using questions from research and development and innovation surveys related to payments for research and development, compilers should be aware that the international funding of research and development may also include donations and grants and thus do not necessarily represent payments for research and development services. Hence, care is needed to clearly identify that information for the purposes of compiling trade in services statistics, especially when compiling import statistics, because the coverage of research and development surveys does not necessarily include firms that buy research and development services but do not perform research and development themselves. Compilers can build on the prototype questionnaire with a comprehensive list of questions as described in the OECD *Handbook on Deriving Capital Measures of Intellectual Property Products*, notably section III, with example questions on data for international trade in research and development services and output produced in the past.⁷⁷

6.62. In addition to questions related to payments for research and development services, questions in research and development and related surveys (e.g., ad hoc commercialization and licensing surveys) could also give insight into the value of intrafirm trade in services related to intellectual property products, notably if no payments are made for those services. Box 6.3 provides examples of questions that could be added to derive such information. A distinction between the types of intellectual property products could be included.

⁷⁷ Two other publications that are relevant for measuring trade in services related to research and development include *The Impact of Globalization on National Accounts*, and the *Guide to Measuring Global Production* (forthcoming).

Box 6.3

Questions for research and development surveys to better capture intrafirm services related to intellectual property products

- (a) What is the estimated value of intellectual property licences (whether protected by copyright, patent or otherwise) that you use in production and receive from your parent or other affiliated party, and who owns and controls the underlying asset, for which no explicit payment was made by you?
- (b) What is the estimated value of intellectual property assets (whether protected by copyright, patent or otherwise) that you use in production, whose ownership was transferred to you by your parent or other affiliated party but for which no explicit payment was made by you?
- (c) For dedicated intellectual property producers that receive no revenue through licensing of intellectual property products (IPPs): What is the estimated value of the intellectual property assets developed by your firm this year on behalf of your parent or other affiliated parties that may have funded the activity but did not make an explicit payment that was recorded by you as sales?
- (d) For dedicated intellectual property producers that receive some revenue through the licensing of IPPs to non-affiliated parties: What is the estimated value of intellectual property (whether protected by copyright, patent or otherwise) that you provided to your parent or affiliated parties, but for which no explicit receipt was booked as sales?

Those questions can, in turn, be broken down by type of service category, e.g., research and development, software, brands or audiovisual.

6.63. It is good practice to target certain questions to specific groups of respondents. For example, sellers and buyers of licences to reproduce and distribute are likely to remain within discrete industry groups.

C.6. Surveys of tourism activities⁷⁸

6.64. It is useful to observe the activities that supply products relevant to travel (credit) and inbound tourism consumption according to the tourism statistics concept. This necessitates the ability to identify products that meet the share-of-supply condition, that is, those in which the consumption of travellers and visitors represents a relevant share of total supply. Additionally, it is necessary to be able to distinguish between the output provided to residents and provided to non-residents. In the following paragraphs, the supply of accommodation and travel agencies and tour operators services is highlighted as possible sources of information on resident to non-resident transactions related to travel and international tourism consumption.

6.65. **Supply of accommodation services.** Accommodation services are provided for the most part by production units specialized in their provision, although there are a few exceptions. It is generally assumed that the provision of such services as a secondary output to other activities is limited, meaning that the collection of data will be restricted to production units producing accommodation services as their main output.

6.66. **Providers of accommodation services.** There are two broad categories of visitor accommodation providers: (a) market providers, which receive payment for their services, included under “accommodation” (ISIC division 55) or “real estate activities” (ISIC division 68) and (b) non-market providers, which accommodate guests free of charge, such as family and friends or one’s own second home or timeshare. A stay

⁷⁸ This subsection deals only with the “supply side” of tourism statistics; the demand side is covered in chapter 7.

with family and friends does not generate any additional production of accommodation services, and services provided by one's own second home or timeshare are not dependent upon an actual visit to those homes.⁷⁹

⁷⁹ See *Tourism Satellite Account: Recommended Methodological Framework 2008*, Studies in Methods, Series F, No. 80/Rev.1 (United Nations publication, Sales No. E.08.XVII.27), para. 2.36.

6.67. Only market providers included in ISIC division 55 are considered in the present *Compiler's Guide* since, in most countries, they represent the major providers of accommodation services, and are those to which specialized surveys are usually directed. For more information on the other categories of providers, users can refer to the *International Recommendations for Tourism Statistics 2008 Compilation Guide*. Activities under ISIC division 55 include classes 551 ("short term accommodation activities"); 552 ("camping grounds", "recreational vehicle parks and trailer parks"); and 559 ("other accommodation").

6.68. Most national tourism administrations have their own registers of accommodation establishments, based on a licensing procedure, which contemplate a more detailed classification, such as a "star" system of qualification of the provided services, or more restricted coverage that excludes group 559, or even group 551, whereas the national statistics office might have its own general business registry that classifies establishments without considering such particularities. Such differences make inter-institutional coordination all the more important to insure consistency of the results.

Survey design

6.69. Regarding survey design, care should be taken, especially in the design of the in the annual national statistics office survey, to ensure that accommodation establishments located in zones of low general economic activity (manufacturing and business services), but with a high tourism orientation, are not omitted through the general selection procedure of statistical units, which is often based on the density of general economic activity.

6.70. The general sample design should also recognize the existence of small family-owned units. It may be the case that the licensing system records them, but not the general business register. Such establishments should be included in the annual survey, but might be excluded from the monthly or quarterly surveys that usually focus on relatively big units, and should follow a census system whose base should be frequently updated (at least annually) to take into consideration the dynamics of the activity. Some of the small family-owned units might also be observed through the use of household surveys or surveys directed to associative bodies to which the families might belong. Such surveys might provide information on the global performance of their associates, in terms of tourism indicators, especially in terms of accommodation units offered and occupancy rates.

6.71. Surveys of accommodation units concentrate on measuring occupancy rates, room revenues per night or per guest, and the national origin of guests. Such information can help to arrive at estimates of non-resident expenditures on accommodation. Other variables related to establishments can also be compiled, such as the number of employees per room, employee remuneration and details on employment, in particular, according to the permanency of the work contract (short-term contracts for a season are often used), as well as total revenue, revenue derived from the sale of accommodation services, value added and gross fixed capital formation.

Frequency of accommodation surveys

6.72. Because tourism activity usually exhibits large seasonal variations, tourism-related establishments are observed monthly, quarterly and annually. Tourism administrations frequently control the monthly and quarterly surveys, whereas the

national statistical office is often in charge of the annual structural survey. The design of the surveys used for those different observation frequencies should be harmonized to enable the comparison of their respective results.

Surveys of travel agencies and tour operator services

6.73. The main business of travel agencies and tour operator services is passenger transport, accommodation and package tours (arranged by others or arranged by the agencies or tour operators). The related fees are usually paid, although in different proportions, by both the person travelling or his/her employer in the case of business travel, and the provider of the service, such as international transport, visitor accommodation services and package tours. The person travelling is usually a resident of the same economy as the travel agency, although this is rapidly changing with the increase of transactions realized through the Internet. The service provider might be a resident of the same economy as the visitors, a resident of same economy as the service provider or a resident of any other economy.

6.74. Because their services are used to book or arrange trips, travel agencies and tour operators can provide indications on the degree of travel (debit) or outbound tourism consumption. It is worthwhile mentioning that, in BOP statistics, as well as in statistics of international trade in services, when services providers (principally, international transportation and accommodation providers) use the services of a travel agency that is resident in an economy different from their own to make their supply available to the public, a resident/non-resident service transaction must be recorded; that transaction, however, is not included in travel, but in trade-related services.

6.75. As a consequence, and in the case of mainly travel agencies, the following two recommendations should be followed:

- (a) Data should be collected on the volume of travel agencies' business as intermediaries in the sale of international transport, accommodation and package tours for travel abroad (arranged either by them or by specialized tour operators who, in turn, might be resident in any country). This might be used as an indicator on the trend of travel (debit) and outbound tourism consumption. The information to be collected may refer to the type of client (business/personal), destination, the number of operations and the total value of transactions, treating separately those that correspond to travel with a package or without a package. Nevertheless, such a measurement might be fragile as households and persons are increasingly using the Internet to plan their trips, and thus have direct access to online travel arrangers that might be resident in other economies and escape from that measurement;
- (b) Because, within the perspective of international trade in services, travel agency services and, more generally, reservation services paid for by international transport companies or accommodation service providers are treated as the purchase of services, those fees should be measured separately in order to be included in data corresponding to trade-related services, if they correspond to resident/non-resident transactions.

6.76. In the particular case of international transport, obtaining information is complicated because of (a) the multiplicity of travel agents and international carriers worldwide, (b) the different modes by which payment is collected from the final client by travel agencies and apportioned among the different stakeholders and (c) the complexity of arrangements among airlines (in particular code sharing and interlining, by which the party that sells the service might not be the one that provides it). The result of such complexity is that the value of services sold to non-resident service

providers reported by resident travel agencies might not be accurate, although it may represent useful information to be possibly combined with other sources. Improvements in the measurement of resident/non-resident reservation services could be gained through the use of databases generated by the International Air Transport Association (IATA) regarding the clearing system between airlines and travel agents (the Billing and Settlement Plan (BSP6)) and from a better understanding of the roles and modes of remuneration of the Central Reservation System (CRS) and the Global Distribution System (GDS).

C.7. Construction surveys

6.77. Construction is a sector with such special characteristics that compilers should consider using a single survey to respond to various information needs, notably those of trade in services between residents and non-residents and of FDI and FATS. The main reason for this is that international transactions for the construction sector are sometimes difficult to separate. For example, when a construction company provides its services through a physical presence over a long-term period (more than 12 months), but without creating a legal entity in the country of the client, and if the operations are substantial enough, then the compiler may need to consider those services as a notional institutional unit from a statistical point of view. In such a case, the corresponding international transactions will be recorded as FDI financial flows, income and position, and the data corresponding to the unit's operations should be considered as FATS (see also section D of the present chapter). If the above-mentioned conditions are not met, the international transactions will be considered as trade in services between residents and non-residents.

6.78. By reviewing all the information obtained through a single survey, the compiler can subsequently, and coherently across surveyed firms, make decisions as how to use the data, i.e., whether to classify transactions as trade in services between residents and non-residents or FDI, and whether to use some of that information for FATS (i.e., sales and turnover; see also section D). Such a unified survey could also be used to collect additional operational data on the activities of those service providers.

6.79. To correctly compile construction data, it is particularly important to precisely identify the residence of the enterprise realizing the construction work. Indeed, a construction enterprise established in one economy may undertake the construction of projects in another economy through a subsidiary or a branch, i.e., via a direct investment relationship. In other cases, an enterprise may decide to conduct services directly from its home base. In the former case, the construction activities are regarded as the activities of foreign affiliates and the corresponding international transactions are considered to be direct investment, whereas in the latter case, they are considered the export of services. For larger projects that take more than one year, the delineation between trade in services between residents and non-residents and the activities of foreign affiliates may be difficult to establish. A number of criteria to consider are suggested in BPM6 and MSITS 2010, and are described further in chapter 14 of the present *Guide*. Given the difficulties in establishing a clear delineation, it may be useful, in particular for countries in which many big contractors have projects abroad, to collect all the information on their activity through a single survey, thereby providing the necessary information for compilers to distinguish between exports/imports of construction services and FDI/FATS transactions.

6.80. When classified as trade in services between residents and non-residents, construction transactions may be considered as mode 3 supply, commercial presence, or mode 4, the presence of natural persons, to account for cases involving the pres-

ence of resident workers (employed by the resident construction enterprise or self-employed) in the non-resident/host economy. It should be noted that, although mode 3 concerns, for the most part, the domestic sales of foreign affiliates, construction services for work carried out in less than one year may also be regarded as a commercial presence, according to GATS.⁸⁰

⁸⁰ See MSITS 2010, paras. 5.53-5.54.

6.81. Although business surveys are designed to collect information on both the transactions of construction companies and those of their clients, the coverage of the latter could be more difficult in the case of construction. The services provided by the contractor are likely to be closely related to the sector of activity of the enterprise (i.e., construction). That is less true for the clients, since any household or the companies of any industry may buy construction services. In addition, information is needed on both the value of the construction project and on the inputs, in particular those bought in the country in which the project is taking place. Hence, for construction, a specific survey may be more appropriate, in particular for those economies that specialize in the export of construction.

Country experience: Italy

6.82. In Italy, construction data are compiled by the Bank of Italy in the wider framework of BOP statistics. Construction-related information is collected through a quarterly non-financial transactions questionnaire (TTN), consisting of regular reports on services other than travel and transport, intangible assets, unilateral transfers and compensation of employees. Therefore, the construction item compilation is based on a general purpose sample, both for credits and debits (see chap. 14, paras. 14.118-14.124, for the data compilation of construction).

6.83. Among the approximately 3,000 firms sampled with the TTN survey, about 450 are engaged mainly in construction activities, according to the reported s code. They cover about 23 per cent and 30 per cent, respectively, of the population total turnover (around €180 billion) and foreign turnover (€65 billion).⁸¹

6.84. The TTN questionnaire begins with a general part. Construction specific information is reported in a subsequent dedicated section of the questionnaire, in which construction abroad and construction in Italy are distinguished. Despite the fact that the TTN survey is meant to address mainly non-financial items, the construction section aims also to contribute to the compilation of FDI, including the related flows of income.

6.85. Firms are required to list the construction projects in which they are involved either as contractors or clients and the counterpart is a non-resident entity, and to provide detailed information for each project according to the guidelines of MSITS 2010.⁸²

6.86. In the system of Italy, the attribution of the status of “branch resident in the host country” is based on a simplification criterion: the entity carrying out the work is considered to be a resident branch of the host country if the project lasts one year or more. Consequently, depending on the estimated duration of the work, the construction activity is regarded either as an FDI-related operation, if the construction work extends over a period of at least one year, or as a service transaction in the opposite case.

⁸¹ The foreign turnover is estimated on the basis of a survey carried out by the Associazione Nazionale Costruttori Edili (ANCE) (National Builders Association), of Italy, in 2012 on 40 Italian construction enterprises (see ANCE, “Rapporto 2012 sulla presenza delle imprese di costruzione italiane nel mondo”, available from www.ance.it/docs/docDownload.aspx?id=8546).

⁸² See MSITS 2010, para. 3.133.

C.8. Other specific surveys, including health, legal and information technology-enabled

6.87. Given the high interest in specific sectors, in particular for exports, it may be useful to consider establishing a specialized survey to collect more detailed data on

a particular service, such as a detailed breakdown of the services products or activities or detailed information on partner countries or on modes of supply used in such international services transactions). Often, the collection of statistics is motivated by a strong policy demand for more detailed information on one or more service category, when, for example, that category accounts for a substantial share of the economy or employment.

6.88. Although such a survey may be tailored to respond to the specific national needs, it is important for the information collected to be compatible with the international definitions as outlined in MSITS 2010 for residence, detailed services items and modes of supply, for example. MSITS 2010, in particular, indicates that, for further breakdowns by type of service, the CPC should be used as a guide (see EBOPS 2010, CPC version 2 correspondence table).⁸³

⁸³ See <http://unstats.un.org/unsd/tradeserv/TFSITS/msits2010/ebops2cpc.htm>.

6.89. Finally, it should be noted that if a specific sector and its international transactions are very important for a country, compilers may wish to consider collecting *all* the required information through a single survey (i.e., not only trade in services between residents and non-residents, but also structural business statistics and/or FATS), and then make decisions as to how to use the data (i.e., classify transactions as trade in services between residents and non-residents or FDI and use some of the information for FATS (i.e., sales/turnover). Such a survey could also be used to collect additional operational data on the activities of these service providers

Country experience: India: compilation of education services

6.90. In order to better analyse trends in trade in higher education in India, the Directorate General of Commercial Intelligence and Statistics of India (DGCI and S) initiated a survey on international trade in education services, under the overall guidance of the Central Statistics Office in the Ministry of Statistics and Programme Implementation. The scope of the survey was restricted to higher education services, i.e., technical education, management education, medical education and general discipline (university-level courses). The survey period was 2010-2011, since all financial information for that year had already been audited and was accessible. The fieldwork of the survey, as well as the processing and compilation of data, was outsourced to the Indian Institute of Foreign Trade under the overall guidance and supervision of DGCI and S.

6.91. A stratified sampling method was used to select institutes and universities, from eight cities in India, that provide education services under each of the categories of education and by mode of supply. In addition, all the important universities and technical and management in India that enrol foreign students were within the sample. The questionnaire was developed in consultation with relevant agencies to collect detailed information on trade (both exports and imports) in higher education from Indian universities and institutions. The questionnaire has 16 subsections, covering among other data types (a) the identification of the service provider, (b) transactions with non-residents, (c) employment by type of staff, (d) details of revenues and receipts from foreign universities and institutes (including foreign students studying in India and in-house Indian faculty visiting abroad), (e) details of expenses and payments to foreign universities and institutes (including Indian students studying abroad and foreign faculty visiting India) and (f) the identification of trade barriers in higher education services.

Country experience: India, compilation of software and information technology exports

6.92. In view of the growing importance of exports of information technology (IT) and Information Technology Enabled Services (ITES), Reserve Bank of India (RBI) has conducted an annual survey on software and IT services exports on a regular basis since September 2008. The survey covers elements of the EBOPS 2010 categories, including computer and information services, as well as a broad range of other business services, which may have a strong IT component (either to produce or to deliver the service). The survey is designed to collect detailed disaggregated information on the export of software services, broken down by activity, type of service (on-site/off-site) and country of destination, along with the four modes of supply. For determining the proportion of each mode of supply within the services transactions, survey respondents are asked to report the estimated value of services provided through modes 1, 2 and 4. That information is sought on both a fiscal year basis and a quarterly basis. The same treatment is applied to the results for modes of supply as to other results of this very detailed survey (i.e., for non-response, etc.) The survey also collects information on the software business of foreign subsidiaries and foreign affiliates, distinguishing between sales to India and other countries for software business carried out in a host country. The collected statistics are cross-checked and validated, with the information collected independently through two other sources: the National Association of Software and Services Companies (NASSCOM) and SOFTEX forms, through which the non-physical (off-site) software exports figures are collected.

D. Foreign affiliate statistics and the international supply of services

6.93. Section D deals with the collection of data necessary for FATS through surveys of enterprises. For most countries that compile FATS, business surveys are the most reliable and cost-effective means of obtaining the information needed to provide meaningful FATS. The elements for data collection detailed in the present section focus on the specific aspects of services. The main definitions of the FATS conceptual framework are briefly described in chapter 1 of the present *Guide*, whereas more details on the definitions of some of the variables are provided in chapter IV of MSITS 2010. Compilation requirements are described in chapter 15 of the present *Guide*. Since most of the variables are drawn directly from the collected data, it is important to consider those definitions when designing the survey form and the accompanying explanatory notes.

6.94. There are two basic approaches to collecting FATS through enterprise surveys. The two approaches are not necessarily mutually exclusive. The first approach, which can be used only for inward FATS, identifies from existing data on resident enterprises the subset that is foreign-controlled. The second approach entails conducting surveys that request information directly on the operations of resident affiliates of foreign enterprises and foreign affiliates of domestic enterprises (either through a dedicated survey, that can be specially tailored to respond to needs, or through an existing FDI survey, which offers more limited options as to the information that can be requested). MSITS 2010 recognizes the advantages and disadvantages of each approach and the need for compilers to demonstrate flexibility in adapting FATS data collection to each country's statistical infrastructure, while maximizing the use of existing data.

6.95. A usual precondition for the establishment of a foreign affiliate is the development of investment flows leading to an FDI relationship. An understanding of the FDI universe provides a strong basis for developing an understanding of the FATS universe and ensuring a sound data collection mechanism for FATS. The FDI universe of enterprises has broader coverage than the FATS universe, but a data collection program for FDI statistics can provide a base for a data collection program for FATS, either directly or indirectly. The direct use of such data collection is that key FATS variables might be incorporated into existing FDI surveys. Alternatively, if the information is not available from the FATS data source itself, links to existing data on FDI could be used (a) for inward FATS, to identify the data of interest in existing sources of information on resident enterprises (i.e., to identify the foreign controlled subset of firms) or (b) for both inward and outward FATS, to identify foreign-controlled affiliates for which FATS variables could be collected on a separate survey. Finally, it is important to note that in the case of regional headquarters that report data on behalf of affiliates further down the chain and located in various countries, the respondent should be required to report the data on a non-consolidated basis, i.e., allocating the variables describing the operations of the affiliates to the affiliates' actual country of location.

6.96. Three types of surveys are particularly useful for compiling FATS: structural business statistics surveys, FDI surveys and specific FATS surveys. The three types are discussed in more detail in sections D.1 through D.4. It should be noted that the collection of FATS does not need to be a stand-alone exercise, and compilers can choose to collect FATS data and other information in a single survey, as described C.7 and C.8 of the present chapter.

D.1. Structural business statistics surveys

6.97. Structural business statistics (SBS) surveys are designed to provide detailed economic and financial data about the activities of domestic resident business enterprises. They may encompass all types of activities or can be specifically tailored for firms primarily engaged in specific sectors, such as wholesale and retail trade activities. Reporting and statistical units for such surveys can be identified at several levels of consolidation, ranging from establishments (single physical locations or local activity units) to fully consolidated enterprises that may include several subsidiaries and operate in several different sectors of the economy.

6.98. SBS surveys can be used to provide FATS measures only for inward FATS by identifying the subset of resident domestic corporations that meet the relevant criteria for statistical units and for which the recommended data items are either already collected for other purposes or can be added to the surveys to meet FATS requirements. As described in chapter 15, such an approach requires the existence of indicators of foreign ownership in the domestic business register, a sample frame that meet FATS requirements or the ability to link SBS data with an FDI survey or an FDI register through the use of common identifiers. That approach was implemented in the United States, i.e., the linking of inward FDI enterprise data with the more comprehensive and detailed data collected every five years at the establishment level in the economic censuses. Where existing domestic statistics are used as the source of information, links to FDI data can be used to supplement SBS data with information, such as by identifying the country of the controlling entity.

6.99. In general, SBS surveys cover most of the variables of interest identified in MSITS 2010, or include the relevant elements to compile them. However, in many cases, some of the elements or breakdowns are absent. When envisaging the use of SBS surveys for FATS, compilers are advised to coordinate with statisticians in charge

of the structural business statistics data collection program to identify what is already available and what would need to be added in the surveys. That would need to be established according to the priorities identified, keeping the burden for respondents to a minimum, as SBS surveys are generally quite long. The FATS variables often covered by existing surveys are the following: sales, employment, purchases of goods and services for intermediation consumption and for resale (often covering only goods), assets, compensation of employees, taxes on income and investment. Breakdowns of those variables are often included, and compilers will need to investigate how they can be used in the context of MSITS 2010. Some variables, for example on research and development, may be included or covered by supplementary surveys. Finally, the forms may include some additional variables of interest to the compiling economy.

6.100. The following additional characteristics are often absent from existing SBS surveys, but are of interest in the context of services:

- (a) For sales and turnover, a breakdown into sales of goods and sales of services (in the first instance) and, if possible, a further breakdown into the main categories of services (*a* longer-term goal), at least those of interest to the compiling economy, and compatible with EBOPS 2010;
- (b) The separate identification of (i) sales of services made in the host economy, (ii) exports to the economy of the ultimate controlling institutional unit (UCI) and (iii) to third economies;
- (c) Other geographical breakdowns of sales and exports and purchases and imports of services would also be useful. If possible, a distinction should be made between affiliated and unaffiliated parties. However, given the higher burden that may entail, the possibility offered by SBS surveys may be limited (see also chapter 15, sections E.1 and E.3);
- (d) For employment, the identification of non-resident employment, including intra-corporate transferees.

6.101. Using SBS surveys to collect FATS data has a few advantages. The FATS variables will be compatible with measures of the domestic economy. Moreover, such surveys allow FATS variables to be compiled with little or no added burden to reporters and relying on fewer resources than a separate data collection program. However, it may be difficult to include the full range of recommended FATS data items because of limitations in the domestic statistics.

D.2. Foreign direct investment surveys in the context of foreign affiliates statistics

6.102. In the case of existing FDI surveys, registers used for FDI would typically be used to identify foreign-controlled affiliates that qualify for FATS treatment. Alternatively, key FATS variables could be incorporated into existing inward or outward FDI surveys. Many countries have inward and outward FDI surveys, and the use of those vehicles to collect some basic FATS is a quick and cost-effective solution, in particular for outward FATS. However, compilers need to keep in mind that there are a number of drawbacks, some of which are listed in paragraphs 6.104 and 6.105.

6.103. The priority would be to cover the main FATS variables, namely sales and turnover (if possible with an estimated breakdown into total goods and total services, excluding income elements) and employment (if possible distinguishing employees recruited from overseas and intracorporate transferees). If such data are available from other sources, the survey should enable the identification of (*a*) subsidiaries and branches (possibly including further qualitative information on the subsidi-

ary), (b) the principal activity of the affiliate and (c) the country of establishment of the affiliate for outward FATS and of the UCI for inward FATS. All affiliates should be covered, whether directly or indirectly controlled. However, given that FDI surveys often gather information only on immediate relationships, in the first stages of implementation, only data on direct control could be collected, but a medium- to long-term objective would be to also gather information on indirectly controlled affiliates.

6.104. Compilers should note that incorporating FATS-related questions in FDI surveys may increase the response burden imposed on enterprises that are not part of the FATS population. In addition, FDI surveys may need to be conducted more frequently (e.g., quarterly), whereas FATS may be needed less frequently (e.g., annually, at least in the initial stages of development of the FATS framework at the national level). If a country conducts an annual survey of direct investment in addition to monthly or quarterly surveys, it may be appropriate to incorporate FATS variables only into the annual one. The possible extension of FATS variables and breakdowns to be covered in FDI surveys should also be carefully assessed, given the main reasoning behind FDI surveys and the broader population that they cover. For that reason, compilers should not go beyond the list of items identified above. If there is a need for additional items, compilers should develop a survey complementary to the regular annual FDI survey that could also be used to collect more detailed FDI data.

6.105. Extended business registers might also be a suitable means of maintaining such information. That approach has already been adopted in some countries that use them to maintain data on foreign ownership.

6.106. While FDI statistics differ in several ways from FATS variables, FDI statistics may provide useful indicators relating to commercial presence for those countries that have not yet begun to compile FATS. In particular, FDI positions can serve as an indicator of a country's interest in using commercial presence to supply services internationally. In addition, FDI statistics can be used in conjunction with FATS to indicate the extent to which the operations of affiliates were financed with funds from direct investors, as well as the extent to which the income generated by affiliates accrued to direct investors.

D.3. Foreign affiliates surveys

6.107. Special surveys for collecting FATS could be designed to complement existing data collection systems, such as SBS or FDI. Those surveys would be limited to the subset of the FDI population that qualifies for FATS and may be conducted as an extension of the existing FDI surveys or less frequently. Naturally, information from the business register or the FDI register would be necessary to identify the target population. Such surveys could be conducted separately for both inward FATS and outward FATS, and would enable more possibilities in terms of collecting detailed data, in particular for outward FATS. That approach may also be appropriate when an existing FDI data collection programme is not already in place or cannot be easily adapted for the requirements of compiling FATS. In general, separate surveys would be required for inward FATS and outward FATS owing to the distinctly different populations, although in certain circumstances, that would not be the case, such as, for outward FATS, when many of the mother companies of the compiling economy are themselves controlled from abroad. It is also important to note that the ability to conduct separate surveys may be limited by legal and institutional conditions in the compiling economy.

6.108. One of the main drawbacks of conducting a dedicated FATS survey is that it may be costly and burdensome to develop additional surveys. However, such

a solution has a number of advantages, including that it can be specially targeted towards the relevant inward and/or outward population. More importantly, it can be targeted to the needs of users, and its design can more closely follow international recommendations, including the development of detailed guidelines for survey respondents. Such a survey could have all or most of the various dimensions listed in MSITS 2010. As a general consideration, it may be easier to approach the inward FATS population for detailed data than the outward. As an alternative approach, the existing SBS could be extended with questions for inward foreign affiliates, which could be more cost effective overall.

6.109. The information that can be covered in a FATS survey includes all the requirements of MSITS 2010 and the guidelines presented in the *OECD Benchmark Definition of Foreign Direct Investment, 4th ed.* (BD4) and the *OECD Handbook on Economic Globalization Indicators* (HEGI). In the context of the international supply of services, those requirements and guidelines are also listed in chapter 15 of the present *Guide*. The information to be covered will also depend on the identified national needs. In the first stages of development, a FATS survey could cover the following aspects:

- (a) If not already covered by the register(s) or related FDI surveys, information on the type of affiliate (subsidiary, branch or associate), its main activity, the country of the UCI (for inward FATS) and the country of establishment of the affiliate (for outward FATS);
- (b) Variables, namely sales and turnover (with a breakdown into total sales of goods and total sales of services, if possible), employment (distinguishing employees recruited from overseas and intracorporate transferees, if possible) and purchases of goods and services for intermediation consumption, as well as those for resale;
- (c) For sales, the separate identification of (i) sales (of services) made in the host economy, (ii) exports to the economy of the UCI and (iii) exports to third economies;
- (d) Other details and breakdowns as experience in use of the FATS survey develops, depending on the results obtained and the use that can be made of them.

D.4. Country experiences

Country experience: United States

6.110. In 1976, the International Investment Act authorized the Bureau of Economic Analysis (BEA) of the United States to collect data on the finances and operations of foreign-owned enterprises in the United States and of United States parent enterprises and their foreign affiliates.⁸⁴ The International Investment Act was expanded to include trade in services in 1984. The Act made responding to BEA surveys mandatory and required BEA to maintain the confidentiality of the data collected. The Paperwork Reduction Act, passed in 1980, governs the collection of data from the public by any government agency. The Paperwork Reduction Act requires agencies to minimize the burden they place on private businesses and citizens in collecting information.

6.111. The BEA surveys of the operations of multinational corporations collect data on balance sheets, income statements, sales, employment and employee compensation, research and development expenditures, property, plant and equipment, taxes, trade in goods and the components necessary to estimate value added. While the surveys cover both majority-owned and minority-owned affiliates, more data are collected for majority-owned affiliates.

⁸⁴ P.L. 94-472, 90 Stat. 22 U.S.C. 3101-3108, as amended, <http://uscode.house.gov/view.xhtml?path=/prelim@title22/chapter46&edition=prelim>

6.112. BEA uses a system of benchmark surveys, conducted every five years, and annual surveys to collect data on FATS. Benchmark surveys cover the universe of multinational enterprises, but data collection is much less detailed for smaller reporters and for minority-owned reporters.

6.113. Annual surveys are conducted between benchmark surveys. The smallest reporters are exempt from reporting on the annual surveys, and BEA uses statistical sampling for the medium-sized reporters. Large reporters are required to report annually and provide the most detailed information. The reporting thresholds are based on the reporter's assets, sales or net income. Estimates are made for reporters not required to report, or failing to do so, in a given year, so the published statistics cover the universe. Smaller majority-owned foreign affiliates report less detail than larger majority-owned foreign affiliates. To present statistics on the operating data of all majority-owned foreign affiliates, BEA estimates items that are collected only for large majority-owned foreign affiliates for the smaller majority-owned affiliates. Those estimates are based on relationships among the data items for a panel of comparable larger majority-owned foreign affiliates.

6.114. Regarding United States parents, data are collected for both inward FATS and outward FATS on an enterprise group basis and cover the fully consolidated domestic entity. For outward FATS, the United States parent is required to report on the operations of its foreign affiliates, but that report tends to be less consolidated. First, affiliates can never be consolidated across countries. Second, affiliates cannot be consolidated across industries unless they were part of an integrated production process. Finally, affiliates cannot be consolidated if they do not have the same ownership structure.

6.115. Data are collected on an accrual basis and generally follow United States Generally Accepted Accounting Principles (GAAP). Data are reported on the basis of the enterprises's fiscal year. For outward FATS, items recorded in foreign currency are translated into United States dollars following GAAP, which calls for assets and liabilities to be translated using the exchange rate on the date of the balance sheet, and for revenues and expenses to be translated using weighted-average exchange rates for the period.

6.116. For inward FATS, operations are classified by the country of the ultimate beneficial owner (UBO), which is equivalent to the UCI. However, a few data items are classified by the country of the foreign parent. For outward FATS, the statistics are classified by the country in which the affiliate is located, that is, where the affiliate's physical assets are located and its primary activities are carried out. In most cases, the country of location and the country of incorporation are the same. However, in some cases, a business enterprise is incorporated in one country, but part or all of its physical assets are located in a second country. If all of its operations are in a single country outside of its country of incorporation, then the affiliate is treated as a single affiliate in the country of its physical presence. If the affiliate has physical assets in each country, it is treated as two affiliates.

6.117. For classification by industry, BEA uses industry codes derived from the North American Industry Classification System (NAICS), generally at the four-digit level. For inward FATS, each affiliate reports up to 10 industries in which it has sales. These are used to assign a primary industry code to the affiliate in three steps. First, a given affiliate is classified in the NAICS sector that accounted for the largest percentage of its sales; NAICS sectors are at the two-digit level. Next, the affiliate is classified into the three-digit subsector within that sector. Third, within that three-digit subsector, the affiliate is classified in the four-digit industry for which its sales were largest.

For outward FATS, the same process is followed to assign United States parents and each foreign affiliate to a primary industry.

6.118. BEA asks reporters to break out their sales into goods, services and investment income. For inward FATS, enterprises are asked to further break out their sales of services between sales to United States persons and sales to foreign persons. For outward FATS, BEA asks that sales of goods, services and investment income each be broken out by destination: to the United States, to the host country and to third countries. For each of these, BEA asks that the reporter further distinguish between sales to affiliated parties and sales to unaffiliated parties.

6.119. The data reported must pass a large number of computerized editing checks and reviews for consistency with such data as quarterly FDI surveys. As a result of that editing and review process, a number of changes are made to the reported data, usually after consultation with the reporter. In some cases, usually involving smaller affiliates, estimates based on industry averages or other information are substituted for missing or erroneously reported data.

Country experience: Japan

6.120. The Survey on Overseas Business Activities of Japan (outward survey) and the Survey of Trends in Business Activities of Foreign Affiliates (inward survey), conducted by the Ministry of the Economy, Trade and Industry (METI) serve as Japan's FATS surveys. They are conducted on an annual basis and the data correspond to those recommended by MSITS 2010, although with the following deviations:

- (a) If the parent company is mainly involved in the financial, insurance and real estate industries, the company and its affiliates are excluded from the outward survey;
- (b) Inward data are based on an ownership ratio exceeding one-third, while outward data are based on 10 per cent standard, as opposed to the majority standard of MSITS 2010;
- (c) Ultimate investors are not identified in inward surveys.

6.121. The Survey on Overseas Business Activities of Japan aims to present the actual conditions concerning overseas business activities of Japanese corporations to serve as a basis for future industrial and trade policies. Survey targets are parent companies, namely, Japanese corporations that, as of the end of March, own overseas affiliates, excluding those in the financial, insurance or real estate industries (hereinafter referred to as "parent companies") and overseas affiliates ("subsidiaries" and "sub-subsidiaries" are collectively referred to as "overseas affiliates"). The following overseas affiliates are surveyed:

- (a) A foreign affiliate in which a Japanese corporation has invested capital of 10 per cent or more;
- (b) A foreign affiliate in which a subsidiary, funded by more than 50 per cent by a Japanese corporation, has invested capital of more than 50 per cent;
- (c) A foreign affiliate in which a Japanese corporation and a subsidiary, funded by more than 50 per cent by a Japanese corporation, has invested capital of more than 50 per cent cumulatively.

6.122. The outward survey is based on the Statistics Law of Japan. For the 2013 survey, questionnaires were sent to the entire population of 8,662 parent companies and 76.4 per cent of those enterprises replied. It is obligatory for survey forms to be filled out by parent companies. If multiple Japanese companies are parents, the com-

pany with the largest equity share (the leading company if the shares of two companies are the same) of a foreign affiliate should fill out the form.

6.123. The outward FATS information that is collected includes overseas affiliate profile, investment, operation status, decline in control share, employment on a full-time equivalent (FTE) basis employment, sales turnover, purchases and related costs, profits, appropriation of earnings; research and development expenses, capital investment and major products broken down into intermediate and final goods.

6.124. The Survey of Trends in Business Activities of Foreign Affiliates (inward FATS) is conducted in accordance with the Statistics Law of Japan. The 2013 survey covered 5,463 companies, of which 60.3 per cent replied. The following enterprises were covered:

- (a) A company in which more than one third of shares or holdings is owned by foreign investor;
- (b) A company funded by a domestic company (in Japan) in which more than one third of shares or holdings is owned by foreign investors, and in which the total ratio of the foreign investor's direct and indirect investment is more than one third of the shares or holdings of the company concerned;
- (c) Companies that fall under (a) or (b), in which the principal foreign investor's direct investment ratio is more than 10 per cent.

6.125. The inward FATS information that is collected includes the company profile operation status, employment on an FTE basis, type and function of the establishment (i.e., whether the affiliate in Japan is a regional headquarters), sales turnover, type of imports purchased, payments to the principal foreign investor (dividends, interest on loans and royalties), research and development expenses, plant and equipment investments and profits and assets.

Chapter 7

Surveys of persons and households, and population censuses

7.1. Chapter 7 discusses the issues related to the use of population censuses and surveys of persons and households and their organization in the context of data collection for measuring the international supply of services. Section A provides an introduction and a summary of good practices. Section B promotes an integrated approach as well as cooperation between related statistical domains (e.g., balance of payments and tourism statistics) by describing such sources and their use in compiling statistics on the international supply of services. Section C covers population censuses. Section D covers household surveys, including constructing the target population and sampling frame, conducting a household survey and measuring travellers' expenditure using a household survey, as well as seasonality issues and reference period. Section E describes labour force surveys, particularly the development of a labour force survey module for mode 4. Section F deals with border surveys and provides details on organizing surveys at different border points, including airports, road borders, railways and cruise ships. Section G provides an overview of complementary surveys of persons travelling.

A. Introduction and a summary of good practices

7.2. Chapter 7 refers mainly to population censuses, household surveys (including labour force surveys) and border surveys. Surveys of persons and households can be used to compile international transactions in services in which individuals or households, as major purchasers or suppliers of services, can be relatively easily identified for survey sampling purposes. For trade in services, the transactions would typically refer to travel tourism, transportation and mode 4-related transactions, but with the growing use of e-commerce by households, it may be relevant to consider other types of services or modes. Such sources, as well as population censuses, can also be used to collect non-monetary information in relation to modes 4 and 2. With respect to collecting BOP services data for households, compilers should consider if the information is already covered by another data source, such as those described in the present *Guide*. However, in some cases it may be necessary to turn to surveys of persons or households, in situations in which they are important for trade in certain services.

7.3. Population censuses and person and household surveys are generally used as major data sources for such other statistical frameworks as social and demographic statistics and tourism statistics. They can also be used to collect information on economic transactions. Persons and, more generally, households are in many economies important economic agents in the context of the international supply of services. The usefulness of such sources will need to be carefully assessed by compilers for each type of information that could be used. Therefore, an integrated approach is imperative for the use of such sources for the purposes identified in MSITS 2010 and the

present *Guide*. Following the basic principle of efficient statistical work—collect once, use many times (multiple-purpose use)—it is good practice to design a survey whose results can be used for compilation in several statistical domains to ensure the highest possible efficiency. Given that the organization and conduct of the surveys will be the responsibility of different units in a statistical system, compilers should, if a need is identified, actively seek cooperation in all stages of the statistical process with those units. For example, such close cooperation is essential in border surveys, which have to provide data for both tourism statistics and statistics on the international supply of services. Such cooperation will need to be formalized through an institutional arrangement (see chapter 3). Cooperation with demographic statistics is also important, for example to ensure the proper use of population censuses in the context of the organization of household surveys and as a benchmark in grossing up their results.

7.4. Population censuses and surveys of households and persons can be used for various purposes to collect the required information, but none can serve all needs. The present *Guide* suggests the following purposes:

- (a) Population censuses can be used to gather benchmark information (in particular, to compile outgoing mode 4 data, but not limited to that) or for household sampling. That can be done by adding questions directly to the population census or by developing a tailored module for the census;
- (b) Household (limited to outbound travel) and border surveys are particularly relevant for collecting data related to international travel (including transport), such as on the expenditure and consumption of households or persons while they are outside their country of residence. Such sources can also be used to collect other information on the characteristics of those travelling. A breakdown by purpose of travel and by type of product consumed should be collected to the extent possible (as a first priority according to the recommendations of MSITS 2010, BPM6 and the International Recommendations for Tourism Statistics 2008 (IRTS 2008), with further items if relevant to the compiling economy);
- (c) For border surveys it is important to ensure that no category of person is excluded from the survey, such as persons beyond the definition of visitors used in tourism statistics, but a clear distinction should be made for each category so that compilers can select the population of interest to their statistical domain;
- (d) Labour force surveys can be used to collect various types of information in relation to the needs of MSITS 2010. For example, for the mode 4 variable “number of persons or trips”, questions can be added to the labour force survey or a specific module can be developed (see suggestions in box 8.3). A labour force survey can also be used for collecting more targeted information on outbound business travel (mode 2 consumption for personal purposes or business purposes);
- (e) Household surveys can also be used to collect data on (i) the consumption of other services (e.g., Internet purchase/consumption of services, mode 4) and (ii) the international provision of services of members of households, in particular for self-employed persons (mode 1 or 4);
- (f) Complementary surveys of persons travelling (e.g., at places of accommodation or in sites of tourism interest) can be used, but are recommended for use only under certain circumstances. Indeed, there are a number of challenges in using such sources, including the identification of non-residents or subsets of the population, or a stay not terminated at the time of surveying, etc.;

- (g) There could be interest in surveys that target categories of persons, such as students or patients, with specific spending characteristics;
- (h) The use of surveys of households or persons should be considered carefully, given their cost and the likely prevalence or sparsity of the activity within the broader population. Increased response burden on the households or persons and the burden of data collection, as well as the reliability and relevance of the data obtained, should also be considered;
- (i) A particularly useful source for mode 4 (and related mode 2) is business travel surveys. Synergies can also be found in that context with labour force statistical sources, for example, by comparing or joining samples;
- (j) Given that there are strong synergies with related statistical frameworks, such as tourism or labour statistics, and that surveys of persons or households or population censuses are primarily designed to serve other information needs, and given that it is considered good practice for one source to serve multiple needs, compilers are strongly encouraged to find synergies and to discuss the possibility of using such sources to respond to MSITS 2010 data needs (chapters 2 and 3 provide more information on legal and institutional frameworks);
- (k) When designing the data collection system using surveys of households or persons, special attention should be brought to the sampling/selection of households or persons and informants, as well as the cost, response burden and sparsity of responses obtained, etc. Compilers should weigh how those sources can be used for the various data needs identified. In particular, increasing the size of samples may significantly increase costs and alternatives may involve using auxiliary information to better target the population to be covered.

B. General purpose and description of population censuses and persons and households surveys

7.5. A population census, hereinafter referred to as a census, provides at a specified time reliable data on social, demographic and economic characteristics of all persons in a country or in well-delimited parts of a country, especially for small geographical units. The data include information on the size, composition and spatial distribution of the population, as well as socioeconomic and demographic characteristics. It is a major source of social statistics, with the obvious advantage of providing reliable data, that is to say, data unaffected by sampling error. In general, the census collects information for each individual in a household, usually for the whole country or for well-defined parts of the country. Censuses are conducted periodically in a majority of countries in the world. The international recommendation is that a national census be taken at least every 10 years. Some countries carry out censuses more frequently because of the rapidity of major changes in their population and/or housing circumstances. For more information on population censuses, compilers are encouraged to refer to *Principles and Recommendations for Population and Housing Censuses*, rev.2.⁸⁵

7.6. The 2008 SNA defines a household as a group of persons who share the same living accommodation, who pool some or all of their income and wealth and who consume certain types of goods and services collectively, mainly housing and food.⁸⁶ In other words, they are groups of persons with common economic interests.

7.7. The internationally endorsed recommendations for the organization of household sample surveys are contained in *Designing Household Survey Samples*:

⁸⁵ Housing censuses may also be of interest. A housing census collects information pertaining to all living quarters and occupants thereof in a country or in a well-delimited part of a country.

⁸⁶ See 2008 SNA, para. 24.12. The 2008 SNA recognizes the importance of household surveys, but, at the same time, notes that the conventions adopted by survey statisticians and those of national accountants are not always the same. A household expenditure survey, for example, may not include estimates of the imputed rental of owner-occupied dwellings or own account production. It may measure income after tax, or expenditure on a cash basis, but not on an accrual basis. Compilers should be aware of such limitations when using those sources.

⁸⁷ *Designing Household Survey Samples: Practical Guidelines*, Studies in Methods, Series F, No. 98 (United Nations publication, Sales No. E.06.XVII.13). Available from http://unstats.un.org/unsd/publication/seriesf/Seriesf_98e.pdf.

Practical Guidelines.⁸⁷ The publication provides recommendations and good practices for such key issues as the planning and execution of surveys, sampling strategies, sampling frames and master samples, the documentation and evaluation of sample designs, the construction and use of sample weights, the estimation of sampling errors for survey data, non-sampling errors in household surveys, and data processing for household surveys. Many countries have in place household survey programmes that include both periodic and ad hoc surveys.

7.8. Compilers should familiarize themselves with the recommendations contained in *Designing Household Survey Samples* in order to be in a better position to participate in the planning and conducting of household surveys in their countries for the purposes identified in the present *Guide*. Household surveys are a widely used statistical tool.⁸⁸ Many countries have, therefore, developed their own detailed methodological guidelines on their design and conduct.⁸⁹ Such guidelines are periodically reviewed and amended as necessary. It is good practice for compilers to participate actively in that process and develop amendments that would ensure that relevant needs identified in MSITS 2010 are taken into account.

⁸⁸ See also the International Household Survey Network at www.surveynetwork.org.

⁸⁹ Household surveys are extensively treated in Statistics Canada, *Survey Methods and Practices*, available from <http://www5.statcan.gc.ca/bsolc/olc-cel/olc-cel?lang=eng&catno=12-587-X>.

7.9. Compilers are also advised to review *International Transactions in Remittances: Guide for Compilers and Users*, a publication of the International Monetary Fund (IMF), that suggests that household or labour force surveys be used to collect information relevant to mode 4 by including a number of specialized modules or questions in existing surveys, or that specialized surveys be conducted through which relevant households could be identified. Such practices would help analysts understand the relationships among such elements as the supply of services and employment status. Various means of specifically targeting the population of interest should be identified in order to avoid increases in the response burden the cost of using such sources and, as well as to ensure an adequate response.

7.10. As with any survey sample, the entities, both enterprises and individuals, surveyed must be representative of the population. Since there is no register for those travelling, compilers should look at administrative records or other sources that could serve as a register. For some countries, even measuring the number of people crossing the borders represents a challenge, for example, in countries with border unions, as is the case for European Union countries.

7.11. A survey of persons collects data pertaining to specific groups of individuals. Household surveys provide access to persons by first selecting households. Compilers can transform household surveys into a sample of persons through the following procedure: at the beginning of the interview, the interviewer asks how many persons above a certain age are permanent members of the household. From that range of persons, the target person (e.g., the oldest, the second-oldest, etc.) is chosen by a random procedure. The interview is then conducted with that randomly chosen target person only.

7.12. Owing to the unique nature of tourism (as described later in this chapter), such sample surveys of households and of persons as border surveys are often used to collect information for travel imports (debits) and tourism expenditures. Thus, given the importance of tourism and travel, some parts of the present chapter will frequently refer to the surveys conducted for tourism statistics purposes. Compilers should therefore have knowledge of the basic tourism statistics concepts in order to make appropriate use of such surveys in the context of MSITS 2010. Basic concepts of tourism statistics are provided in box 14.2 of the present *Guide*. For more detailed information, also see IRTS 2008 and its accompanying compilation recommendations.⁹⁰

⁹⁰ See *International Recommendations for Tourism Statistics 2008* (IRTS 2008), Studies in Methods, Series M, No. 83/rev.1 (United Nations publication, Sales No. E.08.XVII.28), paras. 2.4-2.12 and *International Recommendations for Tourism Statistics 2008: Compilation Guide* (IRTS 2008 Compilation Guide).

C. Population censuses

7.13. Population censuses can be used to benchmark some of the data collected through other means or estimated.⁹¹ They can also be used as a sampling frame for surveys. Such approaches could be relevant for obtaining data on persons moving temporarily abroad under a mode 4 regime and to obtain a sense of medium- to long-term developments, including the importance of outbound mode 4 for the country. More specific surveys or modules can then gather additional details focusing on employment at home and abroad, adding questions relevant to mode 4. For example, to identify more specifically persons who went abroad temporarily in the context of mode 4, one could add the following questions:

- (a) Have you travelled abroad for work in the past [x]⁹² months? Yes/No;
- (b) If Yes, for what purposes?
 - i. To fulfil a contract;
 - ii. To negotiate a contract or establish an affiliate.

To avoid confusion with work-related movements not covered by mode 4, questions and response alternatives are needed to identify the country of residence of the employer at the time.⁹³

7.14. If such questions are identified as potential sources of information, compilers are encouraged to approach the staff in charge of the census. The contents of the questions respond to various needs, and it is necessary to analyse if and how a population census could be used, either by drawing on existing information or by adding a module or questions. Given the long preparation time necessary to develop and conduct a census, compilers should contact the staff in charge of the census during the early stages of its design.

Country experience: Canada

7.15. At the time of writing of the present *Guide*, Canada did not collect mode 4 data. However, some of the questions on its census questionnaire could be useful for the collection of such data. For example, the Canadian census questionnaire⁹⁴ identifies whether the person is self-employed or an employee, as well as his/her occupation, the industry of the firm and whether the person was generally working in or outside Canada during the previous week. Countries with a portion of their population travelling abroad for work purposes may be interested in knowing more about the purpose of such travel to determine whether it is relevant to mode 4. If information is collected on the duration of residence, information could also be gathered to learn if the employer is a multinational entity, or whether the person is in the country for purposes relevant to mode 4 (i.e., whether the employer is based in country of origin).

D. Household surveys

7.16. As indicated above, household surveys are primarily used to collect social and demographic information, but they can also be useful sources for collecting information identified in MSITS 2010, in particular for the following:

- (a) For households as consumers of services (debits/imports):
 - i. Collect information on expenditure patterns of households, or some of its members, that may have travelled abroad. The information will mainly be used to compile the payments for international passenger transport or travel and on outbound tourism expenditure. Socioeconomic characteristics of such households and the characteristics of

⁹¹ It should, however, be kept in mind that an increasing number of countries are moving from traditional questionnaires to a register-based census, which may reduce the potential use of that source in the context of the present *Guide*.

⁹² Number of months to be determined by the frequency of and period covered by the census.

⁹³ See chapter 1 and box V.2 of MSITS 2010 for more information on the identification of the employer-employee relationship.

⁹⁴ See <http://unstats.un.org/unsd/demographic/sources/census/quest/CAN2006enL.pdf>.

their travel abroad may also be useful sources of information in relation to the variable number of trips/persons for mode 2;

- ii. Collect information on the expenditures of households on payments/imports for (other) services. Such information may particularly be relevant for Internet-based transactions or services provided through telecommunications networks, in particular expenditures related to intellectual property products, such as software or audiovisual products, as well as expenditures for services from a supplier who is physically present, such as health services providers and cleaning personnel;⁹⁵

⁹⁵ Compilers will have to ensure that only service contractual relationships will be taken into consideration; see chapters 1, 14 and 16.

- (b) For households or its members as suppliers of services (credits/exports):
 - i. Collect information on the supply of services to non-residents by members of the household:
 - a. Members of the household supplying services to non-residents by travelling abroad (i.e., mode 4), either as self-employed (value of contracts and information on the characteristics of business travel abroad, e.g., mode 4 business trips) or on behalf of their employer (information only on the characteristics of business trips abroad). A labour force survey may be particularly relevant in such a context (see section E);
 - b. Members of the household supplying services to non-residents without travelling abroad, e.g., through the Internet (mode 1) or through the presence of non-residents on the premises of the household (mode 2), most likely to be accounted for under travel credits (or inbound tourism expenditure or consumption).

7.17. Certain specific household surveys, such as business travel surveys, could be timely and relevant sources on outbound temporary labour mobility, which could be useful for collecting detailed information on mode 4 (see the example of the Netherlands in paragraphs 7.33 through 7.35), as well as on mode 2 for that particular category of business traveller. Extending the usefulness of both business travel data and labour force data by joining samples could also be considered.⁹⁶

⁹⁶ For a discussion on the principle of modular and integrative data collection, see <https://circabc.europa.eu/sd/a/45f2b51e-9ba4-4ad1-ab9a-d09a5bb02af4/DSS-2014-Sep-07.6%20VIP%20streamlining%20and%20integration%20of%20the%20European%20social%20surveys.pdf>.

7.18. In principle, all resident persons are attached to one resident household and only one. Therefore, in order to survey residents, resident households can be used as the sampling frame, as it will ensure total coverage, if the sampling frame is up to date.⁹⁷ The information can be collected through an interview, through the visit of an interviewer to the household. That is the most common procedure, as it facilitates the control of the survey.

⁹⁷ Note that some special dwellings may be more difficult to enumerate, for example, retirement and palliative care homes, trailer parks and long-stay hostels, residential colleges and holiday homes.

D.1. Household surveys and services items of EBOPS 2010: travel, transportation and other services

7.19. Using a household survey to collect information in relation to residents travelling abroad (i.e., outbound travel) will serve the needs of the BOP (travel and passenger transport items) and those of tourism statistics, in particular with respect to international tourism consumption, including international passenger transport. Residents, as members of households, will be asked, among other questions, about their travel abroad, the circumstances and characteristics of the travel and the expenditures attached to them (products and values). It should be underlined that travel and tourism refer to individuals, not to households. Nevertheless, when persons travel together and belong to the same household, data on shared expenditure by the travel party can be

collected. Households are used exclusively for selection purposes, but not for providing results; households, as such, do not travel.

7.20. The fact that household surveys are generally conducted in the home facilitates the possibility for the persons being interviewed to check information, such as credit card invoices. The interviewer can collect the information on paper questionnaires or an electronic device, making it possible to control the consistency of the information (see chapter 21). Such procedures can be costly. As a consequence, some countries use telephone interviews, which is a cheaper procedure but with less possibility of asking more sophisticated questions. The telephone interview could also be used as a first step in approaching respondents through simple questions, after which the respondents could be asked if they would agree to respond to a questionnaire with more probing questions.

7.21. The travel item of resident/non-resident trade in services statistics, as well as tourism consumption, is expenditure oriented. Compilers will need an estimate of the value of expenditures per person in a given period, and that value will vary depending on numerous factors. In addition, the information on the characteristics of those travelling and their travel itself may be of interest for compiling other variables. Compilers will therefore need the type of information shown in box 7.1. The information on the characteristics of travel might differ from person to person within the same household, even if they travelled together (e.g., their purpose of travel might be different, and also their expenditures).

Box 7.1

Information needed for international passenger transport, travel and their breakdowns, as well as for mode 2 number of persons/trips

The points below summarize the information to be collected from surveys of persons or households in compiling statistics on the international supply of services (e.g., international passenger transport, travel and their breakdowns). As shown below, the needed information is strongly related to that needed for tourism expenditures. Information is needed on the following:

- (a) **Characteristics of travel.** The main purpose, identifying clearly the different tourism and other travel purposes, the duration, the origin and the destination, the modes of travel or transport, the forms of accommodation and the organization involved, i.e., travel with or without package, travelling alone or in a party or with persons of the household or others, etc. Obtaining such information does not usually present major difficulties;
- (b) **Characteristics of expenditure.** The expenditure to be included, both for travel and tourism expenditure, refers not only to the portion directly paid by the persons travelling, but also that paid by others for their benefit. The consequence is that for each trip and each category of expenditure, it is necessary to ask: (i) whether there has been an expenditure, and the value of that expenditure, (ii) who has paid for it (oneself, a business, the Government, another person in the travel party, another person, etc.), (iii) the form of payment used (credit cards, cash, traveller's cheques, etc.), and (iv) the number of persons to which the reported expenditure corresponds, as an individual might pay for him/herself and for any other persons within a travel party;
- (c) **Breakdown of expenditure.** It is important to take into consideration the following breakdowns, suggested both in tourism statistics and in resident/non-resident services transactions:

- i. Tourism expenditures should be broken down into the following functional categories (the categories have been defined so as to facilitate response):
 - a. Package travel, package holidays and package tours;
 - b. Accommodation;
 - c. Food and drink;
 - d. Local transport;
 - e. International transport;
 - f. Recreation, culture and sports activities;
 - g. Shopping;
 - h. Other;
- ii. In BOP and international trade in services statistics, the recommended breakdown is the following:
 - a. International passenger transport;
 - b. Travel, broken down into the following categories:
 - i. Goods;
 - ii. Local transport services;
 - iii. Accommodation services;
 - iv. Food-serving services;
 - v. Other services, including education and health services.

It is important to note that, beyond the breakdowns recommended above, compilers may also identify other breakdowns of importance at the level of their economy (see the Caribbean Community proposal for creative/cultural services (http://unstats.un.org/unsd/tradeserv/TFSITS/newsletter/TFSITS%20newsletter_9.pdf). In addition, the breakdowns of expenditures in tourism and trade in services statistics are not entirely equivalent, as the orientation of the tourism statistics classification is by purpose, whereas in trade in services statistics it is by type of product. This means that expenditure in fuel for a car, for example, would be classified as "transport" in tourism statistics and as "goods" in BOP statistics. To compile recommended breakdowns, it will therefore be necessary to collect detailed information to respond to all needs. Owing to those circumstances, different designs of forms are possible in order to observe separately and with different frequencies travel and average expenditure per day, or to observe both flows and expenditure simultaneously, using a separate questionnaire. The same source could also be used for associating information related to mode 2 trips/persons.

Challenges in collecting information on expenditures/consumption by type of product consumed. Regarding the collection of data on expenditures by persons travelling, there are a number of challenges in obtaining data by type of product consumed. Visitors frequently share expenditures within a group of persons travelling together. Persons travelling do not always know the amount of expenditures attached to their trip, as they do not pay directly for all the expenses (accommodation, transportation, etc.). There might be agreements for receiving some implicit or explicit payment in kind (transport, meals, accommodation). This may occur for residents travelling for personal purposes, but may be even more frequent for those travelling for business purposes. Persons travelling usually perceive their expenditures by "family" of product, not necessarily by being able to single out each detailed type of product that they consume. For instance, separating goods from services might not be as straightforward as it seems for such items as medical expenses, which might include drugs and services; education expenses, which might include lectures, books and other services; or transport, which might include such goods as gas. Persons travelling for business purposes (mode 4 and others) or those who move

frequently from their country of residence to their country of employment might not have a clear perception of the expenditures associated with their travel, in particular for expenditures such as accommodation. Such aspects need to be taken into consideration when devising questions for the survey form to collect such information.

Seasonality of travel and the survey organization. Travel is often highly seasonal; it cannot be observed over a reduced period of time and then be extrapolated to the whole year as travel. Travel for personal reasons, in particular, will be influenced by such variables as climate conditions in the country of origin and of destination and periods of vacation. As a consequence, frequent observations will be required. It is good practice to collect information on a continuous basis, though results might be produced with different frequencies: quarterly or with such other types of groupings as the peak season and the low season, though seasonality might differ depending on the purpose of the trip (business, work, study, personal, etc.).

7.22. **Reference period.** Additionally, because of memory effects, the period of reference to be used, regarding both travel/trips and the expenditure associated with them, must be very short. The present *Guide* considers it good practice to use a month as a reference period in order to reduce telescopic errors (improper date assigned to trips) and recalling errors (improper characteristics and expenditure) (see box 7.2). As a consequence, because most persons might not have made any trip during such a short period of reference, the selected sample should be sufficiently large so as to collect enough valid information.⁹⁸ A solution could be to ask about travel in the last x months and then deal with the memory effect by weighting up information relating to older travel.

⁹⁸ However, it is also necessary to consider cost, burden and sparsity of responses. Alternatives to increasing the size of the sample may involve using auxiliary information to better target travellers in household surveys.

Box 7.2

Research on the effect of expanding the period of reference for reporting tourism trips in Spain⁹⁹

Research carried out by the Instituto de Estudios Turísticos (IET) of Spain confirms that relying on a respondent's memory for information covered by a domestic and outbound tourism survey can cause two distinct types of errors entirely unrelated to sampling and that have often opposite signs:

- *Telescopic error*: the actual date of an event (an expense, a trip) is unconsciously and erroneously moved up to a more recent date;
- *Pure memory effect*: an event that, in fact, occurred during the observation period is simply omitted, because, subjectively, by the time of the interview, it seems to have occurred long before

IET developed a complex observation methodology using three overlapping samples, in which respondents were asked about trips taken three months, two months and one month before being contacted. That study clearly demonstrated that the longer the delay in contacting respondents after the observation period, the fewer trips they report. For example, three statistically validated measurements for the number of trips taken in June 2006 by residents of Spain are as follows:

- 12,991,044 if observed in July
- 12,745,211 if observed in August
- 12,247,920 if observed in September.

⁹⁹ Teresa Guardia and Sandra Garcia, "Memory effect in the Spanish domestic and outbound tourism survey (FAMILITUR)", paper presented to the OECD ninth International Forum on Tourism Statistics, Paris, November 2008.

7.23. **Issues to consider.** For the process of selecting households, individuals and travel/trips, various possibilities are conceivable and each of has its advantages and disadvantages. Regarding the selection of households:

- (a) All households might be selected with equal probability or with different probabilities, taking into consideration differences in propensity to travel (for the rural population, for instance, or when countries have a stratified universe according to level of income, as higher income is often positively correlated with the propensity to travel);
- (b) A moving panel of households that is renewed periodically can be used, allowing the design of profiles of behaviour over time. However, persons who frequently travel, and thus are absent when requested to answer the survey, will tend to be substituted by more sedentary persons who travel less, thus skewing the results of the survey.

7.24. Regarding the selection of informants, options include the following:

- (a) Select randomly one person within the household who will inform on his/her travel and expenditures. The drawback is that much of the cost of visiting a household will be wasted, particularly taking into consideration that travelling over a short period is not so frequent, so that the randomly selected person might not have travelled, but other persons of the household might have;
- (b) Include only persons over a certain threshold (10 years of age, 15 years of age, etc.). While this appears to be an attractive option, small children usually travel with other persons of the household, and though children usually do not pay themselves for their expenditures, their participation in a travel party decreases the average expenditure per person per day of all members of the party;
- (c) Include everybody. This is often the method followed.

7.25. Regarding the selection of travel, one of the following options is possible:

- (a) All travel can be selected both for the description of the trips taken and the attached expenditures. Although that method is often followed, it can be a drawback, especially with a large questionnaire, when persons travel frequently; restricting travel to outbound trips would lower the reported frequency of travel;
- (b) All trips can be counted (outbound and domestic, i.e., in relation to tourism information needs), but the characteristics of the trip and expenditure are collected for only one of them (usually the most recent one); that is the approach followed by most compilers.

Using a household survey to collect the above-mentioned information could be done in various ways. It is possible to attach a "travel/tourism" module to an existing household survey (usually, a labour force survey or an income and expenditure survey), or to a design specific procedures for observing the required variables. Because of the particularities of tourism and travel mentioned above, using a household survey is usually considered initially by countries. However, this does not result in obtaining all necessary data and should be complemented by a specific survey to observe tourism and travel. Further information is provided in the *ITRS 2008 Compilation Guide*

7.26. Data for such other BOP services items as services consumed by households online, downloaded or received by e-mail or telephone (e.g., legal services, medical advice, audiovisual or software downloads and gambling). Although households may easily identify the type of online purchases they make, it may be difficult for

households to identify whether they are buying their services locally or importing a service, and from which country. An additional difficulty is that the country of billing or marketing may not necessarily be the one that is actually supplying the service to the household. Services provided through mode 4 could be easier to identify, as when the supplier of the service is physically present to render it. This identification of mode 4 transactions for relevant services could be particularly useful for the needs identified in the present *Guide*. However, it will be necessary to ensure that respondents understand the difference between an employment relationship and a service contract. Such information could be collected through existing household surveys, such as expenditure and income surveys, or a specialized survey on the use of the Internet or a telecommunications network by households, or could be collected by developing a specific module or survey. For all those services, sampling will be important to consider, as any household could potentially be a buyer of services. In addition, many of the payments will most probably be low, possibly below thresholds that have been established in the data collection system. Many of the recommendations provided above on the selection of households and informants to collect information on travel/tourism and transport are also relevant for other services. To summarize, although it may be appealing to approach households to collect data for payments for services other than travel/tourism expenditures or related information (including international passenger transport), compilers need to consider if such an approach would provide meaningful and exploitable results for compiling other BOP services items.

D.2. Household surveys and (mode 4) receipts for exports of services

7.27. If the population of self-employed persons can be clearly established within households, it may be relevant to collect data on the value of the contracts for services provided abroad by those persons. Separately identifying those who travelled abroad to provide their services would be particularly relevant for obtaining a breakdown by mode of supply for self-employed persons. However, the issues identified above on identification of the population and informants, as well as sampling (i.e., relevance of the data source), are even more prominent in this context as the number of self-employed persons exporting their services abroad may be relatively small and difficult to identify through the use of a specialized household survey. A specialized survey could help collect certain information, such as the business travel survey described in paragraph 7.30.

7.28. To collect information concerning mode 4, compilers should consider adding a specific question in a household survey about the reason for the trip (“business trip”). In combination with the “self-employed” sociodemographic characteristic, that question can be used as a basis. If such a survey is conducted as a telephone sample, compilers should be aware that self-employed persons are difficult to reach and therefore they should also consider using a specific sample of mobile phone numbers or use a web-based survey.

D.3. Household surveys and mode 2 and mode 4 number of persons/trips

7.29. Data on the characteristics of mode 2 and mode 4 trips (i.e., contractual service supply), or the persons who are themselves travelling, could naturally be collected at the same time as the expenditure/receipt data described above. The following types of information could be collected through household surveys:

- (a) Mode 2 for outbound travel, i.e., those travelling for personal purposes and those for mode 4 or other work purposes;

- (b) Mode 4 for outbound travel, i.e., contractual service supply, intracorporate movements and services selling/establishing a commercial presence;
- (c) Mode 4 for inbound travel, i.e., the import of services by households through mode 4 contractual service supply/inbound, or inbound intracorporate transferees if those become/are residents of the compiling economy. For the latter, the issue of identification of the relevant population is particularly difficult.

7.30. Some compilers may use household surveys to collect specific information on outbound business travel. As indicated above, if such a survey is conducted as a telephone sample, compilers should be aware that frequent business travellers are difficult to reach, and they should therefore consider also using a specific sample of mobile phone numbers or developing a web-based survey. In general, when using a household survey, the compiler would focus on a specifically targeted set of the population, i.e., those travelling for business reasons, which may serve multiple needs, such as for national accounts, BOP or trade in services statistics. As it is a targeted survey, some specifically tailored questions could be included to help the compiler gather information that may be of interest for mode 4, in particular. Of course, as for other data collection described in this chapter, the level of detail one can expect from such a data source is relatively limited. However, by targeting some questions, it is possible to obtain more details on categories of specific interest to the compiling economy. Considering confidentiality issues and the sample size, mode 4 data could be presented in or aggregated to broad economic or geographical categories.

Country experience: Austria

7.31. In Austria, sample surveys of the population have proved to be the most efficient solution for gathering information on domestic and outbound tourism expenditure. Every quarter, a representative sample of the Austrian population is asked about their travel behaviour with the help of computer-assisted telephone interviews (CATI). In the questionnaire, travel expenses include “all expenses related to the trip”. During the interview, it is clearly stated that goods and services bought in the name of the traveller and made available without compensation (i.e., as a gift or invitation) should also be included (e.g., invitations to dinner, expenditure for goods and services). During the interview, it is also mentioned that imaginary rent for free accommodation should not be included.

7.32. The advantage of CATI is that the spoken text can be standardized and better monitoring of the interviews is possible. Supervisors, interviewer training, pre-tests and interviewing instructions ensure the quality of the interviews. Plausibility checks are integrated to prevent typographical errors and outliers. Warnings are programmed, for example, to pop up during the interview if the stated expenses are below specified expenditure minimums. The warnings give the interviewer the opportunity to mention again that expenditures made on behalf of the respondent must be included. Such consistency checks make sure that typographical errors and outliers are identified (signals) and replaced (hard errors) immediately.

Country experience: Netherlands: survey on outbound business travel

7.33. Statistics Netherlands has purchased a new survey on business travel to measure expenditure. It has also extended the list of purposes of the trip, which could be related to mode 4. The Continuous Business Travel survey (CBS) is a web-based survey for outbound business travel that uses the database of TNS-NIPO, a Dutch survey agency, consisting of more than 150,000 people. CBS is held every second year with one retrospective measurement executed each quarter in that year. CBS meas-

ures business trips with overnight stays as well as same-day trips and the number of travellers. The sample consists of Dutch residents aged 18 years and older, identified as members of the working population who took at least one business trip abroad in the period of review. Each quarter, 10,000 panel members from the TNS-NIPO database receive a screening question to determine if they belong to the sample. Out of that group, 1,000 Dutch residents receive a complete electronic questionnaire, in the form of a computer-assisted, web-based interview, due within two weeks. The responses to questions on gender, age, region, municipality and education of interviewees who report having gone abroad during the review period, are grossed up to reflect the totality of the Dutch working population.

7.34. The extended section of the questionnaire regarding the purpose of the trip can be related to mode 4. It suggests 15 types of activity conducted abroad, including marketing and sales, installation and repair, research, teaching and consultancy, visit to clients and visit to head office or branches, as well as variables for the nature of employment (self-employed, employee and civil servant). Additionally, the survey contains variables on education level and professional group, including farmer, professional with a higher education degree and owner of an enterprise.

7.35. By means of the extended questionnaire, the group of business travellers providing services abroad can be narrowed down in the sample, giving initial indications of the number of relevant persons. Such information could be linked to the value of services in the respective service category. However, to derive statistics on mode 4 transactions, one would need to make assumptions, in particular on the extent of the activity. The business travel survey provides some initial indications of the number of persons carrying out activities abroad as well as the allocation of the activities to service categories. The questionnaire contains a separate question on which countries were visited during the business trip abroad, which might be interesting for analytical and trade negotiation purposes. Considering confidentiality issues and the sample size, mode of supply data could be presented or aggregated to broader economic or geographical categories, such as European Union countries or other countries in Europe, Asia or Africa, or the parties to the North American Free Trade Agreement (NAFTA) or members of the Association of Southeast Asian Nations (ASEAN).

E. Labour force surveys

7.36. As indicated above, a labour force survey is a standard household-based survey of work-related statistics. In the context of statistics on the international supply of services, a labour force survey could be used to collect the following types of information:

- (a) On mode 4 outbound movements, i.e., contractual services suppliers, intracorporate transferees/employees directly recruited by foreign affiliates, and services sellers or those responsible for setting up a commercial presence (and, to a lesser extent, mode 4 inbound movements for contractual services suppliers and intracorporate transferees/employees, if the persons become resident). That is the most relevant use for a labour force survey;
- (b) On consumption/expenditure of those travelling abroad for business purposes (mode 2, relevant for travel debits and outbound tourism expenditure), i.e., goods and services actually consumed by the person in the context of his travel, not on behalf of his employer;
- (c) On the acquisition of services on behalf of the respondent's employer or more generally on a business-to-business basis (mode 2);

- (d) On sales/exports of services on a business-to-business or business-to-consumer basis, which will be relevant mainly for self-employed persons (modes 1, 2 or 4).

7.37. Labour force surveys are widespread and reasonably standardized. Modules can be added to such surveys for multiple purposes, for example, for obtaining information on persons moving in the context of mode 4 or changing the subject matter in each round, from questions on the labour force to questions related to mode 4 movements, for example.

7.38. Labour force surveys can identify the individuals in the household who are self-employed (and whether they are employers or not) and who are employees, as well as their principal job and the industry it relates to. A labour force survey can also determine the type of production of the employer, if the individual is an employee (and, in some instances, the size of the company), or that of the self-employed persons. Such information is of interest in the context of mode 4. However, the important factor for identifying mode 4 is whether the individual went abroad in the context of his or her work, but is based in the home country of his or her place of employment.¹⁰⁰

¹⁰⁰ See chapter 1 and MSITS 2010, box V.2.

7.39. To use labour force surveys with the purpose of separating mode 4-related movements from international labour mobility requires including a limited number of questions on recent visits abroad by household members for the purpose of work, e.g., questions about the contracting parties, the duration of the visits abroad and the forms of payment. Such information may be relevant mainly for sending countries in respect of mode 4, which covers contractual services suppliers and those travelling for negotiating purposes. In the case of intracorporate movements, as well as the migration of self-employed persons, such surveys could be relevant for receiving countries, but with a different set of questions.

7.40. For countries or regions in which mode 4 is potentially important and/or the population is relatively well covered by the sample, it may prove useful to add appropriate questions in the surveys. A specific module, similar to the one proposed by the International Labour Organization (ILO) for labour migration, could be developed.¹⁰¹ In order to identify such movements, questions, as illustrated in box 7.3, could be added to the questionnaire or developed in a specific labour force survey module on mode 4. If deemed relevant, other questions could be added to gather more information, as outlined at the beginning of this section. However, it is once again important to note that compilers need to analyse the potential benefits and, most importantly, the costs associated with the use of such a source, in particular if they want to go further than the purely mode 4 information needs.

¹⁰¹ At the time of writing, the module for labour migration had already been applied in Thailand and Armenia

7.41. It is recognized that such an approach cannot be generally adopted without a thorough analysis of the importance of the different mode 4 categories for a country. Some countries are more concerned with the fact that their workers are temporarily sent abroad to fulfil services contracts, whereas others tend to receive many self-employed persons or see a large number of incoming intracorporate movements of personnel who operate from a base in the host economy (as per relevant modes 3 and 4 commitments, often combined). Since such movements may be limited to a specific region within a country, an additional module may be envisaged for respondents of that particular region only.

7.42. It is potentially mutually beneficial for countries with labour force surveys to cooperate at the national and/or regional level on the production of such labour migration or mode 4 statistics. Responses clarifying employment status, in combination with demographic indicators, could be useful for the compilation of mode 4 sta-

tistics. Such cooperation could ensure consistency with enterprise surveys that cover similar subject matter.

7.43. It is, therefore, good practice to cooperate with agencies that have a common interest in collecting statistics on such items as national accounts, balance of payments, migration or tourism. Integrated enterprise and social surveys, such as the European Union Structure of Earnings Survey, the Workplace and Employee Survey of Canada or the National Compensation Survey of the United States, could also be built to collect information on duration at workplaces abroad, and could provide valuable information on wages, industry and other relevant items. It is, therefore, important for compilers to contact the units in charge of the respective surveys or subject matter. Chapters 2 and 3 provide more information on legal frameworks and institutional arrangements.

Country experience: European Union member states

7.44. The European Union Labour Force Survey (EU-LFS) programme provides an example of the possible benefits (at the time of writing, unexploited) of cooperation at the regional level of producing labour migration or mode 4 statistics for mutual benefit, given that all member countries of the European Union and the European Free Trade Association (EFTA) have coordinated reasonably well their labour force surveys.¹⁰² An additional illustration is the European Working Conditions Survey,¹⁰³ which provides an overview of working conditions in Europe using different indicators for working conditions of both employees and the self-employed. The combination of the employment status and the demographic indicators, both included in the survey, is potentially useful for compiling mode 4 statistics.

¹⁰² See source: <http://www.eurofound.europa.eu/surveys/ewcs/index.htm>.

¹⁰³ For more detailed information on the results, common practices, methods and definitions of the European Labour Force Survey, see the dedicated section on Eurostat's website from <http://ec.europa.eu/eurostat/web/microdata/european-union-labour-force-survey>.

Box 7.3

Sample questions for inclusion in a labour force survey module on mode 4

The following questions could be included for *sending* countries:

- (a) Did you work in a country other than your country of residence in the past period (e.g., year, months)?
- (b) In the past year, were you employed in a country outside your country of residence?
- (c) If so, in which country is your employer?
- (d) Were you employed by an employment agency?

The following subsequent questions would capture further information on contractual service suppliers (i.e., those who are self-employed or who are resident and employed in the compiling country, i.e., those who replied "No" to question B):

- (a) In the context of your work, did you travel abroad in the past year?
- (b) How long did you stay abroad?
- (c) How many trips did your travel entail?
- (d) Did you travel abroad to fulfil a service contract in the destination country:
 - i. With a third-part client?
 - a. Was it a firm?
 - b. Was it a household?
 - ii. With an affiliated firm?

It may be of interest to obtain further data on services sellers or persons negotiating the establishment of a commercial presence:

- (a) Did you travel abroad to negotiate a contract?
- (b) Was it a service contract?
- (c) Did you travel abroad to negotiate the establishment of an affiliate/branch?

Some questions could be added to ascertain if an employee travelled abroad on his/her own or with colleagues:

- (a) If you are an employee, did you travel with some of your colleagues?
- (b) If so how many?

Compilers should pay attention to the issues of double counting, as well as the interpretation and extrapolation of information obtained for this question. A solution could be to design processing algorithms to avoid double-counting.

For a self-employed person or employer, the following questions could be asked:

- (a) Did you send some of your employees to fulfil a contract with a client abroad?
- (b) If so, how many?

For *receiving* countries, it may be useful to gather information for intracorporate transferees and self-employed migrants. The identification of the country of residence (of origin, or in last period) may be a first indication. If the individual comes from a foreign country, then the following questions would be useful:

- (a) Did you come to work in an enterprise affiliated with your previous employer?
- (b) Did you enter this country to develop a business?

F. Border surveys

7.45. Border surveys count or survey persons who are travelling when they enter or leave the country. Such sources can be used to collect information on the characteristics of trips and travel, and are useful for deriving estimates of travel and tourism expenditures, as outlined in box 7.1. However, they can also be used to collect information to compile data on the number of mode 2 and mode 4 trips/persons. In 2005, the World Tourism Organization (UNWTO) carried out a study entitled “Tourism as an international traded service” in which 26 out of the 34 responding countries from a sample of 48 countries considered representative of a wider group of countries specified using border surveys. Given the strong link with tourism information needs, it is good practice to identify how stakeholders could cooperate in collecting the details necessary to respond to all information needs. Chapters 2 and 3 provide more information on the legal and institutional arrangements.

7.46. **When to survey?** The circumstances in which information is collected are relevant for the quality of the data. In the case of inbound flows, information must be collected from the person as he/she is leaving the country in which he travelled. In the case of outbound flows, the information can be collected either at the moment of re-entering the country of residence or after the travel is completed within the usual environment of the person. This allows the observation of actual expenditure because persons are interviewed once and only after the expenditure has taken place. If they were asked about their expenditure before their travel ends, upon entry for inbound travel and exit for outbound travel, then only expected expenditure would be observed. The particular case of inbound travel makes the observation challenging, as time is short upon departure, and the person might not be in the appropriate mood to answer a complicated questionnaire. Additionally, if the flows of certain categories of persons are small, it would possibly require a sample of a relatively bigger size or a deliberate oversampling with suitable correction methods. It is strongly recommended

that a specific set of questions be designed to enhance the accuracy of estimates and break them down into categories.

7.47. UNWTO developed a model border survey that is included in *International Recommendations for Tourism Statistics 2008 Compilation Guide*.¹⁰⁴ The model questionnaire includes five sections: (a) travellers, (b) means of transport, (c) about your stay, (d) acquisition of services in your country or other country before arriving in our country and (e) acquisition of goods and services in our country booked or paid either before, during or after the trip. The UNWTO *Compendium of Tourism Statistics* also presents a broad range of data and indicators being collected by a significant number of countries, in line with IRTS 2008, that could give an indication of what data should be collected to compile a basic set of data.

¹⁰⁴ *International Recommendations for Tourism Statistics 2008 Compilation Guide*, annex 1.

7.48. **Organization of border surveys.** Border surveys must be organized differently depending upon whether they refer to airports, land borders, sea ports, ports on rivers or cruises. The more extended practice refers to airports. The organization of the surveys, the sample design and the questions that can be asked also differ extensively because of the different circumstances in which the surveys can be undertaken, in particular the time that can be assigned to the interview or to filling in the questionnaire.

7.49. **Means of conducting border surveys.** In the same manner as other surveys, the border survey can be conducted in various manners, including (a) paper questionnaires distributed to preselected persons who fill them out (provided the questionnaires are available in multiple languages, with clear instructions); (b) paper questionnaires filled by an interviewer; or (c) electronic questionnaires filled out by an interviewer using a handheld device that feeds it directly into a validation program. While for a household survey, it is possible to follow up with the informant if information turns out to be inconsistent, it is difficult or impossible to follow up in the same way with a border survey.¹⁰⁵ Consequently, the questionnaires should be clear enough to minimize errors in the provision of the required information. For example, a well-designed electronic questionnaire to be filled out directly on a tablet computer by a person as he/she is leaving the country visited (at some strategic location where he/she has to wait anyway) could facilitate the conducting of face-to-face border/travel surveys.¹⁰⁶

¹⁰⁵ Some countries have tried returnable questionnaires, but this has not proved very useful, because the few who return it may not have the same profile as those who do not return it. However, New Zealand has developed an online questionnaire in which random sampling is done after airport security and respondents provide information at a later stage.

7.50. **Treatment of travelling parties.** Because visitors often travel in parties, in which the most important expenditures are shared, some countries have tried to use different questionnaires for persons travelling alone and for those travelling in parties to facilitate the collection of information; common expenditures would be collected only once for the whole party, while the personal characteristics of each party member must be collected. This might be good practice, especially if dealing with travel for recreational purposes.

¹⁰⁶ The computer-assisted personal interviewing (CAPI) system technique was used in Morocco for the first time in 2013 for the survey on travel conducted by the Ministry of Tourism at borders. The CAPI technique entails conducting interviews by means of tablet computers on which questionnaires are installed. Answers are entered into the computer and data is sent in online to the database after predefined checks and control processes. The tool helps to improve quality, reduce cost and save time.

7.51. **Working with specific characteristics.** For borders where the flow of persons is almost permanent (land borders, airports), and where it is difficult to maintain the period of observation overnight, it may be useful to work with specific characteristics. In the case of air travel, for example, flights originating in certain locations or terminating in certain destinations are often grouped within certain time brackets.

7.52. Finally, an observation should be made on the survey procedures themselves. When observing flows of persons over the border (with the exception of cruise ships), it is not possible to determine whether the person is a resident (leaving or returning) or a non-resident (arriving or leaving), yet only those who have terminated a trip should be interviewed. The imbalance in questionnaire responses corresponding to the different situations might result in false information.

7.53. Compilers should refer to box 7.1 for information on the characteristics and breakdowns needed. Box 7.1 outlines, in particular, the difficulties regarding the break-

down of expenditures by product as well as the issues of seasonality and the conduct of the survey. Compilers should be aware, nevertheless, that the extent of the information and the type of details that can be collected will depend to a large degree on the length of the interview. For example, in surveys at a land border, interviews must be very short, so the questionnaire should contain only the most essential types of questions.

7.54. It is important to ensure that no category of persons is excluded from the survey (e.g., the survey should cover persons outside the definition of visitors used in tourism statistics), but a clear distinction should be made for each category so that the compiler can select the population of interest to his/her statistical domain.

F.1. Organization of surveys at different border points

7.55. **Airports.** The observation of travel flows through airports and their corresponding characteristics and expenditures should be relatively straightforward as the flows are clearly defined (various types of administrative records should be available from the airlines, customs control and airport administration) and travellers have time to answer (either upon departure, after checking in and before boarding; or upon arrival, after disembarking and before leaving the terminal). This makes it possible to interview them at the end of their trip and observe the corresponding expenditures. In some cases, it might also be possible to distribute questionnaires on board the aircraft, before arrival or just after take-off, provided that the airlines cooperate.

7.56. In the case of airports, the statistical design should take into account the information provided by the airlines on anticipated flights, their origin or destination and their capacity and expected number of passengers. On such a basis, and with some assumptions on the proportion of passengers residing abroad or in the country of reference, it is possible to define a sample. For a given flight, some countries might decide to survey all passengers, whereas others prefer selecting respondents, on a quota basis or systematically, or even allow the interviewers to select the persons they interview. For the sake of completeness and accuracy, it is preferable to interview all persons of a selected flight. Quotas, usually based on country of residence, provide skewed results, as the country of residence is not a good explanatory variable of expenditure, if not associated with others, such as duration of stay or purpose of trip. In the case of interviewers selecting informants, the skewing of the results can be all the greater. An additional difficulty may reside in interviewers who do not have access to airline lounges for conducting the surveys and can access potential respondents only at departure gates. It is suspected that those who use the services of airline lounges have significantly different expenditure patterns from those who do not have access to the lounges, possibly resulting in a serious bias for the estimates.¹⁰⁷

¹⁰⁷ Note that many mode 4 persons transit through airport lounges.

7.57. **Land borders (road).** The situation at land borders (road) is very different from that previously described for airports since, frequently, the flows of persons over the border are not well known, either because there is no control at all, such as in the case of countries in the Schengen area, or because control is limited to a certain subset of flows (as in the case of bilateral agreements that facilitate the movements of persons living near the border post) or even because it is impossible for the border control authority to control all border-crossings, legal or illegal. Therefore, it is good practice to measure the flows of persons over the border and to qualify them subsequently as either "visitors" or "other categories of persons travelling". Such measurement might be done automatically with counting devices that capture vehicles (private cars, buses or trucks), to which an average number of passengers can be imputed, as well as capture their licence plates, from which the country of residence of passengers in private cars can be derived. In the case of buses, a list of passengers and their nationalities is available in most countries.

7.58. **Land borders (railways).** In the case of land borders crossed on international railways, the case is similar to that of airports. The railway companies should be able to provide the number of passengers and, in some instances, such rough characteristics as a breakdown of passengers into first and second class. A sample could be designed on the basis, for example, of persons seated in a given part of the train, mirroring the design of the satisfaction surveys used by railway companies.

7.59. **Cruise ships.** For some countries, such as those in the Caribbean, persons arriving aboard a cruise ship represent a very significant share of total arrivals and travel expenditure. The number of passengers aboard and their characteristics in terms of residence are known, as well as the characteristics of the crew. In the case of cruise ships, ferries, yachts and all types of recreational vessels, the captain is usually requested to provide the port authority with a list of passengers and crew on board (a manifest), indicating name, surname, nationality, passport number and any additional information that authorities might decide to request. Expenditures in the country visited occur when cruise passengers disembark, although they might also purchase packages on board to visit places of interest. Cruise ships necessarily use specific moorings, and embarking and disembarking are controlled by customs officers. It is good practice to apply a simplified questionnaire, either to all passengers or to a sample, in order to collect information on their expenditure.

F.2. Border surveys and number of mode 4 trips or persons

7.60. Border surveys can be used to collect further information on modes 2 and 4 trips persons or details, if an initial indication of the purpose of travel has been obtained, either through the counting mechanism identified above or through such administrative records as arrival and departure cards and immigration counts. The relevant questions in existing questionnaires should relate to travel for personal, business or professional purposes, the two latter being more closely related to mode 4. Information on the characteristics of modes 2 and 4 border crossers could be obtained by adding supplementary detail to existing border and passenger survey questionnaires. However, it is important to note that information collected through such sources will most likely relate to the number of trips rather than the number of persons. When it comes to mode 2, the former would be the preferred option, whereas for mode 4 there would be an interest in both.

7.61. If the flows of certain categories of persons are small, as might happen for certain detailed categories of service suppliers, it would possibly require a larger, and more costly, sample, or a more targeted one, than when fewer categories are considered, in order to obtain sufficient information. For mode 4, a mechanism for targeting business travellers more specifically would be useful, for example, surveying travellers in airport lounges.

7.62. IRTS 2008 suggests the collection of information that would be very useful for approaching the number of mode 4 trips/persons. Recommended elements include a breakdown of purpose of stay into personal and business and professional activities. Among the professional activities, the self-employed are explicitly mentioned as are other types of persons travelling for professional reasons, such as business people and investors. Information on attendance at meetings, conferences or congresses, trade fairs and exhibitions is also recommended.¹⁰⁸ Compilers should further consult the IRTS 2008 *Compilation Guide* and closely cooperate with the compilers of tourism statistics to make the most effective use of such a data source.

7.63. A starting point for identifying mode 4 activities would be to identify people travelling internationally for business or professional purposes. As previously

¹⁰⁸ The scope of that business and professional category is described in para. 3.17 of IRTS 2008: "business and professional". That category includes the activities of the self-employed and employees as long as they do not correspond to an implicit or explicit employer-employee relationship with a resident producer in the country or place visited, or those of investors, businessmen, etc. It also includes, for example, attending meetings, conferences or congresses, trade fairs and exhibitions; giving lectures, concerts, shows and plays; promoting, purchasing, selling or buying goods or services on behalf of non-resident producers (of the country or place visited); participating in foreign government missions as diplomatic, military or international organization personnel, except when stationed on duty in the country visited; participating in non-governmental organization missions; participating in scientific or academic research; programming tourism travel, contracting accommodation and transport services and working as guides or other tourism professionals for non-resident agencies (of the country or place visited); participating in professional sports activities; attending formal or informal on-the-job training courses; and being part of crews on a private mode of transport (corporate jet, yacht, etc.).

described, such information might be available from arrival and departure card data, which could be used for a first stratification/selection for identifying business travellers (see also chapter 9). However, not all of the people in that group will represent mode 4. For example, people travelling overseas to receive a service, such as attending a conference or workshop, are also likely to select business or professional as their purpose of travel on an arrival or departure card, unless those cards include a separate option for the category of the relevant service.

7.64. Small modifications can be included in existing surveys to capture the mode 4 movements of natural persons. Adding such questions to border surveys will require close cooperation between those in charge of tourism and trade in services statistics. The questions suggested in IRTS 2008 on the purpose of the business trip could, for example, be extended as shown in paragraph 7.65. This would allow the differentiation between persons attending meetings, conferences, trade fairs and exhibitions and those who are of interest for mode 4.¹⁰⁹ The suggestions for questions, listed below, have been developed from the perspective of incoming persons. Similar questions could be developed from the perspective of outgoing persons.

¹⁰⁹ Care should be taken about the use of the non-specific term "meeting", since a meeting can be with a specific client to deliver a particular service, and would be of interest under mode 4.

7.65. The following are sample questions for a business or professional visit/trip:

Are you here:

- to attend meetings, conferences, trade fairs or exhibitions?
- for other business and professional purposes?

In order to identify mode 4, the response to the next question could be combined with the response on length of stay. The question could be formulated in several different ways, including the following two options:

First option:

Are you employed:

- in the domestic economy?
- abroad?

Or are you self-employed?

Second option (this option focuses more directly on the mode 4 supply of service):

Are you here to fulfil a service contract:

- as a self-employed person?
- as an employee sent by your employer?
(alternative: Did your employer send you abroad?)

Are you coming to work in an affiliate of your employing company?:

- as a services salesperson?
- to negotiate the establishment of an (services) affiliate?

It is important that the questions be formulated to be understood by respondents, for instance, through the use of explanatory notes.

7.66. Information on the occupation of the person could be collected, possibly presenting a short list relevant for the compiling economy. For example, specific information could be sought for those supplying maintenance and repair services, since that is a category of particular interest for many economies. Alternatively, the respondent could be asked to specify the service activity of his/her employer, such as "agriculture, forestry and fishing", "water supply; sewerage; waste management activities", "construction" and "information and communication". The activities of the employer, preferably consistent with ISIC, could also be listed in the notes attached to the questionnaire, but that is a second-best solution.

7.67. Some persons moving internationally under mode 4, especially intracorporate transferees, would be staying abroad for longer than 12 months; they could be excluded from tourism/travel border surveys if respondents are told not to respond if that is the case. However, it would be good practice to adopt an integrated approach, designing and conducting the border survey to collect information on all respondents, and then selecting the information needed for different statistical domains. For example, for tourism statistics, the compiler would select only visitors with trips of less than 12 months, while other persons, either visitors or those travelling for other purposes, with stays of various lengths, could be of interest in the context of MSITS 2010.

7.68. In addition, compilers must take into consideration the national treatment with regard to the duration of stay that determines whether or not an international traveller is required to register as a resident rather than be regarded as a visitor. The may need to be adapted accordingly.

7.69. As indicated above, rough estimates may be derived with no or little additional cost for the collection system. Unless it is possible to develop specific modules towards well targeted mode 4-related samples or identify ways to better exploit the existing data collection, only approximate estimates for mode 4 data derived from border/passenger surveys may be determined.¹¹⁰

7.70. At least in some countries, using border surveys to collect additional mode 4 information may involve certain challenges, such as the cost of the survey and the size of the sample, which may need to be enlarged to ensure the representativeness of small sets of the population. In addition, the interview duration, and consequently the survey's total cost, may increase or the survey form may become more complex or lengthy. Compilers must not forget that border survey managers are already pressed by other users, in particular tourism sector users, who are willing to expand the questionnaire for tourism-related aspects. That is why it is important that there be strong cooperation between the potential users of such data, for example, those interested in tourism, BOP or trade in services, to identify the synergies and priorities according to the specific information needs of the economy.

Country experience: Italy: border sample survey

7.71. Since international tourist flows are very important in Italy, Bank of Italy uses an extensive border sample survey. The size of the survey and its sample design enable the production of high-quality analytical statistics on many aspects of international tourism in the country. The intended objectives of the data collection system are essentially: (a) ensuring the high quality of the statistics of the "travel" item of the BOP and better adherence to statistical standards established at the international level and (b) providing disaggregated data on a large number of characteristics of the tourism market for use by central and local government bodies, the tourism industry and researchers. The technique used for the collection of data consists of interviewing a representative sample of persons, both residents and non-residents, in transit at the Italian borders, while at the same time estimating their number and nationality. The sampling is carried out independently at each type of border (roads, railways, international airports and ports), which are selected as representative. The methodology of the survey is to provide estimates of expenditure on international tourism in Italy through the application of two distinct operations at the chosen border crossing points: the counting operation and the interview.

7.72. The counting operation is based mainly on the technique of systematic sampling, with each observation of one unit being n , with n predetermined. The counts provide the number of persons travelling at each border point, disaggregated

¹¹⁰ See chapter 16 for more information. The Statistics Division website provides information on existing border surveys and compilers are advised to familiarize themselves with the questions relevant for mode 4.

by country of residence. The counting operation is necessitated by the lack of administrative information with the required level of coverage, detail and timeliness on the physical flows of persons. The face-to-face interviews provide an estimate of expenditures and a set of attributes that allow its disaggregation and qualification. The interviews are conducted with a structured questionnaire submitted to a random sample of persons travelling at the end of the stay abroad (i.e., when residents are re-entering Italy and non-residents are leaving). That technique lowers the number of errors in the respondents' report of expenses incurred compared to, for example, a telephone survey conducted sometime after travel has been completed.

7.73. The questionnaire is the same for all border points. The main information requested, with varying levels of detail, includes: sex, age and occupation; location; means of transport used (with possible detail of the airline or ship used); reason for the trip (if "vacation", the type of holiday); place visited (foreign country for residents of Italy, Italian province for residents abroad); number of nights spent on the trip; type of accommodation used; travel arrangements (inclusive or not inclusive); total expenditure, broken down by type of product (transportation, lodging, restaurants, shopping and other services); method of payment; and level of satisfaction about various aspects of the place visited and of the stay.

7.74. In 2011, 145,000 interviews, or about 1.1 per thousand of total Italians and foreigners crossing the borders of the country, and about 1,550,000 counts of persons travelling, were carried out. The sample is stratified by different variables for each type of border. The stratification variable "direction", with the two modalities "to Italy" and "to abroad" and the variable "type of carrier", with four modalities (road, rail, air and sea), are recorded exhaustively, i.e., respondents are Italian and foreigners crossing all types of borders. The survey covers 82 border points (42 for roads, 5 for rail, 24 for airports and 11 for ports), i.e., the most important in terms of annual flows, although a limited number of small border points were selected to capture origin-destination routes that were otherwise poorly represented in the survey. The selection was based on data from the Italian statistics office (ISTAT) when the survey was begun, and was thereafter updated through the evidence of the border survey itself, which monitors some border points on a rotating basis. The border points were chosen on the basis of data from ISTAT and the National Civil Aviation Authority (ENAC). The choice of number of border points sampled was reduced over time to optimize costs. Specific procedures for conducting the counting operation and the interviews were established for each type of border.

Country experience: Philippines: measuring inbound tourism

7.75. The main source of inbound statistics in the Philippines is the arrival card, which is filled out by all travellers entering the country. The Philippine Department of Tourism (DOT) and the Bureau of Immigration (BI) are jointly responsible for encoding, processing and generating reports on the volume of international visitor arrivals, as sourced from the arrival card, which has been identified as a "designated statistics" for tourism under an executive order in 1996. Although removing the arrival card has been proposed, DOT and BI are working together to improve the appearance and functionality of the arrival card to ensure that it remains a vital and critical data source for decision-making by the Government and the private sector with regard to tourism development and promotion. The critical data in the arrival card relevant to tourism are the country of residence and the purpose of the visit.

7.76. A visitor sample survey is also administered by DOT on a regular basis in all international airports of the country to generate statistics on the demographics or profiles of visitors and their travel characteristics. The most critical data in the sur-

vey is the determination of the length of stay and the average expenditure of visitors, since they are important parameters for estimating visitor receipts. The survey complements the data gathered from the arrival card as a major source of information for inbound tourism statistics and the tourism satellite account.

Country experience: France: characteristics of international visitors and tourism trips

7.77. In France, a border survey is conducted every quarter (20,000 questionnaires) by a private subcontractor. Entitled *Enquête auprès des visiteurs venant de l'étranger* (EVE), the survey permits the collection of quantitative data on trips (same-day visits included) in France by non-resident visitors, and is conducted just before they leave French territory. One major purpose is to collect data on the physical flows of non-resident visitors (arrivals, tourist nights, same-day visitors, etc., broken down by country of usual residence). Another major purpose is to provide data requested by the statistical service of the central bank, Banque de France, for use in estimating the travel receipts item for the French BOP. The survey also collects data requested for French tourism market analysis (categorical data on non-resident visitors, main purposes of trip, places visited in France, activities during the stay, types of accommodation, modes of transport used, etc.). The General Directorate for Competitiveness, Industry and Services is interested in both monetary and non-monetary variables. The sample is stratified in order to calculate results for 22 countries or groups of countries. Manual headcounts are conducted and EVE questionnaires are used at the same locations, except in the case of questionnaires relating to travel by road, which are used at car parks along motorways near the French border. Dates of arrival and departure are indicated by the respondent.

G. Complementary surveys of persons

7.78. It is possible to survey non-residents travelling in the compiling economy either in places of accommodation (hotels and other kinds of accommodation) or in sites of tourism interest. Although that type of procedure presents some limitations, many countries use it as an alternative or complement in cases in which border control systems are incomplete or unreliable. The information ideally to be collected is outlined in box 7.1. It could also be used to collect quantitative and qualitative information on mode 2 or mode 4, as deemed relevant.

7.79. The first challenge is to identify the non-residents among the guests of the means of accommodation. In the case of the observation of such persons at the collective accommodation, two major limitations usually exist. First, not all stay at a collective accommodation. Studies in many countries have shown that the form of accommodation is a determinant of average expenditure per day, so that such a variable observed for those staying at a collective accommodation cannot be extrapolated to others. Another limitation is associated with the fact that when surveying at places of accommodation, the travellers have not yet terminated their stays; as their total expenditure is not uniformly spread over the whole duration, their average expenditure per day cannot be extrapolated to their expected length of stay. Additionally, a person on a unique trip might use more than one hotel, a situation that alters the probability of being selected.

7.80. There are similar drawbacks in the case of surveys at visitor attractions, namely, that not all persons travelling visit those attractions, the probability of visiting an attraction is not known and a given person might visit more than one attraction. As a consequence, information based on surveys at visitor attractions could be biased. Any information derived for the whole population should take into account such a bias.

7.81. Finally, complementary data could be collected on specific sets of the population travelling. This could be particularly relevant for medical patients or students. Indeed, given the particular characteristics and expenditure patterns of some categories of persons, it may be relevant to capture information through a dedicated survey, e.g., an expenditure survey of foreign students (other than education fees, if those can be collected through other more relevant means).

Country experience: Austria and below-threshold establishments

7.82. Austrian accommodation statistics provide information about the number of arrivals and nights spent in rented accommodation establishments in Austria. The data is based on a cut-off sample. About 1,600 municipalities (two-thirds of the total number of municipalities) are selected according to the number of nights spent (at present the threshold is 1,000 nights spent per year) and report the data to Statistics Austria. The data include all rented accommodation establishments; no threshold concerning the number of beds per establishment is applied. The results of the accommodation statistics show the importance of rented private accommodation in Austria. On the basis of regulation 692/2011, Austria reported to Eurostat 77.16 million nights spent by non-residents in 2012. However, that figure represents only 81 per cent of the total number of nights registered in rented accommodation establishments because an additional 17.89 million nights were registered by non-residents in rented private accommodation establishments. Therefore, in 2012, 19 per cent of the nights registered by non-residents in rented accommodation establishments in Austria were spent in rented private accommodation establishments, which are out of the scope of regulation 692/2011.

Country experience: Australia and the survey of students

7.83. Education related travel services, one of the largest contributors to service exports in Australia, are derived using a modelled approach. The approach combines data on the number of foreign students studying in Australia with estimates of expenditure by foreign students on course fees and on other goods and services.

7.84. Estimates for the number of foreign students studying in Australia are based on quarterly stock data for a range of study-related visa subclasses provided by the Department of Immigration and Border Protection of Australia. Estimates of student numbers for the inter-quartile months are compiled using information from overseas arrivals and departures data of the Australia Bureau of Statistics (ABS), with a small adjustment made to account for permanent migration.

7.85. Monthly estimates of course fees per student registration are derived from international student fees data supplied by Australian Education International. That data set is supplied by the educational sector on a per-semester basis. The data are then split into months, according to the number of students studying in Australia for each month in that semester (as estimated above).

7.86. Monthly estimates of per-capita expenditure on other goods and services by foreign students are derived from data collected in the survey of international students studying in Australia, conducted by Universities Australia. The survey provides estimated average weekly expenditure on goods and services for selected educational sectors, which is then converted into a monthly estimate. As the survey is conducted irregularly, most recently in respect of the 2010 calendar year, estimates are interpolated between survey years and extrapolated to the most recent period, with reference to the ABS all groups consumer price index.

Chapter 8

International transaction reporting system

8.1. One of the sources used for statistics on international trade in services is the international transactions reporting system (ITRS). Chapter 8 describes how the ITRS can be used and discusses its advantages and disadvantages as a data source. It should be noted that MSITS 2010 and the present *Compiler's Guide* deal with the use of the ITRS for the compilation of statistics on international trade in services. In doing so, they are consistent with the IMF *Balance of Payments and International Investment Position Compilation Guide*) that discusses the ITRS¹¹¹ as a source for compiling BOP and international investment position statistics.

¹¹¹ See *BPM6 Compilation Guide* for more information on the use of the international transactions reporting system (ITRS) for other parts of the balance of payments at <http://www.imf.org/external/pubs/ft/bop/2007/bop6comp.htm>.

A. Summary of good practices

8.2. Compilers are advised to use the ITRS as a source for statistics of international trade in services, to review the advantages and limitations of that data source, as summarized in table 8.1, and to assess that data's relevance and comparative importance in the context of their countries. In particular, it is good practice for compilers to explore to what extent it is possible to mitigate the limitations of that source by using such additional data sources as surveys. Some of the limitations are the undercoverage of small transactions when reporting thresholds are in place; the absence of data on services that cannot be measured or identified via the ITRS; problems with the recording of partner countries; and a lack of information on breakdowns by modes of supply.

Table 8.1

Summary of the advantages and limitations of the international transactions reporting system

Advantages	Limitations
<ul style="list-style-type: none"> • Timeliness and high frequency: facilitates data compilation • Comprehensiveness: new reporting entities can easily be covered • Limited number and stability of respondents : banks can report on behalf of their clients • Burden of reporting and compiling is not heavy once the international transactions reporting system is implemented • Reporting is often mandatory 	<ul style="list-style-type: none"> • Use of thresholds (simplification or exemption) has effect on data accuracy • Transactions are approximated by settlements. • Possible misclassifications of services items, in particular for some detailed EBOPS 2010 items. • Geographical allocation may be biased (country of settlements versus country of transactions). • An increased number of transactions and growing share of inter-company transactions with netting practices makes it difficult to manage.

B. General description and purpose of the international transactions reporting system

8.3. The ITRS is a system of collecting data of individual international settlements and/or transactions as reported by banks, enterprises and/or households.¹¹² In the present *Guide*, the ITRS system, in which reporters are resident banks that report to the authority (the central bank in most cases) on behalf of transactors (enterprises

¹¹² See also *BPM6 Compilation Guide*, para. 4.2.

or households) is called a bank ITRS, while the ITRS based on reports to the authority from transactors themselves is called a direct reporting ITRS.

¹¹³ In countries in which the ITRS was not maintained after the abolishment of foreign exchange controls, surveys have become main source for statistics on trade in services and the focus has already shifted from settlement to transaction data.

¹¹⁴ See *BPM6 Compilation Guide*, para. 4.3.

8.4. In most countries that maintain an ITRS, the reporting is mandatory. Because the ITRS is often a by-product of present or past foreign exchange controls, the data collected involve settlements (as opposed to transactions).¹¹³ The most comprehensive ITRS collects data on (a) settlements with non-residents through resident banks, (b) settlements with non-residents through non-resident banks, (c) settlements with non-residents through intercompany accounts and (d) transactions without cash settlements.¹¹⁴

8.5. Historically, the use of the ITRS started with settlement reports by resident banks in most countries. However, as resident transactors increasingly started to use non-resident banks for international settlements, direct reporting from such transactors (i.e., not through resident banks) became necessary to maintain the completeness of data collection. In addition, requests of resident banks to reduce reporting burdens have made data collection more dependent upon reporting from transactors.

8.6. When the bank ITRS is complemented with direct reporting, the information included in the ITRS can be extremely useful for identifying the major players involved in international trade in services, especially if the reports include not only settlement amounts, but also the names of transactors.¹¹⁵ In some countries, the framework of the ITRS is maintained even after the introduction of surveys specifically to capture international settlements with large amounts. By accumulating such information, a balance-of-payments enterprise register can be established, which can be used when conducting periodical surveys to measure small value transactions or adopting survey systems in place of the ITRS (see chapter 5, on business registers and survey frames). For the proper maintenance of such a register, the international payments database would need to include, at least once a year, the total sum of transactions in services conducted by individual enterprises.

¹¹⁵ This point is especially important for countries changing their collection system from a bank ITRS to direct reporting and surveys.

8.7. In addition to its use for statistics of international trade in services, the ITRS can also be used for statistics of other financial transactions, as the ITRS can cover a wide range of financial operations, including currency exchanges in foreign exchange companies and bank information on settlements, as well as position and flow data regarding foreign assets and liabilities.

C. Using the international transactions reporting system for collecting data on international trade in services

8.8. There are many reasons that the ITRS can be useful for collecting data on international trade in services. First, the data are collected frequently and in a timely manner.¹¹⁶ Data can be reported as soon as international settlements have been completed, in an exhaustive way, at least when there is no reporting threshold or it is very small. The transaction codes included in the ITRS for identifying the purpose of the settlement generally facilitate classification in conformity with the recommendations of MSITS 2010, except in some cases in which it is difficult to obtain the appropriate information, such as for FISIM and construction and for certain detailed EBOPS 2010 classifications, as discussed in paragraphs 8.10, 8.12 and 8.16-8.19. Indeed, the classification of international settlements according to the type of transaction (although with precautions against misclassification) is the most important condition for the ITRS to be used in compiling statistics of international trade in services.

¹¹⁶ See *BPM6 Compilation Guide*, para. 4.69.

8.9. An additional benefit of the ITRS is that it can be maintained with relatively light burdens of reporting and data processing.¹¹⁷ In a bank ITRS, the reporting burden is concentrated in banks in which the procedures of reporting are relatively mechanical, once the ITRS is implemented, and can be computerized. Data compilation is generally also efficient because its procedure is mechanical and compilers do not have to depend on complex statistical techniques that are often used for grossing up survey results. In addition, new reporting entities can easily be covered if they have significant transactions. This makes data reporting more comprehensive and stable and reduces compilers' burdens significantly.

8.10. When assessing the 12 BPM6 main services components individually, data from the ITRS may be useful in compiling statistics on international trade in services for (a) manufacturing services,¹¹⁸ (b) repairs and maintenance, (c) insurance, (d) charges for the use of intellectual property n.i.e., (e) telecommunications,¹¹⁹ computer and information services, (f) other business services and (g) personal, cultural and recreational services. The ITRS is also useful for financial services, with the exception of FISIM, in which amounts are often estimated on the basis of accounting figures of financial corporations, as discussed in chapter 14. The ITRS captures construction, but it has certain limitations, as discussed in paragraph 8.18. The ITRS can be used, in part, for transport and travel. Since the compensation for transport services is often included in the total price of the goods that are transported, it is difficult to identify corresponding international settlements. In addition, in the case of travel, the ITRS may not ensure appropriate coverage in countries belonging to monetary unions, such as the euro area, since the residents of those countries who are travelling use the same currency as their own country's during intra-area journeys. Consequently, that mode of payment cannot be tracked by banks and other financial intermediaries.

8.11. Although the ITRS has benefits for collecting data on international trade in services, it also has major drawbacks that compilers should be aware of and should aim to mitigate when using that system.

8.12. First, resident banks reporting under the ITRS may have difficulty in correctly classifying each transaction to their relevant transaction codes, especially for complex cases (for example, when services are bundled with other financial transactions, as in the case of interest payments that include fees). Misclassifications may occur if the information on the purpose of international settlements is not correctly transmitted by transactors to reporting banks. A breakdown of trade in services by EBOPS 2010 categories and supplementary items and complementary groupings, as recommended by MSITS 2010, requires more detailed transaction codes. The greater number of codes exacerbates the problem.

8.13. Secondly, the transaction partner country may be incorrectly classified. The ITRS generally includes country codes of counterparties of international settlements. In some cases, however, the country of the settlements counterparty and the country of transaction counterparty differ from each other. This occurs when settlement vehicles are used by transacting enterprises, for example.

8.14. Thirdly, small value services transactions may not be captured owing to the existence of reporting thresholds. This may be particularly problematic for small value transactions made by households, such as for telecommunications, computer and information services or personal, cultural and recreational services, which may be small taken individually but can represent large amounts summed up at the level of the total economy. A bank ITRS generally has thresholds to reduce reporting burdens. The threshold can be either an exemption threshold (no reporting required under the threshold) or a simplification threshold (a lump sum amount is reported without an

¹¹⁷ Although setting up or restructuring an ITRS may be costly and may require a period of more intense contact with respondents to inform and train them on the reporting forms, procedures and coding systems.

¹¹⁸ While the ITRS may provide information about the fee charged, it may not provide the data necessary to adjust the corresponding goods transaction in the trade in goods account.

¹¹⁹ However, depending on its set-up, an ITRS may also suffer from under-coverage, as payments for some telecommunications services are made on a settlement (net) basis. Care should be taken to ensure the gross reporting of transactions (see *BPM6 Compilation Guide*, para 3.11 and p. 287).

indication of the nature of the transactions). The general trend is for reporting thresholds to rise as the regulations related to foreign exchange controls are gradually lifted. For example, in European Union countries, since the reporting threshold was raised from 12,500 to 50,000 euros, a considerable loss of information has been observed. A fourth caveat is that ITRS-based data may not accurately reflect the timing of the transaction, as the time of the transaction and of the settlement may not always match.¹²⁰ Under the ITRS, the time of settlement is the only choice for recording the time of transaction. However, there are cases in which settlements are deferred or advanced for some reason, such as in construction and insurance services.

¹²⁰ Also see chapter 11 for a more in-depth discussion of the advantages and disadvantages of using the ITRS as a data source for selected service categories.

8.15. Regarding construction, as noted in chapter 6, paragraph C.7, the use of an ITRS may give rise to several biases. First, it may prove difficult to correctly identify the relevant settlements corresponding to services transactions, in particular, in defining the residence of units conducting construction projects. For example, from a BOP perspective, a site office may be regarded as a resident if substantive (long-term) construction work is undertaken, even if legally it is not necessarily treated as resident in the host country. Second, difficulties may arise in collecting data with the required level of detail, for example for the identification of goods and services sourced from the economy in which the construction is taking place, and used as an input in a construction project. Third, the ITRS thresholds set in some countries may be too high to properly cover some of the payments related to construction projects, especially for smaller-scale work or, especially, in the case of fractionated settlements.

8.16. In some countries, the authorities oblige ITRS reporters to use foreign exchange rates fixed by the Government, rather than prevailing market foreign exchange rates. If large discrepancies exist between fixed rates and market rates, owing to fluctuations of market rates and/or the time lag between transactions and settlements, reported data do not reflect the economic reality of international trade in services.

8.17. Netting contracts can make the settlement amounts smaller than the transaction amounts. Netting is a common practice for telecommunications and postal services, among others. It is also common for multinational enterprises that use treasury centres. Ideally, data reported under ITRS should be derived from a gross basis, i.e., before netting. In the case of netting contracts, a direct reporting ITRS is more appropriate than a bank ITRS with indirect reporting. If transaction data, rather than settlement data, were reported on a gross basis using the prevailing market exchange rates, most of technical limitations of ITRS could be overcome. Although the timeliness of data reporting might be sacrificed to some extent, such an evolution of ITRS could improve the accuracy and completeness of the reported data.

8.18. Finally, an ITRS is not a complete source of information. It does not provide adequate detail for all service categories recommended by MSITS 2010 (as mentioned above in 8.10), nor for preparing the recommended breakdowns (e.g., for government goods and services n.i.e.). In such cases, administrative data may provide useful information, especially if the international settlements of Governments do not go through private banks.

8.19. Regarding statistics on the international supply of services by mode, MSITS 2010 recommends that each EBOPS component either be allocated to one dominant mode or broken down by mode. In particular, it is often difficult to identify modes of supply (e.g., modes 1 and 4) in ITRS transactions, as well as the partner countries, although those transactions may be reflected in transfers of funds or exchanges of foreign currency with a certain time lag.

D. Country experiences¹²¹

Country experience: South Africa

8.20. The research department of South African Reserve Bank (SARB), responsible for the compilation and dissemination of quarterly balance of payment statistics, relies mainly on ITRS (managed by the financial surveillance department), to compile statistics on international trade in services. The electronic ITRS was introduced in 2001, replacing the previous paper system, as a compulsory reporting system to be used by all reporting entities (banks and foreign currency exchange offices), using the United Nations Electronic Data Interchange for Administration, Commerce and Transport (UN/EDIFACT) international electronic reporting standard. During the transition, which coincided with the liberalization of exchange controls, special care was taken to ensure that the data needs for compiling balance of payments were covered. In an ITRS, the reporting entities provide all details of payments made to foreign parties by South African residents, as well as payments received by South African residents from foreign parties, irrespective of the value.

8.21. SARB considers the ITRS to be a cost-effective reporting system that provides accurate and timely information that is validated via the SARB data exchange architecture (SARBDEX). The information contains comprehensive details of all transactions including the names, surnames, addresses, identification numbers, company registration numbers, telephone numbers and physical addresses of transactors. The confidentiality of the data is guaranteed by using Internet encryption, SARBDEX senders' validation and the Society for Worldwide Interbank Financial Telecommunication's SWIFTNet system.

8.22. The ITRS of South Africa has been enhanced several times since its introduction. The most recent improvement, at the end of 2013, has also ensured better alignment with the requirements of BPM6, although it required a substantial additional investment by reporters. The ITRS is used to assist the compilation of balance-of-payments statistics in general, but from the point of view of SARB, it has special benefits for collecting trade in services data. Given that the ITRS of South Africa has no threshold, it can identify potential new services traders and serve as a sampling framework for surveys aimed at better understanding specific transactions in international trade in services.

8.23. The ITRS is seen as a primary tool for obtaining information for statistics on international trade in services. To mitigate any potential downsides related to inaccurate reporting (e.g., misclassification) the financial surveillance department conducts regular on-site and off-site inspections. In addition, the systems of the reporting entities are certified annually to ensure compliance.

Country experience: Japan

8.24. The core data source for compiling statistics on international trade in services in Japan is the ITRS, which is regulated by the Foreign Exchange and Foreign Trade Act. Under the ITRS of Japan, all residents who make payments to or receive payments from non-residents under certain conditions¹²² must report their underlying transactions. Resident transactors must report their cross-border transactions to the Minister of Finance through Bank of Japan (BOJ). Transactions via non-resident banks are reported directly.

8.25. The information reported includes data on the transactor, the counterparty, the date, the type of payment (payment or receipt), the currency used, the value and the classification and description of the purpose of the transaction. For the last

¹²¹ A more elaborate description of the French and South African country examples in the present chapter is available online. The Japanese example is also described more elaborately online, and includes coding schemes, example forms and more detail on the below-threshold statistical estimation methods.

¹²² There are some exemptions from the reporting requirement, including transactions below the reporting threshold (the current reporting threshold is ¥30 million or the equivalent in foreign currency per transaction, in principle) and payments/receipts related to the export/import of goods which have gone through the customs of Japan. Other exemptions are specified in the ministerial ordinance.

variable, reporters use a BOP classification code to report their purpose of transaction, choosing from a list of 186 BOP codes provided by ministerial decree, of which 61 relate to trade in services.

8.26. Under the Japanese ITRS, transactions that do not involve cash payments are required to be reported on a gross settlement basis. For example, if a resident imports and exports services under offsetting or netting arrangements, not only must the amount settled be reported, so must the underlying transactions on a gross basis.

8.27. The Japanese ITRS reporting threshold has gradually increased to a relatively high level (¥30 million). Therefore, a considerable number of transactions may be missing, especially small-value service transactions. In order to estimate trade in services (other than transport and travel)¹²³ below the threshold, Japan will start employing statistical methods consistent with BPM6. Empirical research suggests that the frequency of transactions increases exponentially as the value of transactions decreases. Statistically, a Pareto distribution fits the data well. Assuming that transactions below the threshold also follow a Pareto distribution, data below the threshold can be estimated. Those estimations are made on annual basis for each service item.

8.28. Compared to using information on transactions from before a threshold increase, the Japanese approach to estimating below-threshold transactions is advantageous, as the estimations can be updated periodically with recent data so that structural and price changes over time can be captured. Further, since the fit of the Pareto distribution is assessed on a regular basis, statisticians are able to choose another statistical approach if the implemented method does not fit the data.

Country experience: France

8.29. Until 2010, France used an ITRS as a data source for statistics on international trade in services. Under the French ITRS, banks reported all payments between residents and non-residents registered in their books, whether the transaction was on their own account or on the account of their clients.

8.30. Since 1990, data from the central bank has been complemented by direct reporting by firms with annual cross-border transactions greater than €30 million. That system covers approximately 500 firms, which are required to report all transactions on a monthly basis and positions on a quarterly basis, with non-residents conducted through accounts with domestic banks or banks abroad or through inter-company accounts.

8.31. The French ITRS had several advantages. It delivered information in a timely and frequent manner and it was highly detailed, allowing, in principle, for an almost exhaustive knowledge of international services transactions. In addition, the ITRS facilitated data access for compilers and was cost-efficient because data processing and compilation took place at the Directorate General Statistics of Banque de France, and the bank is also the institution that oversees payment systems and operations of resident banks.

8.32. The French ITRS, however, also displayed serious limitations common to other national ITRS, such as misclassifications, stemming from the fact that the largest part of the transactions was classified by intermediaries (banks) on behalf of their clients. Potential remedies would either involve additional resources or increase the risk of substantial data omission.

8.33. In addition, transactions were registered on a cash basis, whereas BPM6 recommends recording on an accrual basis. Furthermore, the system did not capture all transactions that did not have a payment counterpart, such as intragroup transactions,

¹²³ Transport is captured mainly by direct reports. Travel is estimated by using border and household surveys and official statistics.

and was able to register transactions made via non-resident banks. As the evolving patterns in international trade show increased settlements through non-resident bank accounts and in intragroup flows, such limitations become progressively prominent.

8.34. Finally, an ITRS is vulnerable to administrative changes imposed for other motives, but that may have negative consequences for collecting and producing statistics. For example, in Europe, the creation of the Single Euro Payments Area (SEPA), that aims to improve the smoothness of cross-border payments and to lower their cost, has resulted in the adjustment of the reporting obligations of banks and an increase in reporting thresholds (up to €50,000 as of 2008).

8.35. In order to assess the magnitude of the limitations of the ITRS, Banque de France organized a parallel run between the “old” ITRS-based system and the new system based on the *Enquête complémentaire sur les échanges internationaux de services* (ECEIS), in order to perform all appropriate testing on the ECEIS survey (see chapter 6, para. 6.56 (b)). The results indicated that the ITRS could be replaced by a direct reporting system. It should be noted, however, that some traces of the old system have been retained in the new system: an ITRS still provides data from all transactions higher than €50,000 that intermediaries complete for their clients vis-à-vis counterparties located outside SEPA. The survey is particularly useful for identifying firms that should be integrated into the direct reporting system.

Chapter 9

Administrative records

9.1. Chapter 9 describes the main advantages and limitations of administrative records as a source of data needed for measuring the international supply of services. Advantages include the reduction of costs and in the reporting burden for companies, the filling of data gaps and improvement in statistical business registers. Typical limitations include restrictions on access to information owing to the demands of confidentiality, divergence in methodology from statistical standards and issues of consistency, timeliness and other quality concerns. The chapter also presents good practices in the use of administrative records, which demonstrate that when their limitations are well understood and effectively addressed, such records can be a valuable data source in statistical compilation. The chapter contains the following sections: a summary of good practices (section A); a general description of administrative records (section B); examples of administrative records for use in statistics on the international supply of services (section C); and country practices (section D).

A. A summary of good practices

9.2. It is good practice for national legislation and/or regulations to grant the compiling agency adequate access to administrative data sources for the compilation of statistics on the international supply of services, as well as for the maintenance of the SBR and the trade in services satellite register, following policies adopted in national statistical systems (see chapter 2), and to have in place appropriate institutional arrangements between the compiling agency and the administrative authorities (see chapter 3).

9.3. Compilers should fully understand and document relevant aspects of the administrative data sources, including (a) information on how the data are processed, registered and stored, (b) methodologies and definitions, (c) coverage, (d) periodicity and timeliness, (e) changes in regulations pertaining to the administrative data that is collected and (f) budgetary constraints of the administrative authority. In particular, compilers should be well aware of how the concepts and definitions used in administrative sources coincide with those that are necessary for the compilation of data on the international supply of services. The use of unique identifiers of economic units by all administrative authorities (as is done increasingly in many countries) would greatly facilitate the integration of the administrative records into the statistical system and help to eliminate duplication in coverage.

9.4. In particular, the present *Guide* advises the use of customs records as a source for trade-related transport and insurance services, with immigration records and entry/departure cards being a source for measuring the flows of inbound and outbound visitors. Compilers are encouraged to consult UNWTO's list of proposed items for inclusion in entry/departure cards.

9.5. Compilers are encouraged to use immigration records to estimate the movements, numbers and presence of foreign natural persons under mode 4 of the supply of services and for compiling certain FATS variables, if the immigration authority collects work permits containing information on foreign entrants applying for work.

9.6. Finally, it is advised to use the records of tax authorities, especially VAT declarations, as a source for values of trade in services, foreign affiliate relationships and the movement of natural persons. Moreover, tax records often include information on the ownership relationship between businesses and employment, and on income from foreign sources separately from income earned from domestic operations, which can also complement other sources in order to identify enterprises and individuals with investments abroad.

B. General purpose and description of administrative records

9.7. Administrative records are compiled for regulatory purposes or to support and document the administration of various government programmes, such as immigration regulations, social security benefits, education and public health services. Important potential sources of data for the compilation of statistics on international trade in services include customs records, records of immigration authorities and records of tax authorities.

9.8. The use of administrative data has become a cornerstone of economic statistics programmes in many countries.¹²⁴ Administrative data are a valuable source for updating statistical business registers. However, other sources with similar information should also be considered, such as income statements made by public enterprises and public quasi-corporations.

9.9. In some cases, statistical outputs are produced at the national level from information obtained from different administrations and/or from various levels of the same administration. The characteristics of each source are important, as are the differences among the sources and how those differences affect statistical output. For example, different regional offices of the same administrative agency may experience different budget, capacity and workload changes, which may influence the timeliness and consistency of the processing and registering of the data.

9.10. Collecting, understanding and documenting information (metadata) about the administrative data sources is critical to the design of the data compilation system. Also, such documentation will improve the coherence of the resulting statistics by helping users to assess the advantages and limitations of data obtained from different administrative sources. The information that compilers should document includes: details of how the source data are processed (e.g., collected and stored), concepts and definitions of data variables, changes in data collection methodologies, available metadata on the coverage and number of data reporters, changes in sample size and/or sample composition, breaks in series for any reason and the time and date that the administrative data were processed and revised. Compilers should also document the features of the environment of the system of administrative recordings, which can influence the quality of such recording; those include changes in regulations pertaining to the scope and composition of administrative data being collected, the level of permanency of the mandate to collect such data, resource requirements and possible interruptions to staffing and technological needs, as well as budgetary constraints.

9.11. Ideally, access to the administrative sources should be guaranteed to compiling agencies by national legislation. However, the availability of legislation is not

¹²⁴ See *Guidelines on Integrated Economic Statistics*, para. 5.98.

a sufficient condition for the efficient use of administrative records. A cooperative approach to the development and use of administrative records for statistical purposes is likely to be far more effective for obtaining access to administrative records than an approach based on legal arguments. Managers within organizations that gather administrative information should be sensitized to the importance of the data and contribution of each data provider to the overall statistical system.

9.12. With the increasing role of administrative data in the overall statistical process, clear arrangements between statistics offices and administrative authorities must be in place and reviewed regularly to ensure continuity of the use of those important data sources in the statistical system.¹²⁵ The agreements should contain clauses about confidentiality, coding, data transfers and their frequency and the content of the administrative database. Strict measures should be taken within the statistical agencies to ensure that the administrative data records remain confidential, are treated as survey microdata and are used only for statistical purposes.

¹²⁵ See chapter 3 for more information on effective institutional arrangements.

Advantages and limitations of administrative data

9.13. If administered and maintained properly, administrative records can offer strategic and statistically important advantages over direct collection of corresponding data from respondents. The advantages and limitations of using administrative data must be considered, including the following:

- (a) **Methodological soundness.** As administrative recording must comply with relevant legal and other administrative concepts and requirements, the resulting records typically adhere to the adopted administrative standards of methodological soundness and consistency in terminology. Therefore, the use of such administrative records for statistical purposes normally requires transforming them to better approximate statistical concepts. When adequate transformation procedures are developed and systematically applied, administrative records can be a reliable and valuable primary, as well as complementary, source of statistical information (see paras. 9.11-9.13);
- (b) **Cost.** Administrative records are a relatively inexpensive source of information compared with surveys and censuses, which is an important factor for statistical agencies faced with tightening budgets. However, the cost may be higher than anticipated if the administrative data require complex transformation and/or processing to meet statistical requirements;
- (c) **Coverage.** Because of their nature, administrative records usually have the advantage of covering a large segment of the economy, if not the entire economy. Moreover, owing to the administrative character of the data, non-response is normally negligible and data are subject to substantial scrutiny, which should generally ensure their accuracy. However, statistical compilers should be aware that the coverage and content of administrative records can be subject to discontinuities resulting from changes in regulations or administrative practices. Also, not all variables in administrative records may receive the same level of attention; for example, revenues may be examined closely, whereas less effort may be devoted to ensuring that industry codes are correct. Nonetheless, with the increasing demand to produce statistics for small domains, in which sample surveys may be difficult to implement, administrative records represent a valuable alternative or complement to sample surveys, when the limitations above are considered and addressed;
- (d) **Periodicity and timeliness.** The availability and timeliness of administrative records may not align well with the data release deadlines of statistical

agencies. For example, individuals and/or entities may not be required to report to administrative agencies at common intervals, resulting in some data being reported monthly, while other data are reported quarterly or annually. Moreover, annual data may be presented in administrative records on a calendar year basis or on a fiscal year basis. There may also be delays before the administrative data can be used and procedures established for allocating the records to the proper period;

- (e) **Response burden.** Administrative records allow for the reduction of the burden of statistical inquiries made by compiling agencies. Administrative records can be adapted to and compared with data collected by other methods, such as surveys, for validation purposes. Linking administrative records to other administrative data sets, survey data or census data is increasingly being performed to produce richer data sets for statistical use;
- (f) **Data compilation.** Administrative records can be used to complement survey data and, in the absence of information owing to such issues as non-response to surveys, administrative data can be very useful in the imputation process.

9.14. In order to make administrative records useful for statistical compilation, it is necessary to show how the concepts, definitions and classifications of administrative data can approximate the economic variables required by the statistical system. For example, a correspondence table can be established that describes how business accounting data are linked to the economic variables of the statistical agencies. Methodologies incorporating economic accounting concepts and definitions should be developed for the ways in which administrative data can be used as extrapolators for economic data collected from official surveys and censuses.

9.15. Additional work is needed to link the legal entities used by administrative authorities to the enterprises and establishments used by statistical agencies. One of the prerequisites for using administrative data is to rigorously map the relationships among the various structures of entities maintained by administrative departments and statistical agencies. This is necessary to avoid duplication in coverage and to match up information from various sources. Some countries have a unique identifier for economic units that is used by all administrative authorities. This greatly facilitates the integration of administrative records into the statistical system.

9.16. When using administrative records, it is good practice for the files used for statistics to be separate from the system in which the administrative records and transactions are stored for operational use. The separation enables compilers to manipulate the data without interfering with the administrative processes. It also helps to maintain the integrity and consistency of the data and preserves the confidentiality of the outcomes of statistical editing and adjustment.

C. Examples of administrative records

C.1. Tax records

9.17. Records of tax authorities can be a very important source of information on values of trade in services, foreign affiliate relationships and the movement of natural persons. For example, tax records, especially VAT declarations, may include the value of services transactions between residents and non-residents, as well as the location of the service transactors. Moreover, tax records often include information on the ownership relationship between businesses, which may be useful for compiling

FATS. Additionally, tax records on businesses may include employment information. Such information can be combined with individual tax return records, which identify independent service suppliers or employees of service providers who go abroad to supply a service, to compile data on the movement of natural persons. Tax records also often identify income from foreign sources separately from income earned from domestic operations. Such records can be useful, especially for conducting surveys or for checking information obtained from other sources¹²⁶ and to identify enterprises and individuals with investments abroad.¹²⁷

9.18. **Use of tax records for statistical business registers purposes.** Tax records are one of the sources for business registers and survey frames, as they contain unique identifiers, names and incomes of businesses. The systematic and persistent updating and maintenance of business registers based on tax records will normally lead to significant quality improvements in the business register (coverage, timeliness and accuracy), and a reduction in operational and business compliance costs.

9.19. Administrative data also includes VAT declarations. When VAT covers services, those declarations are a promising means of identifying, for statistics purposes, the mode of the international supply of services (especially modes 2 and 4). VAT information is often reported monthly and covers most business units in the economy. In addition, since the main principles of the VAT systems of different countries are similar, the systems share features, items and even details that can be used for statistical purposes in many countries.

C.2. Customs records for estimating the value of resident/ non-resident trade and related transport and insurance services

9.20. Customs records are one example of the ways in which administrative sources can be used by compilers of trade in services statistics. In general, customs declarations include the freight charges and insurance for shipments of merchandise and can be used to determine the value of trade-related transport and insurance services.

9.21. If foreign merchandise trade statistics provide both the FOB and CIF values of imports, then the values of freight costs and insurance premiums can be obtained from such statistics. However, a method is also needed to separate freight costs from insurance premiums. When both valuations are not available on a regular basis, it may be possible to obtain freight costs and insurance premiums by analysing the supporting import documentation supplied to customs. Such analysis could be achieved by means of a properly designed sample survey of the customs records. In some countries, import documentation may also provide the name or registration of the vessel carrying the imported goods. The compiler could compare that information to the lists of vessels operated by residents. If no match is found, it could be assumed that the transport service was provided by a non-resident operator.¹²⁸ If customs data can also be used to measure freight on imports, for example, by taking the difference between imports CIF and imports FOB and deducting an estimate for insurance premiums, those data could be matched with information on the vessel to determine transport services provided by vessels operated by non-residents.¹²⁹

C.3. Immigration records and entry/departure cards

9.22. In most countries, immigration records and entry/departure cards are a valuable source of information on the movement of persons across borders, even as the increasing mobility of persons and the facilitation of free movement of persons across borders, in some parts of the world or under certain circumstances (e.g., in the case of the Schengen area) is changing that situation.

¹²⁶ As used by tax authorities, definitions of the terms "foreign" and "income" may differ significantly from those used in the compilation of statistics on the international supply of services. The compiler should take care, in using tax data directly in the compilation of such statistics, that any such differences are accounted for.

¹²⁷ See *BPM6 Compilation Guide*, para. 6.46.

¹²⁸ *Ibid.*, chap. 12, table 12.2.

¹²⁹ *Ibid.*, chap. 12, para. 12.58.

9.23. Migration statistics usually distinguish among visitors, other individuals travelling abroad for short terms and migrants, where migrants are defined as long-term if they are staying in the country for a period longer than 12 months and short-term if they are staying for more than 3 months but less than 12. The different categories are defined in *Recommendations on Statistics of International Migration (RSIM)*, revision 1 (1998).¹³⁰ Visitors are further described in IRTS 2008.

¹³⁰ *Recommendations on Statistics of International Migration, revision 1 (RSIM rev.1)*, Statistical Papers, Series M, No. 58/rev.1 (United Nations publication, Sales No. E.98.XVII.14). Available from <https://unstats.un.org/unsd/pubs/gesgrid.asp?ID=116>.

9.24. For compiling services transactions between residents and non-residents, the categories of visitors and short-term migrants are of interest, in particular when used in a data model. For the breakdown of travel, it is important to distinguish purposes that are employment related (i.e., where there is an employer-employee relationship in the country to which the person is travelling) from those relating to business trips (i.e., no employer-employee relationship in the country visited, e.g., attending meetings or conferences, consultancy, short-term posting of workers abroad by their employer).¹³¹ For the former, the expenditure would be recorded under “travel, business, acquisition of goods and services by border, seasonal and other short-term workers” and the latter under “travel, business, other”. This type of distinction is also important when it comes to compiling data on the number of mode 4 persons (see table V.3 in MSITS 2010) as well as of mode 2 number of persons, which is further described in chapter 16.

¹³¹ See box V.2 MSITS 2010 for further discussion on the identification of the employer-employee relationship.

9.25. Some common examples of the categories covered by migration statistics and their relationship to travel and tourism statistics are presented in box 9.1. However, it should be highlighted that immigration records or entry/departure cards have been put in place for purposes other than to measure trade in services. Records of such administrative procedures should, therefore, be carefully evaluated on a country-specific basis to understand the degree to which they could be useful. That exercise might even lead to the adaptation of the administrative records for improved measurement of trade in services, as well as tourism. Such adaptations are more likely if it can be demonstrated that they lead to improvements in the procedures used by the agency responsible for the registration and/or monitoring of the movement of persons across borders.

9.26. Immigration records contain information provided by travellers when they apply for visas, as well as passport information recorded at the time of border crossing. Entry/departure records contain information provided by the traveller to immigration authorities when crossing the country border. The information available from those two sources, and reconciled by the immigration authorities, is often the basic source for establishing the flows of inbound and outbound visitors. The entry/departure cards usually collect information¹³² on a census basis on name, sex, age, nationality, current address, date of arrival (and/or departure), purpose of trip, main destination visited and length of stay.

¹³² See World Tourism Organization, *Tourism as an International Traded Service: A Guide for Measuring Arrivals and Associated Expenditures of Non-residents* (Madrid, 2005), on the results of a survey of country practices in the use of entry/departure cards, available from <http://www.unwto.org/statistics/border.pdf>.

9.27. Usually, immigration authorities provide data on the basis of arrivals, in which case, for inbound travellers, the collected data refer to the expected length of stay. Some countries reconcile entry and departure cards by matching their identification numbers in order to establish the actual length of stay.¹³³ Some difficulties might arise in such an operation owing to unmatched cards as a consequence of errors in the process (e.g., lost cards or errors in the capture of the data), a lack of coordination in recording authorizations of a change in status, or a change in expected stays (illegal immigrants who entered as tourists are also a possible source of discrepancy). However, notwithstanding the challenges and limitations, compilers should make the greatest possible use of them for compiling statistics on the international supply of services.

¹³³ For example, the Australian Bureau of Statistics compares the actual length of stay to the expected length of stay on the entry card, which allows for calculation of a “realization ratio” so that the number of visitors expecting to stay more (or less) than a year can be adjusted at the time of arrival to allow for an estimate of those who will actually stay for the amount of time they expected.

Box 9.1

Common categories of visitors, other short-term individuals travelling abroad and migrants captured in immigration records and their relationship to travel and tourism statistics

	Holiday, leisure	Religion, pilgrimage	Education purposes ^a	Health purposes ^a	Employment ^b	Business visit ^c
Tourism	X	X	X	X		X
Travel	X	X	X	X	X	X
Business purposes					X	X
Short-term workers, etc.					X	
Other business purposes						X
Personal purposes	X	X	X	X		
Education- related			X			
Health- related				X		
Other	X	X				
Mode 2 number of persons	X	X	X	X	X	X
Mode 4 number of persons					Only to work in foreign affiliate	X

a For tourism, the visit would qualify only if for less than one year; for travel, there is no time limit for the visit if the residence (i.e., centre of predominant economic interest) does not change.

b For the purpose of being employed in host economy; i.e., the employer-employee relationship is in the host country.

c The employer-employee relationship remains in the home country.

9.28. Immigration records and entry/departure cards can be combined with information on patterns of expenditure and compensation of employees to develop a data model for estimating travel services by multiplying the actual number of trips of short-term travellers and the estimate of per capita expenditure from surveys of actual expenditure. Preliminary estimates for a specific period can make use of data on the expected length of stay and anticipated expenditure.

9.29. Immigration records and entry/departure cards can be an important source of information on mode 2 movements of persons, as such persons may constitute a large proportion of those recorded in those sources. However, entry/departure cards are not seen as a sufficient source for mode 4 movement of people, as the cards are meant to collect data for immigration control purposes, not to identify natural persons crossing the border to supply a service. Mode 4 types of movements represent only a very small proportion of the total entries and departures registered by entry/departure cards. Moreover, the identification of mode 4 persons is not an issue for the compilation of tourism statistics, as such persons are part of the visitor population, regardless of the fact they are travelling in order to provide a service.

9.30. The use of entry/departure cards requires statistical compilers to have a clear understanding of their coverage and content, most importantly:

- (a) **What is the geographic coverage of entry/departure data?** The coverage must be clearly stated to assess how representative the cards are for the full population of persons crossing borders. It is, for example, important to know if entry/departure cards are used at all border crossing points, or if their use is restricted in some way (e.g., they cover air passengers only, or apply to other types of arrival such as by sea, land or river). This is particu-

larly relevant for countries with long and open international land borders or borders delimited by rivers, where geography makes crossing the border easy or where border controls are sometimes absent at crossings. Border control authorities will usually estimate crossings beyond their present control procedures, but that estimate might need to be permanently monitored to detect changes over time;

- (b) **What categories of person are covered?** Are there specific conditions that exclude certain persons from border controls, in addition to those represented by the non-controlled crossing points (e.g., nomads, refugees, border workers, etc.)? In many countries, nationals are often exempted from border controls or detailed reporting requirements. Frequent border crossers may have special permits, may not be registered for each crossing, may be excluded from the controls altogether or may be covered only by a global estimate. Finally, certain types of border crossings might be subject to less cumbersome procedures (for instance, private airports, or land borders used by nationals of neighbouring countries);
- (c) **What is the actual content of the data?** Access to detailed microdata should be ensured to allow for corrections and controls. In general, compilers should not expect border control operations to provide all the information needed to measure movement of persons across borders and to provide all the required variables and types of distinctions that would be needed for description and analysis. A recurring example is that many entry/departure cards do not request the residence of the respondent, only the nationality. Additionally, not all controls in a given country will be the same at all border points, nor will they contain the same questions (e.g., questions at land borders might be kept to a minimum, because of the time constraint);
- (d) **The quality of the data collected must be assessed.** There are various repeated inconsistencies in information taken from administrative sources that stem from their specific functions. The main interest of border authorities, for instance, is controlling the flows of non-nationals and, as a consequence, other data (e.g., a national's country of residence, origin or destination, which is often different from the origin or destination of the flight, and the purpose of trip in detail) are of less interest to them and are not always adequately collected or stored. The concern of border control authorities is that the declared purpose be consistent with the type of traveller's visa or resident permit presented, which may induce travellers to declare a purpose in line with their visa (e.g., recreation instead of convention/conference, or seeking business opportunities). Revisions, checks and controls are needed to make entry/departure card information usable for purposes other than migration.

¹³⁴ MSITS 2010 sets out the framework to define mode 4 in the context of the existing tourism and migration statistical recommendations. Statistical compilers should review that framework and, in particular, table V.3 in MSITS 2010, which presents the links between the coverage of RSIM rev.1 and that of IRTS 2008 in terms of purpose of trip or migration and length of stay: identifying categories of interest for GATS mode 4.

9.31. UNWTO has proposed that entry/departure cards include a number of variables for the measurement of traveller flows useful for tourism statistics as well as for modes 2 and 4,¹³⁴ such as date of entry/departure, gender, age, place of birth, nationality, country of residence, port of entry, mode of transport, length of stay and purpose of the visit. In particular, if further differentiation of the business purpose were recorded on the card, such as the difference between intracorporate transfer or employment by a local business, then that information could be used to identify mode 4 movements. The full list of proposed variables on entry/departure cards can be found in the online version of the present *Guide*.

9.32. In countries that require a temporary work visa for mode 4, at least for citizens of some countries, administrative records from the visa issuing department (usually the ministry of immigration) may be a more reliable source of information than the entry/departure card. If there is no requirement for a specific visa (for instance, for the duration of the stay or its repetition), the proposed entry/departure card might not always enable the identification of mode 4, unless the “purpose of trip/visit” is requested. It should be noted, however, that the declared purpose of trip may be influenced by the type of visa/permit that has been issued and may not accurately reflect the reality. Business visas can be directly identified using immigration data, however. Moreover, it is usually recommended that entry/departure cards identify the different subsets of travellers, such as visitors as defined in tourism statistics, through indirect observation of derived characteristics.¹³⁵

9.33. Regarding mode 4, it should also be noted that the interest might not be in the total number of trips, but in the combination of the number of persons, the number of trips taken by those persons, the duration of each trip and the total duration of travel per person. The entry/departure card could provide information on the repetition of trips only if the persons are uniquely identified by the entry/departure card and the registrations at different border crossing points are stored in the same database.

C.4. Work permits

9.34. In many developed countries in which migration regulations are complex, each legal foreign entrant applying for a work permit is asked to register his/her nationality, occupation, purpose and place of visit, length of stay, etc. The information on the inflow and stock of such persons could be collected from the immigration authority and, with the help of such information, it may be possible, under certain conditions (see para. 9.35) to estimate the movements, numbers and presence of foreign natural persons under mode 4 of supply. In some other countries, registrations of work permits may be available from the immigration or labour authority and may include additional information on the foreign resident, such as date of entry into the country and detailed occupation type, as well as information regarding the resident employer, such as name, location and type of business, or even gross annual income and number of employees. Such data could serve as a major source for compiling the number of foreign employees of service suppliers or the number of foreign nationals providing services as independent suppliers. Moreover, such information could complement information used source for compiling FATS statistics, at least for foreign affiliates in the services industry that may be hiring foreign nationals, both in terms of identifying such foreign affiliates as well as estimating their sales and/or output and number of employees. Data derived from documents issued in the context of social security coordination and employment services could also be useful sources of information.

9.35. **Work permits and visa application records.** Only permits relating specifically to mode 4,¹³⁶ or those that are clearly identified as a subgroup of a mode 4 category, can be used for the compilation of mode 4 persons. While rarely possible,¹³⁷ immigration registers could, in theory, include the relevant information.¹³⁸ A solution could be to add questions to visa/permit application forms to obtain more detail on the reasons for migration, visit or permit request. This would enable the acquisition of information more directly related to mode 4, as defined in MSITS 2010, which would, therefore, be comparable among countries. For example, current visa information may indicate the length of stay or whether a migrant is moving under the entrepreneur or skilled migrant category,¹³⁹ but may not indicate whether a person is moving as an intracorporate transferee or being directly recruited by an overseas service produc-

¹³⁵ See *Tourism as an International Traded Service*, para. 2.45.

¹³⁶ As defined in MSITS 2010.

¹³⁷ It is important to note that in certain cases, countries have established commitments based on existing specific types of visas or working permits, which may or may not comply with the definition of mode 4 as defined in MSITS 2010 (i.e., it may have been designed to serve complementary or additional administrative needs). When that information is used to analyse mode 4, it should be clearly specified that such information relates to the commitment made, but does not necessarily refer to mode 4 as defined statistically.

¹³⁸ Actually, such information is often used by analysts and policymakers to support decisions, including concerning labour migration. Ensuring that relevant mode 4 information is also included and reliably recorded in such a source would greatly improve understanding of the different types and characteristics of international movements, and consequently help make the distinction between labour migration and mode 4 trade in services.

¹³⁹ See also <http://ec.europa.eu/eurostat>, the technical guidelines for data collection under article 6 of regulation 862/2007 of the European Parliament and the Council of the European Union on Community statistics on migration and international protection and repealing Council regulation 311/76 on the compilation of statistics on foreign workers. Statistics on residence permits specify, under those called grants of permission to stay to third-country nationals for reasons related to remunerated activities, categories for those activities (e.g., highly skilled workers, European Union Blue Card, researchers, seasonal workers and other remunerated activities). The last category could be expanded for mode 4 purposes.

ing company. In general, statistics on visas granted for work or education reasons are available; however, further breakdown by reason of stay (employment contract, service contract or official residence permit categories) or for short-term visas of less than three months are typically not available.

C.5. Population records

9.36. Registers of individuals (e.g., population registers or registers used to assist in the implementation of legislation or for monitoring specific or overall activities) could be used to measure the number of mode 4 persons, in particular when such registers relate to a specific, relevant part of the population. Once again, it is important to analyse to what extent such a source can be used for statistical purposes (i.e., the type of information included, reasons for inclusion in a register, how the data are stored in the register, etc.). Although the use of such registers is clearly possible from the perspective of receiving countries, the use of a register source could be particularly relevant in some sending countries in which mode 4 movements are important and if such information is recorded in a register (e.g., by the labour ministry, or by a specific sectorial ministry, such as health or transport) or any other official source.

9.37. The statistical compiler must ensure that it is possible to distinguish in the register data between those going abroad for employment purposes and those travelling for business purposes, as defined in chapter 5 of MSITS 2010. For example, the registers would most likely include those going abroad on the basis of service contracts, but compilers must ensure that the register does not also cover those travelling abroad for negotiating purposes. Registers used to assist in the implementation of legislation (e.g., for tax purposes) may be particularly useful for sending countries in the context of mode 4 self-employed persons (i.e., those who remain residents of their economy of origin). The use of such a source would be especially relevant if it were possible to link information on individuals from that source with information on the same individuals from other sources, such as immigration records. Also, it is important to identify if such linking is legally and statistically feasible.

D. Country experiences

Country experience: China: compilation of mode 4 person numbers

9.38. According to the Foreign Trade Law of China, qualified enterprises that seek to supply trade in services supplied through the presence of natural persons, or to enter into contractual services with natural persons, need to apply to and receive approval from the Government. The governmental agency responsible for approving the applications of enterprises or service suppliers also collects and aggregates data on outflows and stocks of mode 4 persons in the category of contractual services. A statistical institution has been jointly established by the Ministry of Commerce and the National Bureau of Statistics in China, to which relevant enterprises are obligated to report required information, such as service projects, outflow and stock of persons, occupation or overseas work, length of stay and destination country. The national authority is responsible for the aggregation and annual publication of the data.

9.39. Sometimes basic information, such as occupation, purpose and destination of visit, is compiled separately by different authorities, such as immigration, tourism or labour, each with its own statistical purposes and measurement scope, resulting in statistics that do not always match the requirements for measuring the number of mode 4 persons. As a result, it is difficult to extract useful information from the

existing statistical systems. For instance, occupations may be classified by primary category (i.e., manager, technician or professional), and it may be impossible to further break down those classifications by industry details. One potential solution is for compilers to cooperate more closely with the relevant sectors and ask for additional useful information. Alternatively, statistical systems of the authorities, other than the compiling authority, could be redesigned to meet the data needs for compiling the number of mode 4 persons. Another solution is for compilers to establish a new and specific statistical system for the compilation of the number of mode 4 persons. Both solutions require close cooperation among the different agencies involved, such as immigration, labour and tourism. Redesigning the existing system requires more communication and understanding, and increases the daily workload for the agencies involved. Establishment of a new system may improve the coverage and accuracy of the data but requires a large capital input and more coordination, and could raise the risk of leaking personal and business information.

Country experience: Philippines: customs data for compiling freight and insurance services

9.40. The compilation of statistics on the resident/non-resident trade in services in the Philippines is heavily based on the administrative records of the Bureau of Customs (BOC). Those records are especially useful for estimating freight and insurance services. The cost of cargo insurance is stated in the attached invoice for import entry internal revenue (IEIRD). If the insurance value is not declared, then the value of insurance is estimated.

9.41. In 2007, a special survey was conducted for the purpose of input-output tables, which also enabled a verification of insurance and freight values generated from administrative sources (see the online version of the guide for the 2007 survey on selected imported commodities (SSIC) questionnaire). Freight and insurance costs are also validated by collecting and comparing data from various government and private entities, including the Insurance Commission; the Bureau of Shippers; Asian Terminals, Incorporated; Cargohaus and FedEx-Philippines. For IEIRD, the freight cost is stated in the customs declaration or in the attached invoice. If the freight value is not declared, then it is estimated. The details of the estimation procedure are given in the online version of the present *Guide*.

9.42. **Computation/estimation: exports, insurance and freight cost.** For export declarations, insurance and freight costs are not reported on the export document, but rather on the attached invoice. For multiple commodities, freight and insurance costs are computed by prorating, using total insurance/total FOB or total freight/total FOB as the multiplier, and the individual FOB value as the basis, in the computation. Insurance and freight costs are not imputed if not reported.

Country experience: New Zealand: tax records

9.43. Statistics New Zealand (Statistics NZ) is in the process of establishing a new business register (BR), which will also include microbusinesses that are not currently recorded. Since the 1920s, Statistics NZ has used tax data from Inland Revenue (IRD)¹⁴⁰ on incomes of individuals, self-employed workers and companies, which has been integrated with tax data from the goods and services tax (GST)¹⁴¹ since the mid-1980s. The integration was made possible by linking the BR enterprise statistical unit to the business tax number of GST-registered businesses.

9.44. Increasingly, over the past 20 years, as the use of tax and other administrative data to maintain the BR has been extended, Statistics NZ has observed that BR

¹⁴⁰ See chapter 3 for a description of the memorandum of understanding between Inland Revenue (IRD) and Statistics New Zealand.

¹⁴¹ The Goods and Services Tax is a value-added tax that covers almost all business activity.

quality has improved in terms of coverage, timeliness and accuracy, operational costs have been reduced and business compliance costs resulting from BR update surveys have also been reduced. Challenges in transforming administrative data for statistical purposes that Statistics NZ has addressed include a better understanding of the rules and processes that define the administrative data, including coverage, timing, quality and completeness of the administrative data, as well as the differences between the statistical units in the BR versus units defined in the tax system; and developing appropriate methodology and processes to transform the administrative data to the statistical model. Addressing those issues has involved the following:

- (a) Relying on tax data for small businesses with a simple structure where the statistical unit directly matches the tax unit structure and supplementing the tax data for large and complex businesses with data collected by Statistics NZ;
- (b) Using models to derive the required statistical outputs from tax data. For example, modelling two and six monthly GST tax returns to produce quarterly data;
- (c) Using statistical techniques, such as estimation/forecasting, to address timeliness issues;
- (d) Using tax data correlated with a required statistical variable (not available in the tax system) to model the required variable;
- (e) Making available to users a clear definition of the statistical outputs produced, and providing overlaps between series on the old and new definitions;
- (f) Requesting changes to administrative rules so that the administrative data fits better with the statistical requirements.

9.45. Maintenance of the BR is conducted continually, primarily on the basis of tax data, as well as on data from the Companies Office, survey feedback, media reports and company reports, among other sources. Units on the BR are stratified into three tiers on the basis of their structure, GST activity and employment numbers, thereby allowing Statistics NZ to focus its resources on the largest businesses. All units are updated primarily using tax data, as well as an annual update survey and other information that supplement and verify the tax information for the larger enterprises. The BR has a monthly quality monitoring programme that also identifies opportunities for quality improvement and for extending the use of administrative data.

Chapter 10

Other data sources

10.1. Chapter 10 describes sources of information that were not intended for statistical use and are not covered in chapters 5 through 9 but that, nevertheless, can be used for collecting data needed for measuring the international supply of services. In particular, the chapter presents recommended practices (section A) and describes other data sources and big data (section B), in particular payment cards and mobile phone records. It also covers external party sources (section C) and linked microdata (section D). Each section presents related country experiences.

A. Summary of compilation guidance

10.2. It is good practice for compilers to explore the possibility of improving the quality of statistics on the international supply of services, including coverage and timeliness, offered by the use of additional data sources, and develop action plans to gradually incorporate them into the data collection activities, taking into account both their strengths and shortcomings. Compilers are encouraged to use additional data sources as necessary, including payment card records, mobile phone records and external party sources, such as financial statements of companies, reports of chambers of commerce, records of investment promotion agencies, records of business associations, surveys conducted by other organizations (e.g., various line ministries may conduct special studies on the industries they supervise and may conduct surveys for this purpose), private databases, online search engines, online travel booking sites, data compiled by trading partners and linked microdata.

10.3. Compilers are further advised to consider the incorporation of various additional data sources in the context of big data initiatives, to undertake pilot projects in selected areas and to weigh the benefits of using big data with the objective of improving timeliness, filling data gaps and reducing cost, while maintaining the high quality of official statistics on the international supply of services. Many of the aforementioned data sources are often placed under the umbrella term of big data. For the purposes of the present *Guide*, big data are sources that can be described as high volume and high velocity, with a wide variety of data that demand cost-effective, innovative forms of processing for enhanced insight and decision-making.¹⁴²

¹⁴² See ECE, "What does "big data" mean for official statistics?", (2013), para. 6.

B. Other data sources and big data

B.1. Good practices in using other data sources and big data

10.4. The compilation of data needed for measuring the international supply of services is a complex process and requires the use of both traditional and other data sources. Compilers are encouraged to consider using other data sources in the context of national initiatives to use big data as a potential new data source. The present *Guide* advises that compilers undertake pilot projects in selected areas and weigh the benefits

of using big data in combination with existing traditional data sources to improve timeliness, fill data gaps and reduce cost, while maintaining a high level of quality in the resulting official statistics on the international supply of services. For example, big data may be useful in compiling travel and tourism expenditures. However, compilers should be aware of and be prepared to address the challenges in using big data, including legislative issues around access to and use of data, privacy concerns, financial costs in sourcing data relative to its benefits and management and protection of data, as well as issues of methodology, in terms of data quality, and technology.

10.5. It is good practice for any use of big data to be part of an organized and efficient data integration process and to be subject to strict standards commonly applied in quality control, data modelling, estimation and imputation. All such modifications to the statistical process should be done in a transparent way, be part of the quality assurance programme and be properly reflected in metadata.

B.2. Purpose and description

10.6. In the modern world, more and more data are automatically generated through a variety of devices, including mobile phones and sensors, and via many computer applications. The amount of data and the frequency at which they are produced have led to the concept of big data. The following are examples of different classes of big data:

- (a) Commercial or transactional data arising from transactions between two entities, including credit card transactions, bank transactions, online transactions (including through mobile devices) and retailers' sales records;
- (b) Data from sensors, including from satellite imaging, road sensors and climate sensors;
- (c) Data from tracking devices, including tracking data from mobile telephones and global positioning systems (GPS);
- (d) Behavioural data, including online searches for a product, service or any other type of information and online page views;
- (e) Opinion, such as comments on social media.

10.7. Although administrative data arising from the administration of a programme involving the collection of certain information, be it a governmental programme or not, are usually seen as a standard data source, they do have some of the characteristics associated with big data sources, and could therefore also be included here. Those characteristics are high volume and rapid availability, as is the case with electronic records on medical procedures, hospital visits, insurance transactions, education programmes and value added tax records.

10.8. Complaints about official statistics usually include a lack of timeliness and high cost. Big data are often automatically generated and are accessible in real time. Therefore, it could certainly be envisioned that big data complement official statistics in order to improve timeliness and cut costs.

10.9. Many challenges need to be dealt with, however, to effectively use big data in official statistics. They include the following:

- (a) Legislative challenges with respect to access to and the use of data;
- (b) Privacy issues, including complying with confidentiality rules, gaining and maintaining public trust and achieving acceptance of data reuse and links to other sources;
- (c) Financial challenges regarding the potential continuous cost of acquiring, hosting and processing large data sources;

- (d) Management issues regarding policies and directives about the rules, roles and regulations aimed at adequately protecting and securing sensitive data sources;
- (e) Methodological challenges, specifically with respect to representativeness of the data, the volatility of data sources over time and the need for adequate estimation and modelling techniques for making the data useful and in compliance with quality standards;
- (f) Technological issues related to hosting and accessing data sources, as well as data processing, system maintenance and the storage of huge amounts of data over time.

B.3. Using big data for purposes of official statistics on the international supply of services

10.10. Examples of big data that can be used for compiling statistics on the international supply of services include electronic medical records of hospital visits (may aid in compiling health services), mobile phone records (helpful in tracking movement of international visitors) and credit card records (may be useful in tracking a wide range of tourism expenditures and in compiling other trade in services transactions). Such data can be used provided that the operators and merchants involved are identified in those data as belonging to service industry. More information on such applications is included in the following sections of the present chapter.

10.11. Compilers are, therefore, encouraged to treat big data as a potential new data source and to undertake pilot projects in selected areas. It should be noted that seizing the potential of big data would require attention to the organization of an efficient data integration process and a review of existing methods for data modelling, estimation and imputation. All such modifications to the statistical process should be done in a transparent way, be part of a quality assurance programme and be properly reflected in the metadata.

Box 10.1

Country example: Eurostat project on using big data

Eurostat conducted a 15-month feasibility study in 2012-2014 on the use of mobile positioning data for tourism statistics. The project explored the usefulness of using such data for tourism statistics and related domains and assessing their strengths and weaknesses. Issues studied included access and continuity of access, trust (of producers and users of statistics), costs, concepts (in translating the existing tourism statistics concept to a new data source) and other methodological topics (e.g., representativeness and sampling within a very large number of observations). The ability of handling large data files held by mobile operators was a critical obstacle to overcome for the project to be successful. The inclusion of the project in the work programme was, among other reasons, based on promising research results in a number of countries.

B.4. Good practices in using payment cards data

10.12. Payment card records are considered by the present *Guide* as a potential source for compiling statistics on international trade in services in countries that have a favourable institutional environment concerning payment cards, especially if there is a well-established and extended network of automated teller machines (ATM) and point-of-sales (POS) terminals, along with a massive use of payment cards in national and international transactions.

10.13. A sound understanding of the processes of payment card transactions and the actors involved in that process, as well as of what to measure, is crucial in order to determine and communicate to the payment card institutions the type of data to be collected. Efforts should be made to obtain standardized nomenclatures, compatible with statistical classification systems. Over time, the specification also needs to be reviewed and eventually modified to reflect changes in cross-border payment infrastructures and patterns.

10.14. It is good practice to compare the expenditures obtained from payment card data with other traditional sources. For instance, if payment card data are being considered for use in the compilation of travel statistics, those data should be compared with surveys on average daily tourist expenditure conducted by statistical agencies or publicly available through the tourism industry.

10.15. It is advised to collect from the payment card institution an indicator of whether the card was present at the point of sale, as that information is useful for isolating cross-border transactions or for identifying the type of service involved in the transaction, particularly those related to e-commerce.

10.16. **Purpose and description.** Payment and bank cards, such as credit and debit cards, are important payment instruments in national and international transactions in both goods and services. Records of card-issuing institutions can provide data on the international transactions of the card holders, both individuals or companies. A comprehensive payment card database can provide detailed and accurate information concerning operations performed with payment cards, with a number of variables that can be used to characterize the operations, namely those related to the geographical breakdown and the types of goods and services.

10.17. Payment card data offer an advantage over surveys in the collection of information on such transactions, as it would be difficult to identify the individuals or entities involved in international transactions by means of surveys. Moreover, individuals often have imperfect recall of specific transactions, whereas payment card records are generally accurate and complete.

10.18. **Using payment card records for purposes of statistics of the international supply of services.** Payment card records can be a valuable source for the compilation of travel statistics. Using the information reported by payment institutions, it is possible to obtain the number and value of operations performed in resident ATM and POS with cards issued abroad, and of those performed abroad with cards issued by resident entities, as well as the characteristics associated with the cards and the type of channel used. Such data provide, on a monthly basis, a significant measure of travel expenditure, both credits and debits.

10.19. Payment card data can also be used as a good proxy for the geographical breakdown of travel, if it is assumed that the country in which the issuer bank is located is the country of residence of the traveller. However, compilers should be aware that such an assumption may not be appropriate for smaller countries, in which a many individuals use payment cards issued in countries other than their country of residence.

10.20. Regarding the purpose of the trip, payment cards data can be a helpful data source. The bank identification number (BIN code)¹⁴³ that identifies the cardholder's designated account as an individual or a company, allows the distinguishing of business cards from other types of cards. That information can be used as a proxy to estimate expenditure made by business travellers and other travellers. However, an important issue that needs to be considered is the regular use of personal cards for business travel, which leads to the need for complementary data sources to estimate that breakdown. A separate alternative breakdown of travel into types of goods and services is required, according to BPM6 and EBOPS 2010, which can be integrated

¹⁴³ Recently designated as issuer identification number (IIN).

with additional requirements of other statistical domains, namely tourism statistics and the Tourism Satellite Account. Payment card databases can provide important information to meet the new breakdown, using the activity classification of the goods and services providers. Such variables can be used as proxies to identify the goods and services acquired by travellers.¹⁴⁴

Box 10.2

Country example: Description of United States merchant category codes

The United States-based payment card industry uses merchant category codes (MCCs) to classify each merchant and its credit, debit and cash withdrawal transactions into industry groups. One or more MCCs are assigned to each United States-based or foreign merchant by the merchant's acquiring financial institution, on the basis of the merchant's primary type of business. Each transaction is then assigned the MCC used by the merchant to process the transaction. Most members of the payment card industry collect detailed data on transactions by country and industry group, for which the industry classification is determined by the company's existing internal MCC groupings.

In total, there are approximately 600 MCCs on the universal list used by the payment card industry in the United States. Although the payment card merchant categorization was not specifically designed to conform to BPM6 main services components, many MCCs directly correspond to particular services categories. However, MCCs are applied broadly, in that a merchant that sells both goods and services may do so under the same MCC. If transaction data are being used to measure travel purchases, that distinction is not important, but it may be if it is intended to be used for other purposes.

¹⁴⁴ For that purpose, correspondence tables between national industrial or activity classifications (e.g., between Statistical Classification of Economic Activities in the European Community (NACE) or merchant category code merchant category code (MCC)) and travel expenditures on goods and different types of services should be developed.

10.21. The main advantages of using payment card data as a source for the compilation of the travel item are, among others, the wide-ranging coverage of travel-related transactions; a limited number of respondents; the timeliness and frequency of the information, as data are available with a short delay and on a monthly basis; the detailed information on the characteristics of both travellers and goods and services providers; and, finally, a reduced cost in terms of compilation, since payment institutions need to process the information for their own use, imposing a reduced statistical burden. However, coverage with payment card data will likely change over time.

10.22. Moreover, purchases made with a payment card from a foreign business identified as a service provider (by an industrial or activity code) in which the card is not present may be an indication of a mode 1 service provision. Identification of such information may be particularly relevant for Internet transactions in services related to intellectual property product (IPP) products, such as music, video and software.

10.23. Some challenges must be considered when using payment card data. Primarily, non-tourist-related transactions, such as imports or exports of goods or services other than travel, must be excluded. For that purpose, the transaction amount, along with the economic activity of the goods and services providers, can be used to exclude transactions that should be classified under other items in the BOP. In addition, an indicator of whether the card was present at the point of sale is useful for isolating some of those transactions, particularly those related to e-commerce.

10.24. Moreover, payment card data are not comprehensive for travel expenditures, because other means of payment can be used. In that case, it may be useful to compare the travel expenditures obtained from the payment card data with other traditional sources, such as surveys on average daily tourist expenditure or statistics from the tourism industry.

10.25. Another challenge is the fact that the classifications used by payment card processors are not necessarily the same as those used by statistical compilers. In fact, efforts should be made to obtain standardized nomenclatures, compatible with statistical classifications.

10.26. An additional difficulty, when using payment card data, is accounting for the time lag between the moment of the payment and the time of the trip. Another potential challenge is the development of the global financial and payment systems that may lead to emergence of more international brands and processors, bringing further complexity to the collecting system.

10.27. Using diverse data sources is crucial for a comprehensive system that facilitates the collection of travel-related transactions made by residents abroad and by non-residents in the compiling economy. One of the main challenges in designing a compilation system for the travel item is the integration of different data sources with different degrees of coverage and different periodicities and that may contain overlapping data. There is a trade-off between reducing the impact of possible double-counting and covering the various types of expenditures of travellers as much as possible. The extensive detail of the payment card database could allow the compiler to mitigate that risk.

Country experience: Iceland

10.28. Statistics Iceland has been using information on payment card data since 2009 as supplementary information to the trade in services survey for the compilation of the travel item. Information is received quarterly from all three payment card companies in the country, two of which issue credit cards.

10.29. Data on the use of foreign payment cards in Iceland link the identification number of the services provider receiving payment to the business register (or national registry for those not registered in the business register) and NACE and EBOPS classifications. For some NACE numbers, such as hotels and restaurants, all transactions are automatically included in travel, whereas all other new identification numbers are examined manually. In order to avoid double-counting with the trade in services survey, businesses are asked not to report transactions on the survey if the payment was made by payment card. The data also includes the country code of the country in which the card was issued, the amount of the transaction and the date of the transaction.

10.30. Potential challenges concerning such data are misclassifications of the NACE category; identification numbers for which no NACE category is available (however, transactions with such service providers are typically of small value); missing or incorrect data; double-counting with the trade in services survey; misclassification of the country that issued the payment card (i.e., residents of country A with payment card from country B); and large amounts of data that are ATM withdrawals and cannot be identified. All ATM withdrawals are therefore assumed to be travel transactions.

10.31. For data on transactions made with domestic cards abroad, only credit cards are included because the information on debit cards is not sufficiently detailed. The total figures that Statistics Iceland receives for the usage of debit cards abroad confirms that the use of credit cards abroad is much more common than the use of debit cards. Given that most of the debit card transactions are ATM withdrawals, Statistics Iceland assumes that the entire amount of the debit card transaction data is travel expenditures.

10.32. The data from credit card companies includes the merchant category code (MCC) identification name and number, which is linked to the EBOPS classification. While most MCC numbers are manually examined, some, such as for hotels and restaurants, are automatically included in travel. E-commerce data is excluded. The data also include identification of the card type (i.e., individual or enterprise), which may be useful in identifying travel transactions (e.g., if an individual card is used to purchase goods, it is assumed that those transactions are travel-related). The data can also supplement information on transportation and other business services collected through the trade in services survey.

10.33. The challenges in using data on credit card usage abroad include the fact that MCC categorization is imperfect and of unknown reliability; e-commerce transactions are often difficult to recognize; the volume of different sales/service providers makes individual investigation difficult; transactions are recorded in the payment card data at the time of purchase, not when the service is delivered;¹⁴⁵ and large amounts of data that are ATM withdrawals and cannot be identified. All ATM withdrawals are therefore assumed to be travel transactions.

B.5. Mobile phone records

10.34. The present *Guide* encourages compilers to consider employing mobile phone applications (“apps”) to collect information about mobile phone users’ movements and behaviours. Such apps can easily be downloaded to users’ devices and can retrieve information to enable data analysts to conduct very detailed studies of users’ movements and behaviours. It is advised that compilers clearly request the consent of mobile phone users before using such apps and describe how the data will be used for official statistical purposes.

10.35. For all types of mobile phone data, compilers must take precautions to make the data anonymous and check that confidentiality rules are being applied appropriately. Privacy concerns are of critical importance and compilers should reassure users that the data will be used only for official purposes and will be aggregated to maintain confidentiality. Again, as recommended in chapter 2 of the present *Guide*, legal acts on the confidentiality of official statistics should be well-established.

10.36. Compilers will likely need to adjust the mobile phone data to correspond with the definitions of official statistics. It is recommended that algorithms be developed to automatically organize the data according to statistical definitions as much as possible.

10.37. It is further advised that the residency of a mobile phone user be determined by the residency of the mobile operator associated with the user’s account.

10.38. **Purpose and description.** The use of mobile phones is widespread in many countries, enabling statistical compilers to obtain data on location (geographical coordinates in time) and other important indicators about mobile phone users and their activities.

10.39. Data gathered with the help of mobile phones can be divided into active and passive positioning data. In the case of active positioning, the collector of the statistics contacts phone owners and asks for information about their location, themselves and their behaviour (e.g., about their travel). In the case of passive mobile positioning, data are automatically stored in the memory files of phone operators or other recording systems.

¹⁴⁵ Timeliness is of particular concern for cases in which accommodations are prepaid and when Icelanders purchase fares online from foreign airline companies using payment cards. Timeliness is less of a concern with regard to other travel expenditures.

10.40. **Using mobile phone records for purposes of statistics on the international supply of services.** Both active and passive positioning data obtained from mobile phone records can be important sources for statistics on the international supply of services. In particular, mobile phone records are advantageous in the compilation of the travel item and mode 4 services, as information on the country of residence and current location of the mobile phone user facilitates the identification of international travellers, and, possibly, providers of mode 4 services.

10.41. **Active mobile positioning.** In the case of active mobile positioning, information about the location of a phone, the user, the travel behaviour of the user and/or the provision of services is found by making special inquiries, which generally requires the consent of the individuals chosen to participate in the study. Active positioning is related to surveys and software that can be downloaded on smartphones.¹⁴⁶ As a result, it is possible to obtain very accurate information about the movement, means of transport, expenses, provision of services and motivation of the chosen respondents. Active positioning data are geographically accurate.¹⁴⁷ Such detailed data enable data collectors to analyse mobility within the destination, and to conduct market research for a particular region. More study is necessary on how to engage with mobile phone users; the involvement with users could range from merely turning on GPS with consent to providing answers actively on a regular basis. Those studies should cover the technical possibilities of phone applications, their user-friendliness and the incentives for users to participate. Of course, the treatment of the data should be transparent for users who provide the active mobile phone data. Recruitment of mobile phone users for outbound travel could be more difficult and more costly owing to the different standards of foreign operators. Still, that area is a very important source for gathering more detailed statistics for studies on travel/tourism and the provision of mode 4 services.

¹⁴⁶ Examples of such software are MySense and PosQues.

¹⁴⁷ Smartphone-based studies in this area commonly use a global positioning system (GPS) resolution with an accuracy of 1-10 m.

10.42. **Passive mobile positioning.** In the case of passive mobile positioning, statistical data are obtained from secondary sources of mobile phone use, which are most often the phone use information automatically recorded in the systems of operators, such as the call detail record (CDR), Erlang and anonymous bulk location data (ABLD), among others. The advantages of passive positioning is the huge mass of data involving all phone users and the relatively cost-effective data collection method. The shortcomings, however, are the difficulty of protecting the privacy of persons and obtaining the data from operators, as well as the lack of characteristics included in the data. The main convention for defining the residence of persons travelling is by the residence of the mobile operator related to them. Other conventions for other statistical purposes can be introduced as well. The use of passive positioning data in the area of travel/tourism is rapidly growing because it is difficult to get an adequate overview of the movements and mobility of people in the increasingly mobile world with open borders.

10.43. The CDR is one of the most widely used sources among the passive positioning data suitable for the compilation of the travel item as well as for tourism statistics. The data are obtained from the data warehouse or from the billing records of the mobile network operator's system, i.e., from the invoice through which information is gathered about phone users through such information as the time, location, duration and cost of a call. The production of statistics from such data requires standardizing the data and rendering it anonymous, as well as checking it, because the privacy of people and the business confidentiality of operators must be protected. CDRs are usually issued as impersonalized data, either aggregated for certain types of user groups or pseudonymously with randomly generated identifiers. Spatially, CDR data are usu-

ally issued with the accuracy of a network cell (the cell together with its location is called the cell global identity (CGI)). The level of accuracy is well suited, for example, to generating the main variables of tourism statistics, and several data collection systems using CDRs were developed for that purpose. CGI is, however, not accurate enough for preparing detailed analyses of the movements of persons. Rather, CGI can be used to identify visitors in transit through airports and seaports or on the main transit lines through the country. Moreover, there is noise in the roaming data, and travellers in the border areas of some countries may be picked up by the cells of neighbouring countries even if they did not physically enter the country.

10.44. A caveat on the use of mobile phone records is that travellers who are in a country for a short period of time, for example, less than a year, may purchase local subscriber identity module (SIM) cards for their phones and thus not be covered through mobile phone records.

10.45. The methodology of preparing passive mobile positioning data requires adjusting the mobile data to correspond with the definitions of official statistics. For example, the duration of a visit, the number of nights spent and transit tourism are assessed on the basis of ordering single call activities, with the uneven distribution of call activities in time and space posing a methodological problem. For that reason, it is necessary to develop algorithms for organizing data, such as segmenting visitors and visits.

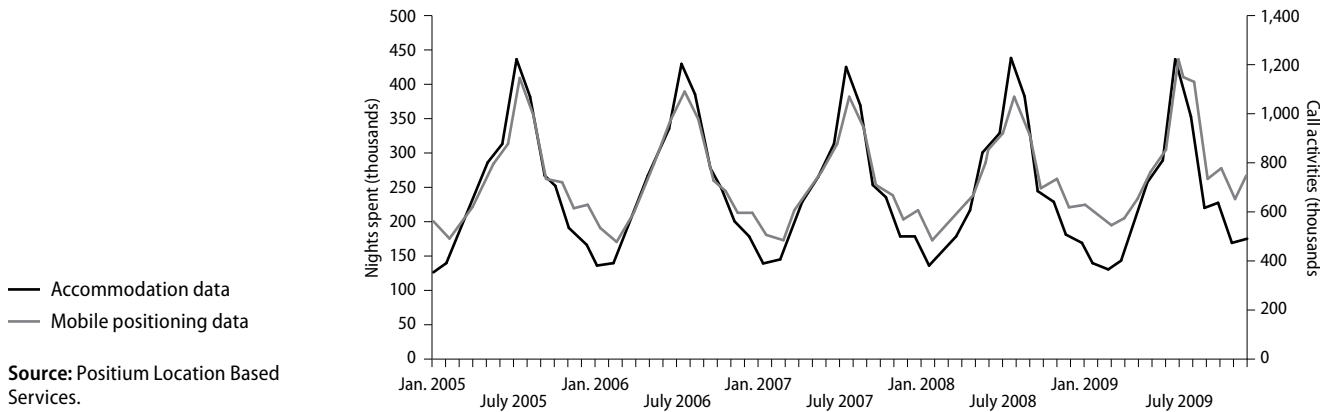
Country experience: Estonia

10.46. Bank of Estonia relies on mobile phone records for estimating travel and the tourism satellite account (see chapter 14, paras. 14.73-14.78 (travel) and chapter 16 for mode 2). Estonia compiles the statistics based on data from Positium Data Mediator, software developed by the department of geography of the University of Tartu.

10.47. In Estonia, algorithms are developed for the segmentation and cleaning of data available in the Positium Data Mediator. For example, special methods are required for eliminating cross-border and accidental roaming noise. In the preparation of the base models of inbound, outbound and domestic tourism, Positium Data Mediator uses the data from Statistics Estonia and the results of surveys regularly ordered from the research agency TNS Emor for calibration. Those results are used to prepare a base model of data, which must be representative of various visitor segments and geographical areas and also take into consideration the market shares of various operators and the ranges of the radio coverages of various mobile networks.

10.48. Inbound tourism is determined on the basis of the log files of the roaming service of operators. The travellers (phone owners) who have arrived at a destination from abroad are divided into visitors from different countries of origin on the basis of the registration of the phones (resident country or nationality of the tourist). The duration of a visit is measured by each phone on the basis of the number of days at the destination that call activities were performed. Outbound tourism is determined on the basis of the roaming log files of the phones originating from the countries of origin. Visiting statistics by country are found on the basis of the temporal and spatial distribution of the call activities performed abroad; foreign visits are segmented according to the requirements of statistics, if necessary. A comparison of call activities obtained on the basis of passive mobile positioning data and data on accommodation nights in Estonia shows high correlation between those two data sources (see figure 10.1)

Figure 10.1
Comparison of call activity in passive mobile positioning data and accommodation nights in Estonia



C. External party sources

C.1. Good practices in using external party sources

10.49. External party sources have some inherent limitations. While they can provide insights and perspectives than not available more traditional sources, compilers should be aware of the unique challenges of using statistics compiled by non-statistical entities.

10.50. Most importantly, external party sources vary in terms of data quality and timeliness, which ultimately depend on the quality of the statistical processes of the external party. It is recommended that the compiling agency become as familiar as possible with the data sources, collection methods, methodology and statistical rigor of the external institution and document its strengths and weaknesses. It is strongly recommended that the compiling agency contact the external source directly to discuss such issues in greater detail, to alert the data provider that its data may be used for official purposes and to open the lines of communication so that any changes in methodology or timeliness can be transmitted to the compiling agency in a timely manner. Some external parties may be willing to work more closely with the compiling agency in order to better meet the official statistical requirements; however, even in such an instance, the national statistics office should continually monitor the quality of the data and be aware of the limitations and weaknesses.

10.51. The compiling agency should assess whether the data available from the external party helps to provide statistics on the trade in services category of interest, or other types of statistics related to the international supply of services. In many cases, the definition of the industry or other aspects related to the international supply of services does not match the official statistical definitions. Such misalignments may lead to misinterpretations and misuse of the data. Again, it is strongly recommended that the compiling agency learn all such definitions and methodological aspects of the external party source.

10.52. Timeliness and frequency are common weaknesses of external party sources. The compiling agency should be prepared for breaks in series, changes in methodology, changes in survey sample sizes and even the disappearance of the source.

In particular, it is recommended that the compiling agency develop plans for cases in which there is a reasonable expectation that the external party source might substantially change or disappear. It may be advisable to use an infrequent data source as an input to a data model that estimates the value of service transactions, or to interpolate missing years or to fill other data gaps, rather than relying solely on that data source.

10.53. Access to data may also pose a challenge, especially if the external party typically charges a fee for access. It is good practice for the compiling agency to contact the external party source directly to request the best possible terms of use.

10.54. It is further advised that compiling agencies appropriately document all data sources in the metadata, including in which years the data source was used, and to keep documentation on the external party source, including historical data, revisions, methodological documents, communication and any user agreements.

C.2. Purpose and description

10.55. Compilers could make use of such other external party sources as a company's financial statements, chamber of commerce reports, investment promotion agency records, business association records, surveys conducted by other organizations, private databases, online search engines and travel booking sites and data compiled by trading partners. In particular, studies and research publications of public or private institutions that include relevant statistical information can be resource- and cost-effective sources. Ministries may also conduct special studies on industries that they supervise. Moreover, industry trade associations may publish research studies on the performance of the industry, particularly in international markets, as a means of promotion. Such data sources could be useful for compilers as a means of identifying enterprises involved in international transactions, as well as for updating the names and characteristics of businesses in the SBR, validating survey results and filling data gaps.

C.3. Using external party sources for statistics on the international supply of services

10.56. National and international organizations that represent services industries often compile registers of their enterprise members, including name, location and contact information. Such information can serve as a source for updating and maintaining the service providers included in business registers.

10.57. Such organizations may also survey their members for quantitative and/or qualitative information on their operations, including domestic and international sales or market share, and conduct market research to compile estimates or forecasts of sales. Quantitative information from such studies can be used to validate or complement statistical survey results or as a basis for estimates when no other data are available.

10.58. National ministries associated with specific industries are also important sources of data and can range from ministries of tourism and investment promotion to regulatory bodies on insurance, health and education. Such agencies may already be providing to the national statistical office more traditional administrative data based on regulatory requirements. However, those agencies may also conduct special research projects or one-time studies that can supply greater detail or cover a different industry than they routinely cover. Such data can be used to validate or complement other data sources.

10.59. Financial statements, annual reports and profit and loss statements of enterprises can also provide a wealth of information for statistical compilers. Often such reports include information and data on the firm's international operations, sales and market share by country or region. The level of detail that is reported varies widely, depending on the country and type of enterprise. However, such sources should not be overlooked as a means of identifying enterprises involved in international transactions, updating the business register, validating survey results and filling data gaps.

10.60. Private database companies that maintain databases of financial, statistical and market information on global companies and private consultant groups are also commonly used by statistical institutions, either to complement or substitute for other data sources. Private databases are usually accessible for a fee. Examples include Compustat, Dun and Bradstreet, Amadeus (Bureau van Dijk), Business Monitor International, Deloitte and Insight Research Corporation, among others. Such databases can be good sources for updating and maintaining SBRs, as they typically provide company names, addresses, telephone numbers, names of contact persons, enterprise size by sales value or employee count and other basic characteristics, including industry or market sector, market share or number of establishments. The private sources often conduct market research studies that include analysis of domestic and international sales, market share, actual values of sales and/or estimates or forecasts based on historical trends.

10.61. Finally, Internet searches of individual company names, industry sectors or trade groups are an extremely efficient and cost-effective way of validating information in SBRs and survey results.

Country experience: Australia: legal services statistics

10.62. The Australian Bureau of Statistics (ABS) collects data for legal services by means of the quarterly international survey of trade in services which surveys resident Australian businesses. ABS captures data from a broad range of respondents, but not a complete range, since resource constraints and collection difficulties restrict data coverage.

10.63. The data from the ABS survey is collected on a country/dollar value basis, asking only for the value of receipts and payments of total legal services. There is evidence that a significant percentage of international trade in legal services is provided by consultants and sole traders. It is currently beyond the resources of ABS to cover and process such a potentially large number of additional respondents. The true volume in resident/non-resident legal trade, therefore, can only be estimated or modelled on the basis of that anecdotal evidence.

10.64. The legal services data currently obtained by ABS on a quarterly basis is compiled solely from the survey of international trade in services. The final trade in legal services statistics are published quarterly and annually as part of the international trade in services series of publications and are posted for general access on the ABS website.

10.65. In 1990, the Australian Attorney-General's Department established the International Legal Services Advisory Council (ILSAC). Among other tasks, ILSAC produces an annual statistics survey on international legal trade. Unlike the ABS survey, the ILSAC survey is sourced from data representing all four modes of supply. In addition, when compiling data for international legal trade, ILSAC identifies earnings of overseas branches of Australian law firms as "exports", while ABS identifies them as "returns on investment".

10.66. Initial results from the ILSAC statistical surveys showed that the ABS data were understating the extent of international trade in legal services. Significant efforts have been made in recent years to improve the quality of ABS data and, to that end, ABS is in contact with ILSAC to better align the data provided by both organizations. It is now possible to reconcile the differences that continue to appear on an annual basis between the data published by ABS and ILSAC. As the two surveys become better aligned, it will be possible to more accurately measure the size of trade in legal services.

C.4. Bilateral or “mirror” data

10.67. The exchange of statistics between countries, especially main partners, is seen as a particularly relevant exercise for compilers of statistics on the international supply of services. However, bilateral or “mirror” statistics should not be seen as a major data source on their own, but should rather serve as a reference for checking and adjusting collected data. It should be noted that because of differences in applied concepts and data collection/compilation procedures, such mirror data should be consulted with caution and only after the necessary reconciliation. It is also well known that mirror statistics on the international supply of services often contain asymmetries, owing at least in part to coverage, sampling and methodological differences. An investigation into bilateral asymmetries between the United States and Canada is presented in paragraphs 10.69 through 10.75.

10.68. Mirror data is a potentially useful means of collecting information on mode 4 number of persons since sending (exporting) countries may be more easily able to collect information for some categories, especially contractual-service suppliers and those travelling for negotiation purposes, than for others, such as intracorporate movements or self-employed migrants. The “receiving” (importing) countries may have such information as well.¹⁴⁸

Country example: reconciliation of the United States–Canadian current account

10.69. The United States–Canadian current account reconciliation, which explains the differences between the official bilateral statistics published by Statistics Canada and those published by the United States Bureau of Economic Analysis (BEA),¹⁴⁹ is undertaken because of the extensive economic links between Canada and the United States. Reconciliation of the United States–Canadian current account was undertaken each year from 1970 to 2008, and has been carried out periodically since 2008. The reconciled estimates are intended to assist analysts who use both countries’ statistics and to show how the current account estimates would appear if both countries used common definitions, methodologies and data sources.^{150,151}

10.70. Differences occur in the official statistics of the current accounts of the United States and Canada because of variations in the definitions, methodologies and sources used by each country. Some of the differences are in components of the current account for which data are preliminary and subject to revision; those differences may be reduced or eliminated when final data for those components are incorporated.

10.71. The long-standing United States–Canadian current account reconciliation is among the leading examples of the benefits of international data exchanges. As a part of the reconciliation process, Canada and the United States have evaluated the accuracy of each other’s statistics and, as a result, each country now includes in its official statistics data provided by the other country. The exchange of data between Canada and the United States for such transactions as trade in goods,

¹⁴⁸ More information on potential sources for mode 4, and by direction of movement (ingoing/outgoing), is provided in table 11.8.

¹⁴⁹ Barbara Berman, Edward Dozier and Denis Caron, Reconciliation of the United States–Canadian Current Account, 2010 and 2011 (United States Bureau of Economic Analysis and Statistics Canada, January 2013. Available from http://www.bea.gov/scb/pdf/2013/01%20January/0113_unitedstates-canada.pdf and <http://www.statcan.gc.ca/pub/13-605-x/2013001/article/11772-eng.htm#n1>.

¹⁵⁰ A detailed article on the methodology was published by the United States Bureau of Economic Analysis and Statistics Canada in “Reconciliation of the United States–Canadian Current Account” in the November 1992 *Survey* and by Statistics Canada in “Reconciliation of the Canadian–United States Current Account, 1990–1991”. Statistics Canada also published a shortened version in the December 1992 *Canadian Economic Observer* and in *Canada’s Balance of International Payments*, third quarter 1992.

¹⁵¹ To better understand the differences in investment income, each country’s positions on bilateral foreign direct investment and on some portfolio investment accounts are also compared during the exercise of the United States–Canadian current account reconciliation.

travel, passenger fares, Canadian and United States government transactions and some large transportation transactions covers a substantial portion of the value of the United States–Canadian current account, and has eliminated some of the differences between the official statistics of Canada and the United States. In addition, the reconciliation process has identified areas in which errors and omissions may exist, helping each country to target data improvement efforts.

10.72. Although the official statistics of Canada and the United States are reconciled, and extensive exchange of data takes place between the two countries, differences between the official statistics endure. The complete substitution of the reconciled statistics for the official statistics and a complete exchange of data are not feasible for several reasons. For some accounts, the protection of the confidentiality of the source data bars the exchange of data. In addition, a few differences are attributable to different requirements for integrating the international and domestic accounts in each country.

10.73. To reconcile the official bilateral current account statistics of Canada and the United States, the official statistics are first restated to a common basis, that is, they are adjusted for definitional and methodological differences. Next, statistical adjustments are applied to reach the reconciled values. The framework for restating the statistics to a common basis follows mainly the international guidelines published in BPM6. The official statistics of Canada and the United States now largely conform to the international guidelines, but some differences from the international guidelines, as well as between the two sets of statistics, persist because of data limitations, difficulties in determining country attribution and differences in classification. In addition, the international guidelines can sometimes provide for more than one acceptable treatment.

10.74. Definitional adjustments mainly reflect data limitations and differences in country attribution. Methodological adjustments mainly reflect differences in classification.

10.75. Statistical differences reflect the use of different source data in Canada and the United States, the difficulty of determining country attribution because of insufficient data, the preliminary nature of some data (particularly for the most recent year and the use of sample data between benchmarks. For both the northbound (United States credit transactions and Canada debit transactions) and the southbound (United States debit transactions and Canada credit transactions) statistics, most of the statistical differences are in the categories of services other than transport and travel and in the investment income accounts.

European Central Bank/Eurostat: bilateral data exchange and the Foreign Direct Investment Network

10.76. The Foreign Direct Investment Network (FDI) Network is a joint European Central Bank (ECB)/Eurostat initiative that has been developed in close cooperation with FDI compilers from all member states. Its aim is to tackle asymmetries in FDI and, as a consequence, to improve data quality. To reach that purpose, the FDI Network facilitates the secure exchange of information between national compilers on specific FDI transactions and positions.

10.77. The transmission and exchange of confidential data in the context of the FDI Network is foreseen exclusively for statistical purposes and, in particular, for the purpose of increasing the quality of the European Union/euro area BOP statistics.

10.78. Transactions taken into account for a specific reconciliation round are related to transmissions exchanged in a certain period. Those transactions are introduced into the template and sent out by Eurostat with the request that FDI Network users amend the information of the transactions for which they acted as an initiator or, on a second sheet, as a counterpart. The compiler member state completes the template for its transactions. A similar procedure is used for the reconciliation of positions.

10.79. In accordance with the provisions of the “FDI Network Manual”, Eurostat regularly monitors the results of the reconciliation process of the transactions exchanged through the Network. FDI asymmetries can be analysed from two different points: at the European Union (EU)-28 aggregate level using data available from the quarterly BOP and annual FDI, and on a bilateral level using mirror FDI data for countries that are more active users of the FDI Network. The analysis of the counterpart countries is based on net figures reported by countries, while the transactions and positions exchanged through the network are expressed normally in gross values. The asymmetries are calculated separately for inward and outward flows/stocks. The tables indicate the decrease of asymmetries and the status of several transactions within a period.

10.80. The bilateral exchange of data (flows/stocks) could improve the quality of the transmitted data. Reconciliation in the FDI Network leads to a number of closed cases. When reconciliation cannot be made, it is typically due to incorrect information received from the company involved or methodological differences among member states, particularly owing to the use of different valuation methods.

D. Linked microdata

D.1. Good practices in using linked microdata

10.81. In addition to the various data sources that have been discussed in the present chapter and the preceding chapters, it is important to note that the integration of two or more existing data sources can also provide a lot of additional information relevant for the compilation of the international supply of services, as described in more detail in chapter 13. In order to facilitate such linking of microdata, it is advisable that all economic entities be included in an SBR that serves as the central sample frame of the statistical system.

10.82. Microdata are the observational data collected on an individual statistical unit, including a person, household, business or other entity.¹⁵² Examples of microdata are the name and location of a survey respondent, an enterprise identification number from the business register and information on the number and characteristics of employees of an enterprise. Such microdata may already be available from existing data warehouses within the national statistical office, or may come from other administrative data sources or the other sources cited in the present chapter. If microdata are being linked across agencies or across different data providers, it is recommended that an aggregate list of the entire population of individuals or enterprises from all sources be marked with an indicator of whether or not it has been linked. A manual review of the entities that have not been linked may reveal duplicates or other inconsistencies that can be resolved.

10.83. The present *Guide* recommends that compilers conduct a thorough review of enterprises with similar names and multiple establishments to identify the appropriate establishments for inclusion in the linking exercise and to avoid double-counting.

¹⁵² OECD, *OECD Glossary of Statistical Terms* (see <http://stats.oecd.org/glossary/detail.asp?ID=1656>).

D.2. Purpose and description

10.84. Compilers may consider using microdata to link characteristics of reporting individuals and enterprises to get a different perspective on a target population, to identify inconsistencies or overlaps in the data or even to fill data gaps. Often microdata are not publicly released other than for officially sanctioned research studies, which typically involve a rigorous approval process.¹⁵³

¹⁵³ See chapter 20 for a more detailed discussion of the release of microdata.

D.3. Using linked microdata for purposes of statistics on the international supply of services

10.85. Linked microdata on enterprises may prove most valuable in compiling FATS and data on modes of supply. Specifically, linking microdata on foreign ownership indicators (available from the business register, company financial statements or other industry sources) will help to identify the target population for FATS surveys and service transactions through mode 3. Moreover, microdata on the characteristics of employees of enterprises who may indicate foreign residence could help in identifying such target populations in relation to mode 4.

10.86. Microdata on labour statistics and/or the residence of individuals will also help compilers to identify the presence of natural persons for compiling the supply of services through mode 4.

10.87. Linking microdata can also provide opportunities for the national statistical office to conduct special research studies on many different aspects of the international supply of services that may be of particular interest to the country, such as the characteristics of domestic firms engaged in trade in services, determinants of imports of services and the effect of activities related to foreign affiliates and FDI on the domestic economy.

Country experience: United States

10.88. In 2011, the United States Bureau of Economic Analysis (BEA) jointly engaged with the United States Bureau of Labour Statistics (BLS) in a microdata-linking study of multinational enterprises based in the United States.¹⁵⁴ The aim of the project was to uncover more about the geographic, occupational and wage distributions of employment by United States-based multinational enterprises. While the study does not directly relate to statistics on international trade in services, the methodology employed demonstrates how such linking is possible, and can open the door to future extensions and applications in the area of FATS and statistics of trade in services by mode of supply.

¹⁵⁴ Elizabeth Weber Handwerker, Mina M. Kim and Lowell Mason, "Domestic employment in U.S.-based multinational companies," *Monthly Labor Review*, October 2011. Available from www.bls.gov/opub/mlr/2011/10/art1full.pdf.

10.89. The project combined firm identifiers from the BEA 2004 benchmark survey of United States direct investment abroad with BLS microdata on employment in establishments of those firms, for a pilot group of the largest United States-based multinational manufacturing enterprises. BEA data on multinational enterprises based in the United States were used to match a pilot group of United States parent firms of multinational enterprises with their establishments that appeared in BLS data. The pilot group consisted of the largest 500 United States-based multinational manufacturers (by primary industry of the United States parent) in the firm-level data of BEA from the 2004 benchmark survey of United States direct investment abroad. The efforts to match were based primarily on the names, locations and employer identification numbers (EIN)¹⁵⁵ provided in that survey.

¹⁵⁵ The Internal Revenue Service assigns the Employer Identification Number (EIN), or Federal Tax Identification Number, to identify a business entity. Most large companies with many establishments report more than one EIN to the Bureau of Labor Statistics Quarterly Census of Employment and Wages. The one or two EINs that companies report to the Bureau of Economic Analysis in the *Benchmark Survey of U.S. Direct Investment Abroad* generally match only a fraction of those large companies' establishments.

10.90. Identification of the establishments of firms in the pilot group were based on the BLS quarterly census of employment and wages (QCEW), which collects infor-

mation on total employment by month and total wage bills for all United States establishments covered under the unemployment insurance programme, as well as detailed information on the industry of main activity (at the six-digit North American Industry Classification System (NAICS) level) and geographic location at the census block level for each establishment. Those establishments were then matched with the establishments sampled in the BLS occupational employment statistics (OES) survey, which provides data on the distribution of their employees' occupations and hourly wages.

10.91. The automatic matching efforts entailed matching EINs between BEA firm-level data and BLS establishment-level data. BEA firm-level data contain only one or two EINs per firm, while BLS establishment-level data contain one EIN per establishment, and the establishments of each firm may report many different EINs in the BLS data. Thus, additional EINs for each firm were found by matching firm names and addresses with the establishment names and addresses in the QCEW, as well as by using enterprise family lists (lists of employers that operate under different names but are part of the same enterprise) from other BLS programmes, enterprise information in the Compustat database and other sources of data on firms.

10.92. Such automated matching procedures are imperfect, however. Some firms are matched with unrelated establishments, while other firms appear to be matched with only a fraction of their establishments in the QCEW. Accordingly, the lists of all establishments found through automated matching were reviewed manually, and the establishments matched in error were removed. Then the QCEW was searched for additional establishments identified from enterprise websites, filings from the Securities and Exchange Commission (SEC) and enterprise annual reports.

10.93. The firms identified in BEA surveys were considered to be "adequately matched" with BLS establishment data if the total employment of all matched BLS establishments for a particular firm was within 20 per cent of the total employment reported in the BEA survey. The establishments of the adequately matched firms were then linked with establishments in the OES survey data. Although a large portion of the United States employment by United States-based multinational manufacturing enterprises was found in the QCEW and OES data, the missing employment was not random. The multinational enterprises that were found to match with the BLS establishment data were different from the firms that remained unmatched. For example, it was more difficult to match privately owned firms, which generally disclose less information than publicly owned firms and, in particular, do not file annual reports with SEC, and firms that have undergone liquidation or reorganization since the survey date.

10.94. Furthermore, the sample design of the OES survey is intended to produce estimates at the State and industry levels, not to provide estimates for the unusual subsample of multinational firms examined in the microdata-linking study. The OES survey collects information from a sample of establishments rotating in three-year panels, with sample probabilities that vary by establishment size. The probability that a larger establishment will be included in the OES sample over the course of three years is greater than the probability that a small establishment will be included. That difference could affect the distribution of occupations and wages in the subsample of establishments that are matched with multinational firms. Consequently, the sample and non-sample variance of those estimates may be large.

10.95. Future research could be based on other information collected by BEA, such as the magnitude and scope of FDI, the amount of intrafirm trade, the destination countries for FDI, the enterprises' degree of "global engagement" and their trade in services.

Chapter 11

Comparing data sources

11.1. In chapters 6 to 10, the present *Guide* discussed a variety of data sources, including enterprise and establishment surveys, surveys on persons and households, ITRS, administrative records and other data sources. Chapter 11 provides a comparison of the advantages and disadvantages of those sources in compiling the various EBOPS components, as well as FATS and modes 2 and 4 number of persons and trips. The advantages, identified with a plus sign (+), and disadvantages, identified with a minus sign (-), are analysed in comparison tables by systematically addressing the coverage of transactions (C), the accuracy of reporting (A), the timeliness and frequency (T), the relevance (R) and the burdens of reporting and processing data (B) involved in each data source. In doing so, the present chapter forms the basis for chapter 13, in which the integration of data from different sources is discussed.

A. Summary of good practices

11.2. Given the fact that the present chapter is about comparing data sources and good practices for the collection of the five main services groupings (manufacturing services on input owned by others as well as repair services, transport, travel, other services and government goods and services), FATS and the modes of supply, the user is advised to read sections B (resident/non-resident trade in services), C (FATS) and D (modes of supply) for specific discussions of good practices in those areas.

11.3. It is generally considered good practice for compilers, guided by the comparison tables available in the present chapter, to explore and compare the possibilities offered by the sources readily available nationally, and to use those that present an advantage (identified with a plus sign), relative to other sources, for collecting information for the supply of services item under consideration. If no source is yet available for the topic under consideration, it is considered good practice for the compiler to carefully compare and assess which type or types of data collection would be most useful to set up in his or her national context, using the guidance of the comparison tables in the present chapter.

11.4. To assess the advantages and disadvantages of different sources with respect to their coverage of the specific service category, some collection practices are marked with a double plus sign (++) in order to illustrate that they present the most advantages relative to other sources. However, the reader should always be aware that, depending on national circumstances, the suggested source may not always be the best option for every country and that in practice other sources or a combination of sources may be more suitable for collecting the necessary information.

B. Comparison of data sources for resident/non-resident transactions

B.1. Preferred collection practices and comparison of data sources for manufacturing services on physical inputs owned by others and maintenance and repair services n.i.e.

11.5. The present *Guide* suggests that data on manufacturing services on physical inputs owned by others (and corresponding goods) and on short manufacturing services could best be collected through surveys sent to manufacturing companies that organize international production (for imports of manufacturing services) and to processing companies/sole-proprietorships (for exports of manufacturing services). It is important to explain to respondents, and to verify that they understand, the scheme of production networks in which they are involved. Surveys would also be an efficient source for collecting information on maintenance and repairs n.i.e., provided that they are designed to ask respondents to separately identify maintenance and repairs related to construction and computer services.

11.6. An ITRS is an alternative data source for those items. For manufacturing services, it should be noted that an ITRS captures only fees paid to processors, meaning that transactions without settlements (e.g., between affiliated enterprises) may not be captured. Although customs data may also be used to derive estimates on manufacturing services, it is widely recognized that the difference between the value of imports and exports of processed goods in general does not represent the processing fee. Customs data could be useful for identifying companies engaged in processing, for reconciliation exercises when processing fees are obtained from ad hoc surveys or to complement other methods. Alternatively, they can be used as input in a data model by major type of manufacturing. Regular benchmark surveys may complement those sources to validate the model outcomes. Customs data are also potentially useful for identifying goods sent abroad for repairs and maintenance, although information on fees that is difficult to obtain could be requested in customs forms (see BPM6). Given the tax concessions provided to some firms that may be involved in processing, statements to tax authorities may provide relevant information.

B.2. Good collection practices and comparison of data sources for transport

11.7. Enterprise/establishment surveys of resident and non-resident carriers are the main source for collecting transport services data in many cases. Compilers are advised to make sure that the survey is elaborate enough to cover most EBOPS categories related to transport services. An additional difficulty, which applies to all sources for transport, is obtaining the information necessary for compiling data on the basis on BOP recording rules.¹⁵⁶ Compilers should also be aware of potential difficulties in obtaining data that reflects the activities of non-resident carriers for freight-related services (i.e., imports of freight transport services-debits). However, in many cases, transport operators establish branches or agents in client countries, which may then respond to surveys. For economies with regulated modes of transport, air transportation being the best example, this may even be more relevant. Alternatively, countries can survey resident importers and exporters about their transport expenditures paid both to resident and non-resident carriers.

¹⁵⁶ The reason for this is that, in line with BPM6 recommendations (para 10.78), all freight costs up to the customs frontier of the economy of the exporter are shown as incurred by the exporter and all freight costs beyond the customs frontier of the exporter are shown as incurred by the importer (see chapter 14 and *BPM6 Compilation Guide*, para. 12.35).

Table 11.1

Comparison of data sources for compiling manufacturing services on physical inputs owned by others and maintenance and repair services n.i.e. (import and export)

	Enterprise and establishment survey	International transactions reporting system (ITRS)	Administrative records, customs data and tax concessions
Coverage (C)	(++) Covers enterprises engaged in such activities. (-) May not cover full population if threshold is applied, in particular for resident small and medium-sized enterprises.	(+) Covers settlements related to transactions. (-) Does not cover all settlements if threshold is applied.	(+) Customs data could be useful for identifying companies involved in manufacturing services or processing and maintenance and repair, but declaration forms may need to be adjusted. (-) Probably not possible to ask for fee charged. (+) Information from tax authorities.
Accuracy in reporting (A)	(+) May require explanatory notes/follow up when respondents do not fully understand the scheme of the production network.	(+) If settlements of processing fees occur between unrelated parties. (-) Misclassifications: may include other (goods or services) transactions between processing company and client.	(+) Customs data: if gross flows related to goods for processing and repairs and maintenance are properly identified (mainly to adjust goods). Possible to ask for fee.
Timeliness, Frequency (T)	(-) Often lag of more than one month; quarterly frequency.	(+) Lag of a only few days; monthly frequency.	(+) Lag of a few weeks; monthly frequency.
Relevance (R)	(+) Can collect detailed information on manufacturing and maintenance and repair activities.	(+) If different processing-related transactions are identified by separate transaction/codes. (-) Additional information needed on corresponding movement of goods to adjust general merchandise.	(-) Difference between value of imports and exports often does not reflect manufacturing or repair fee (e.g. holding gains and losses).
Burdens of reporting and processing data (B)	Reporting: (-) Processing: (-) In case of difficulty of grossing up.	Reporting: (-) Especially for banks reporting on behalf of transactors. Processing: (+) Once implemented.	Reporting: (+) If no additional work. Processing: (+) In terms of coordination with data collection units.

(+) implies advantages and (-) implies disadvantages in terms of each element.

11.8. Information on passenger transport services can also be obtained from traveller surveys, including by means of questions on passenger fares for international transportation, although the same limitations encountered in travel would apply, namely, the capacity of the respondent to provide the correct information and the compiler's knowledge of the population.

11.9. An ITRS may cover most exports and imports of transport services categories but may not properly distinguish freight exports under FOB contracts where the transporter is a resident or imports of freight transport under CIF contracts, as the transport value is usually included in the value of merchandise. In such cases, compilers need additional information to estimate the imports of freight transport services. In addition, when using ITRS, compilers should be aware that the country of operations may be different from the country of registration or residence of the owners, especially in marine shipping.

11.10. Administrative records, such as customs documents, could provide useful information for modelling freight costs, as long as they include information about the commodity traded, the weight, the origin and destination and the mode of transport. Obviously, including such information also depends on whether it is available for the carrier involved. For example, administrative records may not have information on transport costs by type of merchandise. They also will not be helpful for the transport of cargo or passengers from one foreign country to another by a resident transporter, and administrative records might also be a weak source for measuring transactions related to auxiliary transport services, such as loading containers, storage or air traffic control.

Table 11.2
Comparison of data sources for compiling transport services, including postal and courier services

	Enterprise/establishment survey	Personal and household survey	ITRS	Administrative records and customs data
C	<p>Import/export: (++) General enterprise surveys cover transactions by residents reporting on their transactions involving non-residents (less relevant for passenger transport imports). (++) Surveys on agents/branches of non-resident carriers cover imports of residents (for passenger transport debit, could be targeted to ticket selling agents). Export: (++) Specific surveys may cover major resident carriers that provide services to non-residents (for both passenger and freight transport credit). (-) May not fully cover resident small carriers..</p>	<p>Import: (partial +) Household surveys or border surveys can cover transport services imports (freight and passenger fares) by resident. Export: (-) Border surveys can provide information on passenger fares incurred by non-residents.</p>	<p>Import/export: (+) Covers settlements related to transactions. (-) Does not cover settlements under thresholds. Import: (-) May be difficult to capture freight exports and imports included in goods.</p>	<p>Import: (+) Customs data could be useful for identifying freight costs. (-) Do not cover transport occurring between two foreign countries.</p>
A		<p>(-) Households/individuals may not identify cost components of package tour; depends on sample representativeness for international transactions.</p>	<p>(+) But compilers need to pay attention to partner country attribution.</p>	<p>(-) Difference by types of merchandise cannot be fully reflected.</p>
T	<p>(-) Often lag of more than one month; quarterly frequency.</p>	<p>(-) Lag of more than one month; quarterly frequency.</p>	<p>(+) Lag of only a few days; monthly frequency.</p>	<p>(+) Lag of a few weeks; monthly frequency.</p>
R	<p>(+) Can be designed to ensure relevance.</p>	<p>(+) Can be designed to ensure relevance. (-) Recollection of information may be approximate.</p>	<p>(-) Cannot easily identify complex transactions.</p>	<p>(-) Typically cannot identify freight costs.</p>
B	<p>Reporting: (-) Processing: (-) In case of the difficulty of grossing up.</p>	<p>Reporting: (-) Processing: (-) In case of the difficulty of grossing up.</p>	<p>Reporting: (-) Especially for banks reporting on behalf of transactors. (-) In terms of aggregation of microdata. Processing: (+) Once implemented.</p>	<p>Reporting: (+) If no additional work. Processing: (-) In terms of aggregation of microdata or coordination with data collection units.</p>

(+) implies advantages and (-) implies disadvantages in terms of each element.

B.3. Good collection practices and comparison of data sources for travel

11.11. Travel-related transactions are unique in comparison with other services, in that individuals are involved systematically in the consumption of the related products. The most efficient way to collect data from those travelling is, therefore, through surveys of persons or households that ask for information on their expenditures while outside their home country. There are certain limitations to such surveys, however. First, it may be difficult to reach relevant households/persons, notably non-residents, at the time they leave the country. Reaching residents when they return to their home country is also a difficult task, but they can be surveyed later (i.e., through household surveys).

11.12. Secondly, respondents may not have a perfect idea of all their expenditures during their travel, especially if they have to fill out the survey while they are in the process of leaving the countries. Some expenses, such as hotels or some transport, could have been paid well in advance. Expenses in the context of business travel could be paid or reimbursed by the traveller's enterprise; the traveller may even not know the exact value of the services transactions paid by his or her employer.

11.13. An ITRS could cover payments by resident and non-resident travel agencies, as well as large payments for travel. Payments by travel agencies may include expenses for hotels, domestic transport and meals during travel. Transaction data from foreign exchange bureaux could also approximate travel expenditures, although such data could contain non-travel transactions. Another potential weakness that can be important in the context of travel is that settlements and service delivery may not occur in the same time period.

11.14. Other data sources, such as payment and bank card (credit and debit) transactions, could also be explored. Such sources are not perfect, as purchases with credit cards or withdrawals with debit cards could have purposes other than travel spending. Therefore, the use of further information relating to credit and debit card transactions should be explored, such as the merchant code and information concerning the point of sale, in order to identify the relevant travel transactions. Compilers should be aware that persons travelling do not always use a card for payment but may use cash, or payments may be made by a third party. However, payment and bank card information might be very helpful for establishing trends and geographical breakdowns, and it offers a much larger sample than any survey on persons or households can likely provide. In the context of personal and household surveys, administrative records, including information from entry/departure cards, and mobile phone records, information is often combined in a model to derive travel information.

B.4. Good practices and comparison of data sources for other services¹⁵⁷

11.15. For most of the other services, the present *Guide* suggests that enterprise/establishment surveys could provide a large share of sources for estimates. The advantage of such surveys is that they could be designed to collect specific information corresponding to the compiler's needs.

11.16. Surveys are costly to process, however, and are also costly for the respondents, as they have to train employees to complete questionnaires. This is particularly true for transactions in services, which are difficult to extract from accounting documents. Increasing the response burden of small entities could be counterproductive as it could affect their interest in responding to other surveys for which their participation is more important.

11.17. To improve efficiency in data collection, enterprise/establishment surveys could be designed to target a specific activity or specific industry, in particular for exports. In certain cases, such targeting may also be relevant for imports of services (e.g., affiliated companies or activities for which outsourcing or /offshoring of activities may be important). Respondents could then be asked to provide more detail for services activities in which they are likely involved and less detail for other services where they expect to have negligible impact. In addition, it is important to note that collecting representative data for imports of services may be more difficult than for exports, as any resident entity, large or small, can import services. However, as indicated above, a number of factors could be used to define those enterprises or establishments that are more likely to be major importers of services.

11.18. As with any other survey, the degree to which a sample is representative of the population is a key indicator for the quality of the results. Compilers should take advantage of all other available sources of data to supplement and validate survey results and to reduce processing costs and reporting burdens.

¹⁵⁷ Excluding manufacturing, government goods and services n.i.e., transport services, and travel.

Table 11.3
Comparison of data sources for compiling travel

	Enterprise/establishment survey	Personal and household survey	ITRS	Administrative records	Operational data source
C	<p>Export: (+) Covers major resident suppliers, e.g., travel agencies, hotels, hospitals and education facilities.</p> <p>Import: (++) Border or household surveys capture expenditures by residents.</p> <p>(+) Potential source for business travel.</p> <p>(-) Does not cover non-resident suppliers.</p>	<p>Export: (++) Border surveys capture expenditures by non-residents.</p> <p>Import: (++) Border or household surveys capture expenditures by residents.</p>	<p>Import/export: (+) Covers settlements by resident and non-resident travel agencies. (+) Captures large payments corresponding to travel expenditure. (+) Data of foreign exchange companies cover most foreign exchange transactions by individuals if not paid in advance. (-) Does not capture travel payments below threshold, as travel payments are small. (-) Does not cover settlements below threshold.</p>	<p>Import/export: (+) Registration of immigration office (including entry/departure cards and border counts), can be used for identifying number of persons crossing borders; official records may be used for students and medical patients. (-) Possibility of abrupt suppression of sources.</p>	<p>Import: (+) Payment and bank card data cover most payments. (+) Partner country data may be used as supplementary source. Import/export: (+) Mobile phone records can be used for identifying both inbound and outbound travellers.</p>
A	<p>(+) If respondents fully understand the residence of the customers.</p>	<p>(-) Possibly depends on unrepresentative samples and frequency of survey. (-) Members of households may not identify cost components of package tours. (-) Recalling errors might exist for household survey.</p>	<p>(-) Payments and services may not be in the same period. (-) Foreign exchange data do not represent entire expenditure and can include payments not related to travel.</p>	<p>(-) Depends on immigration control, but some countries may not identify relevant population.</p>	<p>(-) Credit/debit card data can include payments not related to travel.</p>
T	<p>(-) Lag of more than one month; quarterly.</p>	<p>(-) Uncovered periods may exist when the survey is not frequently conducted. (-) Lag of more than one month (border surveys are more timely); quarterly or annually.</p>	<p>(+) Lag of a few days; monthly.</p>	<p>(+) Lag of a few weeks; monthly.</p>	<p>(+) Lag of a few weeks; monthly.</p>
R	<p>(+) Can incorporate partial breakdown by products. (-) Recollection of information may be approximate.</p>	<p>(+) Can incorporate detailed questions, e.g., expenditure by product.</p>	<p>(-) Cannot be easily designed easily to ensure that details of travel expenditures are correctly collected.</p>	<p>(-) Cannot be easily designed to identify relevant population.</p>	<p>(+) If non-travel amounts can be excluded.</p>
B	<p>Reporting: (-) Response rate of household surveys.</p> <p>Processing: (-) For border surveys in operation costs. (-) If grossing up survey results is difficult.</p>	<p>Reporting: (-) Especially for banks reporting on behalf of transactors. Processing: (+) Once implemented.</p>	<p>Reporting: (+) If no additional work. Processing: (+) In terms of coordination.</p>	<p>Reporting: (+) If no additional work. Processing: (+) In terms of coordination.</p>	<p>Reporting: (+) If no additional work. Processing: (+) In terms of coordination.</p>

(+) implies advantages and (-) implies disadvantages in terms of each element.

11.19. An ITRS has the great advantage of providing larger coverage than enterprise/establishment surveys. An ITRS comes with a strong degree of obligation for the respondents to provide the information requested. The costs for compiling ITRS data may be low, as the compilers can concentrate their efforts and resources on items that are not sufficiently covered. However, in some cases, it might be difficult to incorporate details, e.g., EBOPS, in reporting forms.

11.20. Administrative records cover a large portion of transactors, but may not be sufficient for all services categories. A promising source in that respect is tax records that include the value of services sold to or purchased from non-residents (value added tax (VAT) for services), as well as the location of the service transaction. That information can be particularly useful for identifying service traders. The advantages of those records are low cost, timeliness and completeness, the latter because tax or finance departments may have greater powers to convince respondents. The drawback is that, since the main purpose of this source is not to produce statistics, the validation of the results might not be adequate for the compiler's needs, and the compiler has no control over changes to, or even the abolition of, the data source by the tax authorities.

11.21. Surveys and an ITRS cannot be used to directly compile services such as FISIM or insurance services, which need supplementary information and require models to be generated. However, they can provide important partial information for the measurement of those service items (e.g., insurance payments). Commercial databases on financial institutions could also be useful for such items if they contain sufficient detail. For construction, surveys may provide more detailed and relevant data than an ITRS (see chapter 8).

11.22. For some specific detailed service categories, surveys on persons and households, which are primarily used to collect social and demographic information, could be useful. For example, although normally small in comparison with enterprise or establishment transactions, purchases of products downloaded online by individual consumers (software or audiovisual products) or commissions paid directly to non-resident brokers by individuals directly buying or selling securities abroad would most likely be covered only through such surveys (see chapter 7).

B.5. Good practices and comparison of data sources for government goods and services n.i.e.

11.23. Similar to travel, government goods and services n.i.e. are transactor-based (i.e., government units supply services or purchase goods or services). Compilers should use administrative records for the majority of services supplied by government units. Administrative data could also be used to capture data on expenditures by government units abroad, as well as by staff (e.g., by obtaining data on their wages to derive an estimation of their expenditure). For some components, such as goods and services acquired by government units, or by staff and their dependants working in foreign embassies and military enclaves (e.g., diplomats or military personnel), those transactions could be obtained through surveys of the units. For staff and their dependants, surveys could be targeted to embassies. They could include questions on the number of diplomats and other government employees, as well as on their earnings, to estimate expenses. An ITRS, if well designed, could capture expenditures by government units; however, it could be difficult to capture transactions with foreign government enclaves located in the reporter's economy. In addition, an ITRS cannot be used to capture expenditure by diplomats and their dependants.

Table 11.4
Comparison of data sources for compiling other services, excluding manufacturing services on physical inputs owned by others, maintenance and repair services n.i.e. and government goods and services, n.i.e.

	Enterprise/establishment survey	Personal and household survey	ITRS	Administrative records	Operational data source
C	<p>Import/export: (+) Surveys cover major resident enterprises. (-) May not fully cover resident small enterprises; may be difficult to ensure representativeness of import data.</p>	<p>Import: (+) Can cover Internet transactions (e.g., consumption of software or audiovisual products). (+) Can collect information on persons physically present to provide services, such as health or cleaning. Export: (+) Targeted labour force survey can cover mode 4 persons supplying services abroad. (+) Household survey can cover self-employed residents supplying services through mode 1.</p>	<p>(+) Covers settlements related to transactions. (-) Does not cover settlements under thresholds.</p>	<p>Import/export: (+) If transactions can be identified for specific sectors. (+) Tax records can help identify services traders and may include the value of services sold to or purchased from non-residents.</p>	<p>Export: (+) Data on financial markets and institutions are useful complementary sources for estimating insurance and financial services.</p>
A	(+)	(-) Recollection of services consumed through the Internet may be approximate.	(+) If settlements occur between unrelated parties. (-) Misclassifications.	(+)	(+) If resident/non-resident transactions are separately identified.
T	(-) Lag of more than one month; quarterly.	(-) Lag of more than one month; quarterly.	(+) Lag of a few days; monthly. (-) Misclassifications.	(+) Lag of a few weeks; monthly.	(+) Data are provided in timely and frequent manner.
R	(+) Can incorporate detailed questions relatively easily, e.g., complex transactions, such as construction. Could also be tailored to target specific activities.	(+) Can be designed so that relevance is ensured.	(+) All the resident/non-resident transactions can be captured once the system is designed properly (-) For long-term construction projects, can be difficult to establish the location from which work is conducted.	(-) Mapping may be difficult, as not designed for statistical purposes.	(-) Mapping may be difficult, as not designed for statistical purposes.
B	<p>Reporting: (-) In particular for imports. Processing: (-) In case of the difficulty of grossing up.</p>	<p>Reporting: (-) Large samples to ensure representativeness. Processing: (-) In case of the difficulty of grossing up.</p>	<p>Reporting: (-) Especially for banks reporting indirectly on behalf of transactors. Processing: (+) Once implemented.</p>	<p>Reporting: (+) If no additional work. Processing: (+) In terms of coordination with data collection units.</p>	<p>Reporting: (+) Processing: (-) If statistical techniques must be used.</p>

(+) *implies advantages* and (-) *implies disadvantages in terms of each element.*

Table 11.5
Comparison of data sources for compiling government goods and services n.i.e.

	Surveys	ITRS	Administrative records	Operational data source
C	Import: (+) Surveys (less likely) on own country's government agencies cover goods and services acquired from non-residents. Exports: (-) Surveys on foreign embassies cover goods and services consumed by non-residents.	Import/export: (+) Covers settlements related to transactions. (-) Does not cover settlements below thresholds.	Import/export: (++) The central bank dealing with international settlements of the central Government may provide comprehensive data or administrative records from the ministry of foreign affairs. (-) Transactions in kind are not covered.	Export: (+) Budget data and statements of government accounts provide information on costs of government services.
A	(+) If sufficient responses.	(-) Can include payments of other goods and services.	(+)	(-) Budget data are mere assumption.
T	(-) Lag of more than one month; quarterly.	(+) Lag of a few days; monthly.	(+) Lag of a few weeks; monthly.	(-) Publication of statements not timely.
R	(+) Can incorporate detailed questions (e.g. earnings).	(+) All the resident/non-resident transactions can be captured once the system is designed properly. (-) Difficult to capture transactions with foreign government enclaves located in the reporter's economy. (-) Cannot capture expenditure by diplomats and their dependants.	(-) Cannot be designed to ensure that necessary data is identified.	(-) Cannot be designed to ensure that necessary data is identified.
B	Reporting: (-) Foreign embassies may not report. Processing: (-) If estimation is needed.	Reporting: (-) Especially for banks reporting on behalf of transactors. Processing: (+) Once implemented.	Reporting: (+) Very low additional cost. Processing: (+) In terms of coordination.	Reporting: (+) Very low additional cost. Processing: (-) If estimation is needed.

(+) implies advantages and (-) implies disadvantages in terms of each element.

C. Good collection practices and comparison of data sources for FATS

11.24. For FATS, information on services provided via mode 3 (commercial presence), enterprise/establishment surveys is the most useful source. As noted in chapter 6, an understanding of the FDI Framework provides a strong basis for the establishment of the FATS universe; key FATS variables could even be incorporated into existing FDI surveys. Administrative records or commercial databases on foreign affiliates are also useful, but their forms and questionnaires cannot be easily designed to provide useful data for statistical and analytical purposes. Thus, they could rather be used as supplements to the survey on foreign affiliates.

11.25. An ITRS, which provides strong sources for resident/non-resident transactions, is not necessarily useful for compiling FATS, because an ITRS captures only settlements between foreign affiliates and residents, and such information does not measure the activities of foreign affiliates (including the provision of services).

D. Preferred collection practices and comparison of data sources for modes 2 and 4 numbers of persons

11.26. Tables 11.7 and 11.8 provide an overview of the different sources from which the number of modes 2 and 4 trips and/or persons can be derived, as well as some of their characteristics from the perspective of both the sending (outgoing indi-

Table 11.6
Comparison of data sources for compiling inward and outward FATS

	Enterprise/establishment survey	Administrative records	Operational data source
		Inward FATS	
C	(++) Survey used to collect information on a compiling economy's business structure, identifying the foreign-controlled population of firms, as well as the country of the UCI. (++) Key FATS variables can be incorporated into FDI inward surveys. (++) Dedicated inward FATS surveys. (-) May be difficult to fully cover resident small and medium-sized enterprises.	(+) Business registers, tax returns or regulatory reports cover most resident enterprises. (+) Customs data for the trade variable, but through linking exercises.	(+) Industry associations, commercial databases, such as financial statements of major enterprises, could be useful. (+) Surveys conducted outside the main statistical programme by, for example, sector-specific ministries, such as research and development surveys. (-) Partner country data. However, the level of detail is likely too small for use, and care should be taken in the interpretation of concepts.
		Outward FATS	
C	(++) Key FATS variables can be incorporated in FDI outward surveys. (++) Dedicated Outward FATS surveys. (-) May not fully cover foreign affiliates of resident small and medium-sized enterprises.	(+) Business registers, tax returns or regulatory reports could be used to determine whether residents have affiliates abroad, and relevant information from those records could be used.	(+) Industry associations and commercial databases, e.g., financial statements of major enterprises. (+) Surveys conducted by specific ministries, e.g., research and development surveys. (-) Partner country data; level of detail is likely too small for use, however, and care should be taken in the interpretation of concepts.
		Inward and outward FATS	
A	(+)	(+)	(+)
T	(-) Lag of more than one month; quarterly	(+) Lag of a few months; annually.	(+) Lag of a few months; annually.
R	(+) Can incorporate detailed questions.	(-) Cannot be easily designed for statistical purposes.	(-) Cannot be designed for statistical purposes.
B	Reporting: (-) FDI surveys: a portion of FDI firms are not part of the FATS universe and FDI surveys may be conducted with a quick turnaround, whereas FATS data are usually collected on an annual basis. Processing: (-) In case of difficulty in grossing up.	Reporting: (+) If no additional work. Processing: (+) In case of the need for coordination with data collection units.	Reporting: (-) No additional costs. Processing: (-) In case of the need for statistical techniques to use data.

(+) implies advantages and (-) implies disadvantages in terms of each element.

viduals) and receiving (incoming individuals) country. Compilers should carefully evaluate how residence is defined in their countries, be aware of the laws and regulations in place for migration and trade in services and assess how that information can be used in a statistical context.

11.27. Table 11.7 on mode 2 movements of persons shows that the sources of interest would most likely be the same as some of those used for the collection of travel information. An ITRS cannot capture such information, but household and border surveys can capture information on outgoing individuals travelling for personal or business reasons. Often such surveys need to be elaborated to identify the travel motive (business or personal reasons). Labour force surveys and enterprise surveys constitute appropriate sources for capturing the number of outgoing persons travelling for business reasons. For incoming mode 2 persons, specific surveys targeting students, medical personnel and tourists could be used, as well as border surveys that can be conducted as persons leave the country. Administrative sources such as border counts or entry/departure cards can be used to get an initial, timely estimate of the number of individuals leaving or entering the country to consume services, but compilers should be aware that it might be difficult to add supplementary questions to such sources. Often the data will need to be combined, in particular for compiling breakdowns, to obtain relevant data on the number of mode 2 movements/persons, e.g., through the use of data models using numbers from border counts, entry/departure cards and information from border or household surveys.

11.28. Table 11.8 breaks down the categories of mode 4 persons into four categories: employees and self-employed contractual services suppliers, intracorporate transferees/foreign employees of foreign affiliates and services sellers.

11.29. Regarding mode 4 types of persons, enterprise surveys (i.e., trade in services, structural business or general enterprise surveys) constitute an important source for both incoming and outgoing employees and for self-employed persons providing services under a contract (i.e., contractual services suppliers). Surveys are particularly relevant given that they can be specially tailored, in particular in the case of trade in services surveys. Inward FATS surveys, if they include variables measuring exports and imports of services of the foreign affiliate could possibly include information on the persons (and their numbers) who provide the services as employed contractual services suppliers. For outgoing persons, outward FATS surveys may provide information on employees on service contracts working in the affiliate located abroad. The number of intracorporate transferees/foreign persons directly recruited by affiliates and possibly that of services sellers could also be captured through inward and outward FATS surveys. In particular, outward FATS surveys could allow the identification of employees of the parent company who work in the affiliate as intracorporate employees.

11.30. As in the case of mode 2 persons, border and household surveys are also an interesting source both for all types of incoming and outgoing employees and for self-employed mode 4 persons. Information regarding residence, as well as identification of the employer-employee relationship of the individuals, will be crucial, as household surveys cover only resident persons. Finally, as for mode 2, the data will most probably need to be combined, in particular for compiling breakdowns, to obtain relevant data on the number of mode 4 movements/persons, e.g., through the use of data on characteristics sourced from surveys of persons or households, combined with counts of those crossing borders. Data from partner countries may be particularly useful for capturing the relevant information for sending countries.

Table 11.7
Comparison of data sources for compiling mode 2 movements of persons

Sources of data		Personal and household survey	Administrative sources	Operational data source
Enterprise/establishment survey				
C	<p>Demand side/outgoing:</p> <p>(+) Enterprise surveys can include questions on individuals travelling on behalf of their employers.</p> <p>Supply side/incoming:</p> <p>(+) Surveys targeting tourism, education or health-related establishments can include questions to non-residents to whom services were supplied.</p>	<p>Outgoing:</p> <p>(++) Household surveys can capture information on individuals travelling.</p> <p>(++) Labour force surveys can capture data on individuals travelling on behalf of their employers, in the context of business trips.</p> <p>(++) Border surveys provide information on persons travelling (mainly on their characteristics).</p> <p>(-) Some adjustments to fit both tourism and trade in services concepts are needed.</p> <p>(-) Sample size might need to be increased.</p> <p>Incoming:</p> <p>(-) Most likely not relevant in case of household, persons and labour force surveys.</p> <p>(++) Border surveys provide information on persons travelling (mainly on their characteristics), often as they are leaving.</p> <p>(-) Some adjustments will be needed to fit both tourism and trade in services concepts.</p> <p>(-) Sample size might need to be increased.</p>	<p>Outgoing:</p> <p>(+) Border counts, entry/departure cards or other types of immigration records can be used as first estimates of number of mode 2 persons leaving the country to consume services.</p> <p>Incoming:</p> <p>(+) Border counts, entry/departure cards or other types of immigration records can be used as first estimates of number of mode 2 persons entering the country to consume services.</p>	<p>Incoming:</p> <p>(+) Mobile phone records can be used for identifying both inbound and outbound number of persons travelling.</p> <p>Incoming and outgoing:</p> <p>(+) Partner country data may be used as supplementary source.</p>
Personal and household survey				
A	(+) For incoming, if respondent fully understands the residence of the customer.	(-) Depends on representativeness of samples and frequency of survey.		
T	(-) Lag of more than one month; quarterly.	(-) Lag of more than one month; quarterly.	(+) Lag of a few weeks monthly.	(+) Lag of a few weeks or months.
R	(+) Can be designed to ensure relevance.	(+) Can be designed to ensure relevance.	(-) Cannot easily be designed/modified to fit statistical needs.	(-) For partner data, need to ensure that residence and other variables are compatible with national definitions.
Administrative sources				
B	<p>Reporting:</p> <p>(-) Low cost.</p> <p>Processing:</p> <p>(-) In case of difficulty with grossing up.</p>	<p>Reporting:</p> <p>(-) Low cost.</p> <p>Processing:</p> <p>(-) In case of difficulty with grossing up and reuse of existing data.</p> <p>(-) Coordination with data collection units.</p>	<p>Reporting:</p> <p>(+) Low cost.</p> <p>Processing:</p> <p>(+) In terms of aggregation of microdata and reuse of existing data.</p> <p>(-) Coordination with data collection units.</p>	<p>Reporting:</p> <p>(+) If no additional work.</p> <p>Processing:</p> <p>(+) In terms of coordination.</p>

(+) implies advantages and (-) implies disadvantages in terms of each element.

Table 11.8
Comparison of data sources for compiling mode 4 persons/trips by category of mode 4

Enterprise/establishment survey	Personal and household survey	Administrative records	Operational data source
Contractual service suppliers (employees and self-employed persons) and intracorporate transferees			
<p>C Incoming persons: (++) Trade in services, structural business or general enterprise surveys. (++) Inward FATS surveys for imports of services of foreign affiliates, i.e., incoming persons to provide services to foreign affiliates. Can also identify intracorporate transfers in which the employment relationship is transferred to the resident affiliate. Outgoing persons: (++) Trade in services, structural business or general enterprise surveys. (++) Inward FATS surveys for exports of services of foreign affiliates. Can also identify intracorporate transfers in which the employment relationship is transferred to a non-resident affiliated unit (+) Outward FATS surveys: for persons leaving the country to supply services to non-resident affiliates. Can also identify intracorporate transfers in which the employment relationship is transferred to a non-resident affiliated unit.</p>	<p>Incoming persons: (+) Border surveys upon entry to or departure from the country to capture information on characteristics of those crossing borders. (-) Household and labour force surveys or population censuses to capture information on characteristics of those crossing borders; in general, non-residents are not covered. Outgoing persons: (+) Border surveys upon entry into or departure from the country to capture information on characteristics of incoming and outgoing persons, those crossing borders. (+) Household and labour force surveys or population censuses to capture information on characteristics of those crossing borders, if they remain residents.</p>	<p>Incoming persons: (+) Entry/departure cards for rough estimates. (+) Work permits, visas and immigration records. (+) Legislation implementation register (e.g., tax). (-) Registers of persons do not cover non-residents. Outgoing persons: (+) Registers of persons who remain residents. (+) Commercial registers. (+) Legislation implementation register (e.g., tax). (-) For incoming and outgoing only if coverage corresponds to MSITS 2010 definitions.</p>	<p>Incoming and outgoing persons: (++) Surveys covering statistical needs of other domains, such as surveys of a sectoral ministry (legal services, research and development, education or health). (+) Partner country data, in particular for receiving countries.</p>
Services sellers/commercial presence negotiations			
<p>C Outgoing persons: (++) Trade in services, structural business or general enterprise surveys. (++) Possibly inward FATS surveys. .</p>	<p>(+) Border surveys can cover information on services sellers and commercial presence negotiations upon entry to or departure from the country..</p>	<p>Incoming and outgoing persons: (+) Entry/departure cards. (+) Visas and immigration records. (-) Only if coverage corresponds to MSITS 2010 definitions.</p>	
<p>A (+) In particular, trade in services and FATS surveys, but requires clear explanatory notes (in particular to clearly define mode 4 categories).</p>	<p>(+) For border/passenger surveys, but with limited details. (+) For outgoing, for household and labour force surveys and population censuses. (-) For incoming for household and labour force surveys and population censuses.</p>	<p>(+)</p>	<p>(+)</p>
<p>T (-) Lag of more than one month; quarterly.</p>	<p>(-) Uncovered periods may exist when the survey or census is not conducted on regular basis. (-) Lag of more than one month; quarterly.</p>	<p>(+)Lag of a few weeks; monthly..</p>	<p>(-) For partner data.</p>
<p>R (+) Can collect detailed information on contractual services suppliers (employees, self-employed persons) and intracorporate transferees, in particular for trade in services surveys that can collect detailed information on number of persons as well as values. Also useful for intracorporate transferees in particular FATS surveys. (-) For outgoing self-employed persons, only if covered (i.e., in the case of a threshold).</p>	<p>(+) All sources can be designed to ensure relevance..</p>	<p>(-) Cannot easily be designed or modified. (-) For incoming and outgoing, for all sources, only if coverage of categories is close to MSITS 2010 definitions. (-) Possibility of abrupt suppression of sources.</p>	<p>(+) Can be designed to ensure relevance.</p>
<p>B Reporting: (-) In particular, need to keep track of additional information which may be stored in other departments, such as human resources. Processing: (-) in case of difficulty of grossing up.</p>	<p>Reporting: (-) May need to substantially increase samples. Processing: Inn case of difficulty in grossing up.</p>	<p>Reporting:(+) If no additional work. Processing:(-) In terms of coordination.</p>	<p>Reporting: (-) Keep track of additional information stored in other departments, such as human resources. Processing: (-) In case of difficulty in grossing up.</p>

(+) implies advantages and (-) implies disadvantages in terms of each element.

E. Country experiences

11.31. For compiling statistics on the international supply of services, most countries face the challenge of having to rely on several sources with different coverage. The data collection is often done in a context of scarce resources and the necessity of limiting response burden. Therefore, compilers need to make the best possible use of available sources. The following examples illustrate some country practices for dealing with the challenge of having to use different data sources and compare their characteristics in order to collect relevant information.

Country experience: Canada

11.32. For the majority of statistics on services transactions, apart from travel and transport services, Canada uses a specific survey on trade in services and several industry-oriented surveys. Those enterprise/establishment surveys are supplemented by administrative data that record non-arm's-length transactions with non-residents. Each source has its own coverage and its own collection of services statistics that are not necessarily equivalent to those of EBOPS. However, as resources are limited and the reduction of response burden is an important objective for Canadian compilers, it is necessary to use several sources to produce the best possible estimates.

11.33. The industry-oriented surveys of Canada collect different information on revenues and expenses by enterprises/establishments for specific industries. Those surveys offer broad coverage of the services industries, but the level of detail of the collected information is limited. Such surveys are, therefore, complemented by the international transactions on commercial services survey (BP21S) that targets 3,500 enterprises and collects information for 32 categories of services. Transactions are reported by country of trade as well as whether there is a relationship with the trade partners. The accompanying explanatory notes should, in principle, improve the quality of the responses.

11.34. Compared with enterprise/establishment surveys, administrative data provide, in principle, better coverage, as all Canadian legal entities are required to fill out the tax form if their total transactions (not only in services) with their foreign related entities are above Can\$1 million. For example, for the year 2010, more than 12,000 entities filled the tax form, and half of them reported service transactions. The tax form supplies transactions by name and country of the non-resident entities.

11.35. However, the tax form is limited to transactions with foreign-related parties. That limitation virtually eliminates Statistics Canada's capacity to use the administrative information as a data replacement source. In other words, the administrative data could not completely replace survey data. Furthermore, several service categories are aggregated on the form to simplify the work of the respondents. The tax form contains few definitions, which may lead to errors or misinterpretation by the respondents.

11.36. The annual administrative data files are updated twice a year. As they are an external source, less quality control may be applied on the information they contain. For example, if no transaction is reported for a certain entity, the reason could be the absence of a transaction, but it could also be that the transaction has not yet been processed. Monitoring transactions in services is not the main purpose of the tax form. Thus, verifications by tax authorities are usually done at a more aggregated level, possibly resulting in transactions for the same unit being reported under one activity in one year and under another activity the following year, without further verification.

11.37. More information on the industry-oriented surveys of Canada and the more specific international transaction in commercial services survey is provided online.

Country experience: Japan

11.38. Japan uses an ITRS as a primary data source for compiling trade in services. However, as some transactions cannot be captured through an ITRS, various data sources have been implemented to supplement it. Other data sources include enterprise surveys for specific business based on the Foreign Exchange and Foreign Trade Act, administrative sources and data provided by private institutions. Uses of data sources other than the ITRS for the compilation of trade in services are summarized in table 11.9. More detail on the experience of Japan is given in the online version of the present *Guide*.

Table 11.9

Japan: sources of trade in service items

	Source data	
	Credit	Debit
Sea transport	ITRS, International transportation survey (ITS)	ITRS, ITS, trade statistics, other sources
Air transport	ITRS, ITS	ITRS, ITS, trade statistics, other sources
Other transport	ITRS	ITRS
Travel	Border surveys, administrative sources (AS), ITRS, other sources	Household surveys, AS, ITRS, other sources
Manufacturing services	ITRS	ITRS, survey ordered by written notification
Maintenance and repair services	ITRS, ITS	ITRS, ITS
Construction	ITRS	ITRS
Insurance and pension services	ITRS, survey on freight insurance, other sources	ITRS, survey on freight insurance, trade statistics, other sources
Financial services	ITRS	ITRS
Charges for use of intellectual property	ITRS	ITRS
Telecommunications, computer and information services	ITRS	ITRS
Other business services	ITRS	ITRS
Government goods and services n.i.e.	AS, ITRS, ITS	AS, ITRS, ITS

Country experience: Philippines

11.39. Bangko Sentral ng Pilipinas (BSP) is the lead agency in the compilation of statistics on the international supply of services in the Philippines. BSP is able to compile all the main services accounts, mostly from the bank reports in the ITRS, supported by the company responses to the cross-border transactions surveys (CBTS) and administrative reports from other agencies and industry associations.

11.40. The main challenge for BSP in the compilation of statistics on the international supply of services is maximizing the benefits of the ITRS and CBTS. On the one hand, the challenge of BSP in the use of an ITRS is addressing possible misclassification of transactions by banks. On the other hand, BSP is confronted with the challenge of improving the generally low response rate and the coverage of CBTS to include other industries, to better capture relevant international services transactions. The low response rate of surveys stems from the absence of a specific provision in the charter of BSP that would allow it to enforce compliance by non-financial corporations to provide data or information.

11.41. Reports submitted to BSP by commercial, thrift and foreign banks under ITRS contain information on bank positions in foreign currency-denominated

assets and liabilities and all payments and receipts that bring about changes in the banks' positions. That information is being used in the compilation of some services sub-items, such as transport, travel, construction, insurance and pension, financial (including FISIM), charges for the use of intellectual property n.i.e., telecommunications, computer and information services, other business services and personal, cultural and recreational services.

11.42. In addition to the monthly CBTS, BSP, in coordination with the department of trade and industry (DTI) also conducts the annual information technology-business process outsourcing (IT-BPO) services survey that covers companies engaged in business process outsourcing (BPO) activities.

11.43. BSP also uses administrative data provided by regulatory and administrative government agencies, such as customs data, to compile some of the services sub-accounts, including manufacturing services of the physical inputs owned by others, freight import and exports, insurance, etc. The department of foreign affairs (DFA) data on the annual budgets of Philippine embassies and consular offices abroad are used as approximations for payments on government goods and services n.i.e.

11.44. For non-resident expenditure in the Philippines (travel receipts), data are derived from the visitors sample survey (VSS) conducted by the Department of Tourism (DOT), which provides information on the average expenditure of foreign tourists and their average length of stay in the Philippines. For tourist-related travel expenditure abroad by residents, data are sourced from the ITRS and CBTS. Beginning with the 1999 report, travel receipts include the expenditure of non-resident overseas Filipinos (OF) in the Philippines during home visits. Travel debits cover expenditures of resident OFs in the host countries in which they are deployed. Information on residents' credit card expenditures abroad are obtained via reports of the Credit Card Association of the Philippines.

Part III

Data compilation

Data compilation is understood as a set of statistical procedures performed on collected data to derive new information according to a given set of rules, resulting in intermediate data and final statistical outputs. Data compilation includes, among other things, integrating data from different sources, the use of weighting schemes, methods for imputing missing values or source data, statistical adjustment, balancing and cross-checking techniques and relevant characteristics of the specific methods applied. Part III starts with an introduction and overview of data compilation within the modes of services supply statistical framework (chapter 12), followed by a discussion of the integration of data from different sources (chapter 13), the compilation of resident/non-resident trade in services statistics (chapter 14), the compilation of foreign affiliates statistics (FATS) (chapter 15) and the compilation of additional indicators on the international supply of services (chapter 16) and concludes with a description of the estimation and modelling of missing data, and forecasting or back-casting (chapter 17).

Chapter 12

Introduction and overview of data compilation within the modes of services supply statistical framework

12.1. Chapter 12 provides an introduction and an overview of data compilation with the modes of services supply framework. It first covers the information needs of data users, then provides an overview of using an integrated approach to data compilation, reviews the need for phased implementation of suggested data compilation procedures and, finally, provides an introduction to using models and estimates in data compilation, which will be further covered in chapter 17.

A. Data compilation within the modes of services supply statistical framework: issues to consider

Information needs

12.2. The information needs include the value of trade in services or sales/output of services by foreign-controlled foreign affiliates and other monetary statistics (foreign direct investment flows and stocks, research and development expenditure in affiliates, income flows relating to foreign affiliates active in services sectors, etc.). There is also interest in non-monetary data, in particular in terms of assessing commitments made in trade in services agreements (e.g., number of mode 4 persons, number of foreign affiliates established abroad in the context of mode 3, etc.).

12.3. To provide better guidance on how to satisfy the information needs of data users, part II of the present *Guide* contains three chapters focused on particular areas:

- (a) The *compilation of statistics on resident/non-resident trade in services* is covered in chapter 14. That chapter complements the guidance provided in chapter 12 of the *BPM6 Compilation Guide*. It elaborates conceptual issues directly related to data compilation; describes challenges and good practices in the compilation of particular Extended Balance of Payments Services Classification (EBOPS) categories, in total and detailed by trading partner, as well as their allocation to modes of supply, and provides guidance on services transactions between related enterprises;
- (b) The *compilation of FATS* is covered in chapter 15, which contains a general description of the compilation of FATS, elaborates a set of FATS variables, discusses the related data compilation issues and describes relevant country experiences. The chapter focuses, in particular, on data needs with respect to the international supply of services, identifying the variables and breakdowns of interest for assessing mode 3 commercial presence. These include the need for more detailed statistics for services activities, the preference

for output over sales/turnover for measurement and the need to separately identify sales/output of services products for all activities and specifically for those that are destined to consumers of the country of establishment of affiliates;

- (c) The *compilation of other monetary and non-monetary indicators*, in particular for modes 2 and 4 (i.e., the number of mode 2 persons travelling abroad and purchasing services and the number of mode 4 persons crossing borders and temporarily abroad in the context of services contracts) is an important information requirement. The related challenges and good practices are described in chapter 16, which provides, in particular, an overview of data variables on the movements of natural persons under mode 4 of services supply, describes the uses of various data sources in the compilation of the variables and compares different sources and guidelines on the organization of the data compilation process. The chapter also provides information on the possibilities offered by the linking of trade and business statistics and a list of sectoral services statistics useful for a full analysis of the international supply of services.

B. Focusing on an integrated approach

12.4. Part III pays a special attention to the promotion of an integrated approach to compilation. As described in part II, there are several groups of data sources that can be used in the compilation process. This raises the issue of how to properly integrate data from various sources. Chapter 13 provides guidance on that topic by discussing issues and good practices in the consolidation and merging of data, and exploring the possibilities of compilation using data generated in other statistical domains. It also proposes a number of approaches, taking into account the suitability for economies and considering differences in compilation systems.

12.5. Chapter 14 proposes to integrate data sources for compiling resident/non-resident trade in services statistics. For example, for travel, linking with tourism statistics is proposed to develop coherent sets of data. Such integration focuses on the breakdown by purpose of travel and type of product consumed for compiling the supplementary item “tourism-related services” in travel and passenger transport. In the case of data for modes of supply, such an approach would enable compilers to arrive at more detailed estimates of the mode 2 supply of services, in particular, travel by type of product consumed and linking to tourism statistics (i.e., tourism-related consumption/expenditure as suggested in the international transactions reporting system (ITRS) 2008 and the *Manual on Statistics of International Trade in Services 2010* (MSITS 2010), chapter 14, section C), and using customs data or merchant category codes from credit card data. The scope of different statistical domains must be taken into account when integrating data from different sources.

12.6. Chapter 15, while focusing mainly on compilation issues related to FATS, also gives a special attention to the possibility of using or reusing existing data by linking with microlevel information, for example, through business registers (with a common identifier) for the compilation of FATS. Consideration should also be given to using data from structural business statistics (SBS) to further develop international services data by mode of supply for modes 1 and 4, as well as to combine SBS information with FATS to gather more insight into mode 3.

C. Phased implementation of the recommendations on data compilation

12.7. The present *Guide* advises a phased implementation approach for the compilation of data within the statistical framework for measuring the international supply of services. The proposed approach can, in particular for modes of supply, serve as a reference for producing approximations of certain statistics. Part III, therefore, identifies the main conceptual and statistical challenges in measuring the international supply of services, in particular for the modes dimension, and goes beyond balance-of-payments services and FATS. The present part evaluates to what extent existing statistics can match the information needs of trade negotiators and economic analysts, in particular in the context of the General Agreement on Trade in Services (GATS); it also identifies what would need to be developed in data compilation systems to respond to information needs when it comes to other indicators useful for assessing the international supply of services.

12.8. Data on trade in services have been compiled for a number of years in the context of the *Balance of Payments and International Investment Position Manual*, ed. 5 (BPM5), but compiling more detailed statistics by type of service and by partner remains a challenge for many compilers. Not much information is currently compiled on the activities of foreign affiliates, as FATS is a relatively new statistical domain. Moreover, modes of supply are not always easy to observe and, consequently, many data compilers have not yet compiled such data. On the one hand, the concept of modes of supply is not yet embedded in existing national compilation systems. On the other hand, a completely new compilation of statistics on the international supply of services by mode will necessarily cause a higher burden and additional costs for compiling economies; that is why a phased approach should be adopted on the basis of the proposals in MSITS 2010. Statisticians, both national and international, also need to have a more profound knowledge of how different services sectors operate in various economies. Compilers can choose from among different approaches that are elaborated in part III, in particular in chapter 14. The respective size of an economy, the structure of the services sector or the importance of specific services are indicators that could be used for focusing on one approach or the other, or adopting a combination of several approaches.

12.9. **A simplified allocation and direct compilation of statistics on the international supply of services by modes.** For the development of modes of supply information, a simplified allocation of FATS and balance-of-payments data to modes of supply is proposed in MSITS 2010.¹⁵⁸ The so-called mechanical allocation of services categories either to one dominant mode or the indication of a distribution to several modes in the balance of payments, as well the simple allocation of FATS to mode 3, is considered to be the starting point. That approach makes use of existing services data within the balance-of-payments/FATS framework for compiling or estimating statistics by mode of supply and is further explained in chapter 14, section C, and in chapter 15.

12.10. That simplified allocation is a reasonable first step because of the relatively low cost and minimum burden for compilers. Chapter 14 also elaborates on the development of estimates on a broader basis that takes into account economic, political-economic and socioeconomic issues. Chapter 14 then focuses on the actual compilation of data, in particular by suggesting the identification of modes in trade in services surveys (mainly modes 1 and 4, but also mode 2, under certain conditions). Specific sector studies, which focus on different user interests, could serve several purposes, including providing specific studies to policymakers on, for example, services

¹⁵⁸ See MSITS 2010, chap. V and table V.2, as well as chap. 1, para. 1.5.

incidental to agriculture or environmental services. Such an approach could also be applied for further elaboration and adjustments of the simplified allocation.

12.11. Finally, as outlined above, beyond the monetary value of the international supply of services, users also need additional monetary and non-monetary data, which are mainly described in chapter 16 and, for mode 3, chapter 15 (e.g., employment, number of enterprises). Although those additional needs are considered to be longer-term objectives for compilation, when developing the system, compilers should keep them in mind so that they can be factored in easily at future stages of development of a complete information system.

D. Use of models and estimates

12.12. The present *Guide* recognizes that available data sources have their limitations and, therefore, that compilation must include the use of models and estimates. Those limitations include the unsustainable cost of collecting some of the information, the inability of the available sources to provide the required coverage, detail, frequency and/or timeliness foreseen by international standards and the partial overlap of the various sources to be combined in the collection system. Chapter 17 is devoted to those issues and covers such topics as imputation for filling data gaps and for editing data, forecasting and compensating for the lack of timeliness of data sources, back-casting and revising time series, allocating all services transactions to the relevant EBOPS services categories and appropriate trading partners, and model-based estimates.

Chapter 13

Integration of data from different sources

13.1. As described in part II, several sources can be used in the compilation of data within the modes of services supply statistical framework. In practice, information from various sources will often have to be combined to obtain the required level of detail and quality, while also reducing excessive burden for respondents. The present chapter reviews the potential challenges compilers face when integrating data sources that cover the same activities or the same entities and provides guidelines on how to resolve those issues. More specifically, the chapter presents a summary of good practices and defines the relevant terminology (section A), and describes the integrated business survey program (section B) and integration, consolidation and merging of data from different sources (section C). A country experience is presented in section D.

A. Summary of good practices

13.2. Integrating data from different sources is advised as the principal way to ensure the production of more detailed and comprehensive statistics, as well as to reduce the burden on survey respondents. Compilers are encouraged to determine which data sources are most appropriate on a case-by-case basis, carefully considering the strengths and weaknesses of each data source. More specifically, compilers should be aware of the statistical units used in each source, the entities covered, the services categories identified, the variables compiled (e.g., the value of services exports/imports by EBOPS categories for the compilation of trade in services between residents and non-residents or output or turnover/sales and employment for the compilation of FATS, etc.), the availability of geographic breakdown, the time period of reference, the presence of thresholds and the survey frequency. Ideally, compilers should identify the sources in which they have more confidence, to be used as a benchmark for the other data sources.

13.3. To optimally exploit the advantages of data integration, it is recommended that the potential of using linked data be considered from an early stage and that decisions on survey design and sampling frameworks, for example, be made while keeping in mind that the data will be linked later on. Such forward thinking requires positive coordination across surveys, that is, compilers should ensure that the entities covered by different surveys and registers have sufficient overlap to avoid large shares of non-matched records, which make data integration more difficult and may create statistical biases. It is recognized that such coordination may be seen as a long-term strategy by countries whose capacity to compile statistics on the international supply of services needs significant strengthening.

13.4. The present *Guide* encourages national statistical agencies to adopt an integrated business survey programme, as outlined in the *Guidelines on Integrated Economic Statistics*.¹⁵⁹ Specifically, under those guidelines, it is recommended that the collection of statistical information move from a “stovepipe” approach, in which each statistical programme collects information for its own purposes, towards an integrated

¹⁵⁹ See *Guidelines on Integrated Economic Statistics*.

approach, which aims to integrate survey design and implementation across all statistical programme areas. That recommendation is particularly relevant in the context of statistics on the international supply of services, given that information needs cut across various statistical domains. Such integration of data collection procedures will reduce the burden on respondents. It will also create a common standardized statistical framework for presenting more coherent statistics for the entire economy, covering business statistics, short-term statistics, national accounts and international statistics, for evidence-based policymaking.

13.5. It is good practice to use the statistical business register (SBR) to identify the common statistical unit and to provide the sampling frameworks. In addition, it is advised that ITRS and the trade register, which includes merchandise trade statistics, be linked to the SBR, with the enterprise as common statistical unit. This is particularly relevant for services categories with a strong link between trade in goods and trade in services, such as manufacturing services.

13.6. Compilers should take note that for the purposes of the present chapter, the term “data integration” refers to bringing together information from two or more data sources, with the object of better understanding and presenting the nature of a transaction than would be possible on the basis of any one source alone. “Data consolidation” is understood as the summation of data from multiple sources, in which the sources generally provide information on non-overlapping parts of the total. “Merging data” refers to the process of combining data, especially data covering the same activities or entities, from different sources via common denominators, such as a unique identifier in the SBR, when individual sources provide incomplete information. Merging data is the final step in the process and creates a unified view of an entity or activity. Before merging data, compilers must be aware of the definitions and methodologies used across the various data sources to ensure internal consistency of the merged data and to prevent the duplication or overlap of records.

B. Integrated business survey programme: an overview

13.7. The idea of developing and achieving an integrated system of business and international statistics has a long history among national and international governing bodies of economic statistics. The motivating source of that work has been the policy and statistical benefits that can be obtained from an integrated statistical system for national and international coordinated economic policy planning in an interconnected global economy.

13.8. The benefits to data users, producers and providers, include, but are not limited to, the following:

- (a) A common standardized information management framework that governs the statistical production process over time and across countries;
- (b) Statistical production processes that help reduce response burden and costs, while improving transparency for data users and providers;
- (c) Collaboration in the development and application of common methods and information technology tools for data processing, documentation and exchange through the adoption of a standardized information management model;¹⁶⁰
- (d) Addressing the demand for evidence-based, mutually reinforcing stories and descriptions of the sequence of events that are obtained from coherent statistics, covering business statistics, short-term statistics, national accounts and international statistics.

¹⁶⁰ See “Learning centre on explaining the integrated business statistics programme for statistical information management”, concept note presented at the forty-fifth session of the Statistical Commission, New York, 4-7 March 2014. Available from http://unstats.un.org/unsd/statcom/statcom_2014/seminars/LC_Integrated_Business/Concept%20Note%2012%20Feb%202014.pdf.

13.9. The starting point for integrated economic statistics is the use of the internationally accepted standard for macroeconomic accounts, the System of National Accounts (SNA) (preferably its latest edition, the 2008 SNA) as the conceptual organizing framework. As a result of years of work in harmonizing macroeconomic statistical standards, the use of the 2008 SNA as the conceptual framework provides consistency and coherence with other internationally accepted standards and international recommendations, such as the Balance of Payments and International Investment Position Manual, 6th ed. (BPM6) and other specialized manuals, such as MSITS 2010.¹⁶¹

13.10. **Standardized surveys across statistical programmes.** The most effective means of ensuring integration and consistency is through a holistic redesign of data collections, both surveys and administrative data, that minimizes inconsistencies through the use of common standards and methods, integrated survey design and a central business register. It is good practice for the collection of statistical information to move from a stovepipe approach towards an integrated approach. In a stovepipe model, in which each programme collects information on its own and for its own purposes, an entity surveyed may be asked the same questions with different definitions. A stovepipe approach, therefore, not only increases the survey burden, but is also likely to produce statistics that are difficult to align. In contrast, integrated questionnaire design and integrated surveys help to resolve such data-collection issues.¹⁶² The integrated approach is particularly relevant for statistics on the international supply of services, which are compiled with information from various statistical domains.

13.11. Under an integrated approach, all economic data collections gradually change their objectives and statistical designs and enhance the coherence of statistical outputs. When designing a collection for various sets of economic statistics, compilers need to think beyond their current work to how those sets will integrate with other statistical outputs. Likewise, questionnaires must apply concepts and definitions that are consistent with those used in other surveys and administrative collections.¹⁶³

13.12. A national statistics act may provide a national statistical office with the authority to approve the design of all statistical surveys operated by government agencies.¹⁶⁴ One practical approach to achieving integrated surveys is a reorganization of the statistical agency towards a more functional structure. A separate division with responsibility for developing and maintaining classifications and standards can lead a programme to apply consistent definitions and classifications to all statistical outputs. Creating a division that has responsibility for developing the SBR to be used for the production of all economic statistics is an effective way to ensure that units are selected and classified consistently across all statistical outputs. Establishing an independent statistical methods division can help to ensure the coherent design of all surveys.¹⁶⁵

13.13. It is important to note here that the subject matter expert or compiler of statistics on the international supply of services may not always have full control over the design of such integrated surveys if the design is managed by an independent division. It is important for compilers to recognize that success in achieving integration across many programmes requires extensive collaboration and communication across the organization, support from senior leaders in the organization and adaptability and flexibility.¹⁶⁶

C. Integration, consolidation and merging of data

13.14. The compilation of data within the statistical framework for describing the international supply of services requires the use of a wide range of data sources, as some sources are complementary and their combined use can result in the production of more detailed and comprehensive statistics.

¹⁶¹ See *Guidelines on Integrated Economic Statistics*, p. 17.

¹⁶² *Ibid.*, pp. 49-50.

¹⁶³ *Ibid.*

¹⁶⁴ *Ibid.*, pp. 28-29.

¹⁶⁵ *Ibid.*, p. 39.

¹⁶⁶ A country example of the "Integrated Business Statistics Program at Statistics Canada", is available from http://unstats.un.org/unsd/nationalaccount/workshops/2014/St_Lucia/IBSP.ppt. Samples of integrated surveys from Statistics Canada are available on the website of the Statistics Division.

13.15. The integration of different sources and the reuse of surveys for several purposes could also reduce the burden for compilers, in particular in the context of compiling modes of supply data. Furthermore, linking data on a micro level could allow for broader types of analysis of the resulting data. The potential of the approach of using information from other statistical frameworks therefore deserves further exploration by the compiler. For example, in the context of the compilation of inward FATS, it is possible to integrate information from foreign direct investment (FDI) surveys and domestic enterprise surveys. Other examples include using information from sources on migration, tourism, household expenditures, population or taxes (see chapter 15). That information could be used in the compilation of resident/non-resident trade in services data (see chapter 14) or to compile quantitative indicators on modes 2 or 4 (see chapter 16).

13.16. The consolidation and merging of data sources provides multiple advantages for compilers. First, it improves coverage and the diversity of information. Second, it usually reduces the resources required to collect the statistics. Third, it results in statistics of higher quality. However, compilers must be aware of the risk that some of the data sets resulting from the integration of various data sources may be internally inconsistent.

13.17. Consolidation is a straightforward summation of data from multiple sources in which the sources provide information on non-overlapping parts of the total. Meanwhile, the merging of data sources is usually not a simple task, as compilers must find common denominators between data from multiple sources that cover the same entity or activity. The business register is of vital importance in such linking of microdata.

13.18. Compilers should take into account all relevant dimensions of data sources before merging; for example, the content of each source could be more or less compatible with a certain services category definition. For such reasons, compilers should have in-depth knowledge of the methodologies and definitions used by the other data sources to ensure consistency and the comparability of the resulting merged data. Various dimensions of the different sources must be analysed by the compilers during merging, most notably, entities covered, services categories or activities identified, the availability of geographical breakdown and the period of reference.

13.19. **Entities covered.** Sources could collect statistics at different structural levels of the entity. Some sources may target the legal entity, while others could survey entities responsible for the production. Companies could merge, be acquired, disappear or simply modify their organizational structure so that entities might end up being different from source to source if they have been surveyed at different points in their structural composition. There could also be differences between how the business register defines the structural organization of an entity and how that entity defines its own structural organization. That might result in the statistical compiler unwittingly incorrectly comparing entities from different sources.

13.20. It is good practice for compilers to analyse the coverage, possible overlap and potentially differing definitions of variables across the different sources available, and determine, on a case-by-case basis, which data sources are most appropriate to use.

13.21. **Services categories.** Compilers should compare the services categories available from each source to be merged. Details and aggregations provided could be different from source to source. In the absence of clear definitions and guidance, respondents may interpret survey questions incorrectly and include invalid transactions or exclude pertinent ones.

13.22. **Geographical breakdown.** Data sources could have different levels of geographical breakdown, or even none at all. For example, the country of transaction identified in the ITRS could be different from the country that actually purchased or sold the service.

13.23. **Period of reference.** Values reported on a monthly basis from one source could differ from the annual value reported by another source (e.g., where there is an annual reconciliation or balancing process). Moreover, difficulties may arise when integrating data from administrative sources on a fiscal-year basis with information collected on a calendar year basis. Similarly, there may be challenges in bringing together data reported on a monthly or quarterly basis with data reported on a through-the-year basis.

13.24. MSITS 2010 recommends the use of the accrual basis for determining the time of recording of transactions. The accrual basis provides the most comprehensive information because all flows are recorded, including non-monetary transactions, imputed transactions and other flows. The change of economic ownership is central in determining the time of recording on an accrual basis.¹⁶⁷

¹⁶⁷ See BPM6 *Compilation Guide*, para. 1.21.

13.25. Other factors, such as the threshold for certain sources or the frequency of the survey, may also affect the comparison between sources. If a source is available only once every two years, compilers should develop a strategy to preserve the comparability for the year that the source is not available. All such possible differences between sources may complicate the comparability and integration of data sources, at both the global level and the micro level.

13.26. **Possible approaches and solutions.** There is no quick fix for problems with merging data. Compilers must have in-depth knowledge of the data with which they work and need to recognize the strengths and weaknesses of each source. Data sources are rarely equivalent; one source may provide reliable information for some transactions but be weak for others. Ideally, if compilers can identify a source in which they have more confidence, that source could serve as a benchmark against which to compare the other sources.

13.27. **Linking various data sources.** It is vital that compilers avoid approaching businesses multiple times with different surveys covering the same or similar information. Above all, statistical surveys should not request information that the business has already supplied in another data gathering mechanism. The central SBR should be linked to the trade register to enable the analysis of the effects of the international supply of services on production, employment and enterprise performance.¹⁶⁸ The enterprise is the suggested statistical unit to be linked between trade and business statistics; thus, data collected and registered at the level of the declaring unit of trade operators can be aggregated to the level of the whole enterprise via characteristics available in the SBR. The linking of trade and business statistics enables the generation of relevant information on the structure of the international supply of services without collecting additional data from businesses.

¹⁶⁸ See also chapter 16.

D. Country experience

Canada

13.28. Three different sources are used in Canada to generate trade in services statistics, except for travel and transport. First, the annual survey on trade in services (international transactions in commercial services (BP21S)) is sent to Canadian enterprises of varying size and economic sector.¹⁶⁹ The second data source is the set of

¹⁶⁹ To supplement the International Transactions in Commercial Services (BP-21S), more than 200 entities from the insurance sector are also surveyed, with two surveys of Canadian incorporated insurance companies and Canadian branches of foreign insurance companies. Both surveys collect financial transactions as well as service transactions.

approximately 15 annual industry surveys covering a large sample of establishments in service industries. The third source is administrative data on non-arm's-length annual transactions between residents and non-residents.

13.29. Statistics Canada integrates those three sources and is thereby able to improve coverage, make better use of limited resources and reduce the burden on respondents. The key to integrating the sources is that each entity that they cover is linked to the Canadian business register (CBR). The CBR contains information on ownership, industrial activity, organizational structure and the business identification number¹⁷⁰ of businesses engaged in the production of goods and services in Canada.

13.30. The quality of the CBR directly influences the compiler's ability to integrate the different sources. A team at Statistics Canada works constantly to ensure that the CBR reflects the structure of the Canadian economy as well as possible.

13.31. The three sources cited above are not considered equal in terms of quality and the details provided. Data in the industry surveys are indirectly measured in a process by which respondents indicate the percentage of their total revenues related to their total trade in services. No breakdown is available for transactions conducted between related partners and transactions between unrelated entities. Furthermore, the geographical breakdown is available only for the total trade in goods and services. The administrative records cited present only trade with affiliated parties and aggregated groupings of services.

13.32. Both the industry surveys and the administrative data have limited details in term of EBOPS categories. However, the annual BP21S is very detailed, with 32 categories of services collected, broken down by partner country and affiliation.

13.33. For the majority of the responding entities, data are available from only one of the three sources cited, in which case reported values are kept by default. When data on a particular entity are available from more than one source, the data from the BP21S are used if those values are larger, equal to or even slightly lower than the other sources. Other situations are reviewed on a case-by-case basis. Other analysis is also done to ensure the validity of the reported transactions: for example, compilers compare current reported transactions with data from the previous year.

¹⁷⁰ This identification number is assigned at the time of registration with the Canada Revenue Agency. For more information about the Statistics Canada Business Register, see http://www23.statcan.gc.ca/imdb-bmdi/document/1105_D2_T1_V3-eng.pdf.

Chapter 14

Compilation of resident/non-resident trade in services statistics

14.1. Chapter 14 discusses the compilation of resident and non-resident trade in services statistics. It is important to stress that the chapter does not aim to be exhaustive, but rather to complement the existing guidance provided in the *BPM6 Compilation Guide* on specific aspects, and focuses on the needs outlined in MSITS 2010. It is also strongly suggested that compilers consult the online version of that *Compilation Guide* for additional compilation guidance, including on certain services items and complementary groupings, as well as the EBOPS-Central Product Classification (CPC) correspondence table, which may facilitate the classification of certain transactions under the EBOPS classification system.

14.2. After the summary of good practices (section A), section B describes the compilation of the EBOPS 2010 service categories by bundling them into several groups that are often similar in the nature of their compilation and their use of underlying source data:

- (a) Goods-related services, including manufacturing services on physical inputs owned by others, maintenance and repair services and freight transport and insurance;
- (b) Passenger transport and travel;
- (c) Construction;
- (d) Insurance, pension and financial services;
- (e) Services related to intellectual property products (IPP), telecommunications, computer and information services, other business services, as well as personal, cultural and recreational services;
- (f) Government goods and services n.i.e.

14.3. Note that in the case of transport, the treatment is split between freight transport and insurance (goods-related) and passenger transport (travel-related). For each of those subsections, the compilation of providing partner country detail is separately discussed. Such a breakdown is recommended in MSITS 2010, at least at the level of the 12 major components of the BPM6 classification of services, and, where possible, at the more detailed EBOPS 2010 level.¹⁷¹

¹⁷¹ MSITS 2010, paras. 3.57-3.58.

14.4. Subsequently, section C discusses the compilation of statistics on the international supply of services by mode of supply insofar as it relates to resident/non-resident transactions. Section D elaborates the statistical treatment relevant to services transactions between related enterprises.

A. Summary of good practices

14.5. When compiling resident/non-resident trade in services statistics, it is good practice to follow the BPM6 recommendations on the principles of recording residence, valuation, time of recording, unit of account and currency conversion. The

highest priority should be given to the compilation of data at the level of the BPM6 main EBOPS categories, followed by the EBOPS 2010 level of detail and the compilation of related supplementary items and complementary groupings. Compilers are also strongly advised to consult the online version of the present *Guide*, where more compilation guidance is available on certain services items and complementary groupings, as well as the EBOPS-CPC correspondence table that may facilitate the classification of certain transactions in the EBOPS classification system.

14.6. Compilers should note that, in the compilation of *goods-related services statistics*, enterprise surveys generally represent the most efficient collection method. An ITRS and customs declarations, as well as other data sources, may also be used, although they are generally not a sufficient source of data and may need to be supplemented with enterprise survey data. For *manufacturing services on inputs owned by others*, compilers should be aware that the difference between the value of the goods before processing and the value of the goods after processing may differ from the value of the manufacturing fee. Compilers should also evaluate if and how received data must be adjusted, especially in the absence of complete information or misreporting. Compilers also need to carefully distinguish between manufacturing services and manufacturing on own account, using the economic ownership of the inputs as the distinguishing criterion. Also, a clear difference should be made between transactions related to manufacturing services on inputs owned by others, and those related to merchanting, based on whether or not the nature of the goods changes.

14.7. For *freight transport and freight insurance services*, it is not always possible to measure the value of services directly. However, the information may be derived from the cost, insurance and freight/free on board (CIF/FOB) adjustments that are made to the merchandise trade statistics for balance of payment (BOP) purposes. Compilers should note, however, that when calculating the freight transport and insurance costs for BOP purposes, the statistical value does not necessarily reflect the sum of the actual invoice values, but instead follows the principle adopted in the accounting framework.

14.8. Regarding *passenger transport and travel*, transport should be recorded on a gross basis. That means that the value of passenger transport includes fares and other expenditures related to the carriage of passengers. When passenger fares are a component of package tour payments, the compiler should separate passenger transport from other travel components.

14.9. The compilation of the *travel* item is closely related to the compilation of tourism statistics. Thus, it is useful for compilers to understand the conceptual framework of tourism statistics. The BPM6 and EBOPS 2010 recommendations should be followed, and compilers should provide further breakdowns of travel in order to better assess the scope of travel activities, gauge their possible impact in terms of economic activity and ensure consistency between travel and other related statistics, such as tourism statistics, the Tourism Satellite Account or supply and use tables.

14.10. When compiling statistics on *construction*, compilers should take care to value transactions on a gross basis, i.e., inclusive of all goods and services used as inputs to the work (whether subcontracted or not), other costs of production and the operating surplus that accrues to the owners of the construction enterprise. It is particularly important to precisely identify the residence of the enterprise realizing the construction work in order to differentiate between exports of services and direct investment operations, using criteria such as the length of a project. Given the complexity involved in cross-border construction projects and the level of detail required, surveys are the preferred method for collecting data on construction. Such surveys could possibly be used to collect information on FDI and other resident/non-resident transactions, as well.

14.11. Regarding *insurance, pension and financial services*, it should be noted that some services are provided without explicit fees, which means that their compilation requires a certain degree of estimation and imputation. It is good practice to base insurance and pension services on earned premiums, which are consistent with the accrual recording. To compile the exports of insurance services, compilers can generally obtain comprehensive data by surveying resident insurance enterprises. If comprehensive surveys are not feasible, compilers may be able to obtain information directly from domestic insurance companies, which can also provide information for estimating imports of insurance services.

14.12. To avoid the volatility and negative figures that can be generated by catastrophic events, an adjustment in claims due is required to reflect a more long-term view of the functioning of the insurance sector. The compiler is invited to analyse the three possible adjustment methods for smoothing the amounts of claims by policyholders on insurance corporations, i.e., the expectation approach, the accounting approach and the sum of cost plus “normal profit” approach, and to use the one that is most efficient for the national circumstances.

14.13. For *financial services*, transactions without explicit fees are included in financial intermediation services indirectly measured (FISIM). FISIM is produced only by certain financial corporations and only on the loan and deposit instruments on their balance sheets. Compilers should take special care to properly calculate the reference rate. As recommended by the Advisory Expert Group on National Accounts (AEG), the calculation of the reference rate should be determined according to national circumstances, using preferably either a reference rate based on a single observable exogenous rate for a specific instrument, such as interbank lending rates; a reference rate based on a weighted average of observable exogenous rates of maturities with different terms (weighted by the stock of loans and deposits in each maturity); or a weighted average of the endogenous interest rates on loans and deposits. The most comprehensive source data for exports and imports of FISIM come from (a) resident financial corporations (surveys or administrative data collections or financial supervision authorities), which can identify the deposits and loans of non-residents, as well as (b) surveys of selected non-financial corporations, households and non-profit institutions serving households (NPISHs), which could provide data on residents' accounts with financial corporations abroad to support the compilation of FISIM imports.

14.14. *Services related to intellectual property products* may be particularly difficult to measure, because the distinctions among the categories, from a reporter's perspective, may not always be clear, and because intrafirm transactions, which are frequent in those services categories, may be affected by transfer pricing phenomena or more general tax planning issues. When recording transactions on the *use of intellectual property n.i.e.*, compilers should note that *franchise and trademark licensing fees* are related to charges for using non-produced assets and should, hence, theoretically, according to the SNA, not be recorded. However, the payments are often bundled with additional service items, making it difficult to separate out the pure payments for the use of the underlying brand and, therefore, both 2008 SNA and BPM6 recommend that such payments be recorded as payments for services. For payments related to *licences for the use of outcomes of research and development*, care should be taken to differentiate between payments for entire originals. Similar differences exist for *computer services*, where compilers should distinguish between licences to reproduce (of more than one year) and *software originals*. In contrast, compilers should note that research and development services primarily relate to “new” research and development, such as newly produced customized software, or transactions in “originals”, where ownership and the concomitant rights are transferred to the purchaser. Care is

¹⁷² OECD, *Frascati Manual: Proposed Standard Practice for Surveys on Research and Experimental Development*, 6th ed. (Paris, 2002). Note that at the time of writing, the *Frascati Manual* is being revised, in part to provide better alignment with the national accounts.

needed differentiate this from the licences to reproduce, identified above. Compilers are strongly advised to consider using the Frascati-based¹⁷² survey approach, which provides perhaps the best mechanism for improving their measurement of trade in research and development services.

14.15. For the compilation of data on resident/non-resident transactions in *education or health services*, the collection of data is often problematic. Compilers are advised to consider that sources of information from such specialized entities as the ministries of education and health may be necessary, and also to explore other types of sources, including higher education institutions and surveys on health insurance companies in combination with travel surveys (e.g., with reference to the purpose of stay), data available at embassies and consulates or administrative data from health and social insurance records.

14.16. *Government goods and services n.i.e.* includes only those services related to government functions that cannot be classified to another specific service category. The majority of government services transactions are most commonly compiled using administrative records. Data on government expenditure abroad should also be available from an ITRS, although it may be more difficult to capture expenditures by foreign governments and international institutions located in the compiling economy using an ITRS. In that case, an enterprise survey of non-resident bank accounts or a survey of foreign embassies and international institutions could be used.

14.17. When allocating resident/non-resident trade by *mode of supply*, compilers may start with a simplified allocation, following table V.2 in MSITS 2010, and applying a three-step procedure of allocate, evaluate and refine. However, compilers should treat such an allocation only as a first rough approximation of resident/non-resident services transactions by mode of supply, as that technique has important limitations. The present *Guide* strongly encourages compilers to gather additional information on modes of supply that may be collected for all services sectors using generic business surveys with added questions. Alternatively, compilers may choose to obtain information only for a selection of specific service sectors of interest to the compiling economy, using focused sources of information, possibly through sector-specific survey that also integrates such other statistical domains as FATS, SBS or innovation. It may be useful to consider collaboration with other agencies and institutions that have a special interest and/or expertise in obtaining modes of supply data. In such circumstances, it is important for the agency in charge of the collection and compilation of official trade in services statistics (generally the national statistical office or central bank) to work in coordination with such specialized agencies to ensure that the international recommendations for the collection and compilation of trade in services statistics are followed and that the collected information can be used in a broader context. It is suggested that the compiler investigate how to collect and compile more details for items for which mode 4 or 2 (both involving natural persons) is deemed important for the compiling economy.

14.18. Finally, compilers are advised to develop appropriate procedures to separately identify service transactions between related (affiliated) enterprises, as recommended in MSITS 2010. It is good practice to carefully examine the valuation of services transactions between related enterprises, since the recorded transactions could be under- or overestimated, misrepresenting the real flows of the economy. Compilers should be concerned that intrafirm trade might not reflect the real trade, as measured by market prices, that benefits from fiscal and taxation regulations, since transfer pricing is used for the valuation of services transactions.

B. Compilation of individual service categories

B.1. Goods-related services

Introduction

14.19. Subsection B.1 deals with goods-related services, which include manufacturing services on physical inputs owned by others; maintenance and repair services *n.i.e.*; and freight transport and insurance, as a subcomponent of transport. Those service categories are strongly related to flows of imported and exported goods. However, the value of services cannot necessarily be directly derived from the gross value of merchandise trade statistics. Additional information from surveys, for example, is often needed to measure the exact value of the services provided.

14.20. *Manufacturing services on physical inputs owned by others* include activities such as processing, assembly, labelling and packing that are undertaken by enterprises that do not own the goods (see also MSITS 2010, paras. 3.66-3.77). Such services may also be referred to as contract manufacturing, toll manufacturing or toll services and are also described in BPM6¹⁷³ and the *BPM6 Compilation Guide*.¹⁷⁴ In the case of manufacturing services imports (those services can, for example, be rendered under a special customs procedure: outward processing of goods), the principal¹⁷⁵ (goods owner) has goods it owns processed by another unit (processor), which is resident of another economy. The principal pays a fee to the processor for the services provided. In the case of manufacturing services exports (those services can, for example, be rendered under a special customs procedure: inward processing of goods), a processor transforms goods belonging to the principal who is resident of another economy. In return for a processing fee, the processor transforms the goods using its own labour and capital. Over the course of the transformation process, the economic ownership of the goods remains with the principal. The manufacturing service equals the processing fee, *i.e.*, the value of the contract between the owner of the goods and the manufacturer. Gross values of goods associated with manufacturing services should be identified as EBOPS supplementary items in economies in which such an activity is significant.¹⁷⁶

14.21. *Maintenance and repair services n.i.e.* include maintenance and repair work by residents on goods that are owned by non-residents and vice versa. The value recorded for maintenance and repairs is the value of the repair work, not the gross value of the goods before and after repairs (see also MSITS 2010, paras. 3.78-3.79).¹⁷⁷

14.22. *Freight transport and related freight insurance services* are part of the EBOPS categories of transport and insurance services, respectively (see MSITS 2010, paras. 3.97-3.103 for freight transport and 3.178-3.180 for freight insurance). It refers to freight charges between residents of the compiling economy and non-residents on goods with change of ownership, as well as on freight where there is no change of ownership.

Compiling statistics for goods-related services

14.23. It is suggested that compilers consider that *enterprise surveys* generally represent the most efficient method for collecting information on goods-related services. The surveys could include questions on the value of the service fee, as well as the value of the goods sent and received for processing or repair. That information can be used to adjust the goods account to measure merchandise trade on a change of ownership basis.

14.24. An ITRS and customs declarations may also be used for the compilation of goods-related services, although those sources are generally not sufficient and may

¹⁷³ See BPM6, paras. 10.62-10.71, and boxes 10.1. and 10.2 and table 10.2.

¹⁷⁴ *BPM6 Compilation Guide*, paras. 12.5-12.25 and paras. 3.15-3.17.

¹⁷⁵ In this chapter, the following terminology is applied: The "principal" is a unit that enters in a contractual relationship with another unit (here called "processor") to carry out some part (or all) of the production process; the processor is a unit that carries out a specific production process on the basis of a contractual relationship with a principal. The activities performed by the processor are denominated "on a fee or contract basis". "Processing" is a contractual agreement according to which the principal requires the processor to carry out a specific production process. The term "subcontracting" is sometimes used, as well. In that context, the production process also includes supporting activities. Manufacturing services on physical inputs owned by others can be performed on goods leaving the county of the principal and entering the country of the processor under various arrangements, depending on the customs laws of the countries involved, including (but not limited to) specific customs procedures called "outward" and "inward" processing. Outward processing customs procedures means the customs procedure under which goods in free circulation in a customs territory may be temporarily exported for manufacturing, processing or repair abroad and then reimported with total or partial exemption from import duties and taxes. Inward processing customs procedures means the customs procedures under which certain goods can be brought into a customs territory conditionally relieved from payment of import duties and taxes, on the basis that such goods are intended for manufacturing, processing or repair and subsequent exportation. See IMTS 2010, paras. 1.19-1.21 and annex B, para. B.1-B.12.

¹⁷⁶ See BPM6, paragraph 12.5.

¹⁷⁷ No distinction is made between repairs that maintain the item in working order and are considered as intermediate consumption, as opposed to those that extend the efficiency or capacity of the goods or extend its life and thus are included in capital formation.

need to be supplemented with enterprise survey data. When using ITRS data for information on fees for manufacturing services or maintenance and repair services, the compiler should ensure that such amounts do not include payments for other goods and services. Administrative sources, including tax records, can also provide useful information (see *BPM6 Compilation Guide*, paras. 12.20-12.25, for manufacturing services, and 12.35-12.37 (including tables 12.1 and 12.2), for freight transport).

14.25. Compilers may consider combining data from customs declarations with the results of enterprise surveys, when both data sets are available. While such merged data would not necessarily provide compilers with advantages in developing aggregate measures of goods-related services, such data could be very useful, in combination with appropriate screening questions on enterprise surveys, for determining partner country attribution and the detailed product composition of exports and imports for firms that indicate that they either receive or send goods abroad for processing or repair.

14.26. Compilers may also consider comparing the trend in the value of goods under inward and outward customs procedures (and the pattern of the application of the transaction codes) with the trend in the magnitude of manufacturing services over time. While the actual monetary amounts will be different, compilers could expect the growth trend between the series to be similar, which could provide a useful quality check for compiling statistics on the international trade of manufacturing services.

Compilation of manufacturing services

14.27. Compilers should be aware that the difference between the value of the goods before processing and the value of the goods after processing may differ from the value of the manufacturing fee for various reasons, including the sale of processed goods in the economy of the processor or in third countries, holding gains or losses or the inclusion of brand names after processing (see *BPM6 Compilation Guide*, para. 12.14).

14.28. The compilation of data on manufacturing services on inputs owned by others may be facilitated by following the change of ownership principle in general merchandise trade statistics. However, the recording of the movements of goods across borders and statistical surveys on trade in services are usually independent and therefore not mutually consistent.

14.29. As for the export and import of manufacturing services, box 14.1 provides an example of a possible data adjustment in the compilation of resident/non-resident trade in services statistics when not all necessary information is available to the compiler and misreporting of goods after processing can be expected to be the main cause of the difference between the processing services and the value of goods before and after processing. It also provides an example of other adjustments of data on the import and export of goods related to the import of processing services that may be conducted in order to compile BOP statistics. Table 14.1 presents possible combinations of related movements of goods and services across borders for processing and after processing, as well as without cross-border movements. It also explains the difference in the recording of exports and imports of goods between *International Merchandise Trade Statistics: Concepts and Definitions 2010* (IMTS 2010) (cross-border concept) and BPM6 (ownership concept). It is obvious that, in some cases, there is no cross-border movements of goods related to the transfer of goods between processor and principal either before the processing or after the services have been provided.

Box 14.1

Numerical example of possible adjustments to the import and export of goods for balance of payments purposes in relation to the import of processing services in the absence of full information

Assume that country A imports processing services from country B in the value of 7 (5 is related to processed goods returned to the economy of principal A, 1 is related to goods that were sent for processing without returning to country A and 1 is related to goods sourced abroad that were processed in country B and imported (brought) to country A after processing). A's international merchandise trade statistics (IMTS) record—export of goods for processing (returning to country A after processing)—is 10, but the import of goods after processing is only 5, therefore the imports value in the IMTS record must be corrected.

The margin between goods sent for processing (10) and returning after processing (5) is -5. The value of those goods cannot be accounted for as general merchandise in the BOP and their value is therefore subtracted to obtain the gross flows of exports and imports according to the BPM6/MSITS 2010 recommendations. In addition, the import of services related to the goods returning to A is 5, so the adjustment of the import after processing value has to be +10 (=5+5), i.e., the adjustment of general merchandise according to BPM6/MSITS 2010 is 10.

Apart from the adjustment for misreporting, there may be also other adjustments in goods due to insufficient data sources and imported processing services. Assume that country A exports goods for processing with a value of 10 that are not returning to country A after processing. Strictly speaking, the value of the goods should be also subtracted from general merchandise, since no change of ownership occurs when the goods cross the border and exports of goods should be recorded only when a sale abroad after processing occurs (e.g., in the value of 11, 10 + 1, for the processing services). However, there is usually no data source for such sales abroad and, thus, the value of goods exported for processing that do not returning to the exporting country may not be subtracted from that of general merchandise (10). In addition, the import of services for 1 (corresponding to the value of imported services processed on goods sold abroad) is supposed to be imputed to the export of goods. Analogously, assume that the import of goods purchased abroad and processed in country B (in the value of 11: purchase for 10, services for 1). The value of import, according to BPM6/MSITS 2010, should include only the value of goods brought from abroad (excluding the 1 corresponding to the value of imported services processed on goods purchased abroad and imported to country A).

Table 14.1 (a)
Export of processing services; resident is the processor (contractor)

Recording BOP, national accounts and IMTS		Goods and services that should be recorded in the BOP and national accounts of processor's economy (change of ownership principle)							
Residence of the principal (owner of goods to be processed)	Residence of the processor	Origin of goods before processing	Residence of the principal acquiring trans-formed goods from principal	Residence of the principal	Residence of the principal				
Non-resident	Resident	Abroad	Export of processing services, resident is processor (contractor)	1	Goods received by resident processor for processing. Transformed goods leave processor's economy once processed.	Import of goods for processing	Export of processed goods	—	Service: Processing fee
				2	Goods received by resident processor. Transformed goods are purchased by residents of processor's economy once processed.	Import of goods for processing	—	Goods: Purchase of processed goods	Service: Processing fee
				3	Goods purchased by non-resident principal in the resident processor's economy. Transformed goods are purchased by residents of processor's economy once processed.	—	—	Goods: Purchase of processed goods	Service: Processing fee. Goods: Sales of goods (input) to non-resident principal.
				4	Goods purchased by non-resident principal in the resident processor's economy. Transformed goods leave processor's economy once processed.	—	Export of processed goods.	—	Service: Processing fee. Goods: Sales of goods (input) to non-resident principal.

Table 14.1 (b)
Import of processing services; resident is the owner (principal)

Recording BOP, national accounts and IMTS		Goods and services that should be recorded in the BOP and national accounts of principal's economy (change of ownership principle)							
Residence of the principal (owner of goods to be processed)	Residence of the processor	Origin of physical inputs before processing	Residence of the principal acquiring trans-formed goods from principal	Residence of the principal	Residence of the principal				
Resident	Non-resident	Compiling economy	Import of processing services, resident is the client/owner (principal)	5	Resident principal sends goods (inputs) to non-resident processor. Transformed goods are returned to the economy of principal.	Export of goods for processing	Import of processed goods	—	Service: Processing fee
				6	Resident principal sends goods to non-resident processor. Transformed goods are sold abroad by resident principal to non-residents.	Export of goods for processing	—	Goods: Sales of goods (includes processing fee)	Service: Processing fee
				7	Resident principal goods from non-resident. Transformed goods are sold by resident principal to non-residents.	—	—	Goods: Sales of processed goods (includes processing fee)	Service: Processing fee. Goods: Purchases of goods (input)
				8	Resident principal purchases goods (input) from non-resident. Transformed goods are sent to economy of principal.	—	Import of processed goods	—	Service: Processing fee. Goods: Purchases of goods (input).

Manufacturing services: borderline cases

14.30. It is important to separate manufacturing services on inputs owned by others from transactions that may have similar aspects but should be recorded differently, according to BPM6.

14.31. First, compilers should carefully distinguish between manufacturing services and manufacturing on own account, using the economic ownership of the inputs as the distinguishing criterion. Even if the processor not only transforms the goods owned by others (i.e., the principals), but also provides some physical inputs in the process, their exported output will be recorded under manufacturing services (i.e., including the value of physical inputs provided by the processor). That distinction is particularly relevant for countries with locations or zones with special taxation arrangements, such as export processing zones or free zones. Compilers should be aware that enterprises that operate in such zones are not necessarily by definition engaged in manufacturing services. If such enterprises are the economic owners of the goods that they process (whether purchased domestically or from the rest of the world), their exported output would not qualify as manufacturing services but as general merchandise. Similarly, many enterprises may be engaged in manufacturing services, without necessarily being in special locations (see also *BPM6 Compilation Guide*, paras. 12.15-12.16).

14.32. Some enterprises may be affiliates of direct investors abroad and may use technology transferred to them by that direct investor.¹⁷⁸ Compilers should note that the mere existence of a direct investment relationship does not imply the provision of manufacturing services, even when the processed products are sold to the direct investor. Since the classification is determined solely by the economic ownership of the inputs, the activity would still be recorded by the affiliate as manufacturing on own account and hence not a manufacturing service.

¹⁷⁸ Technology transfer includes patenting, licences, know-how, technical assistance and the provision of research and development services (see OECD, *Measuring Globalization: OECD Handbook on Economic Globalization Indicators* (Paris, OECD Publishing, 2005).

14.33. A second area in which compilers need to make a careful distinction is the difference between transactions related to manufacturing services on inputs owned by others, and those related to merchanting (see *BPM6 Compilation Guide*, para. 12.19). When, in the case of merchanting, the nature of the goods does not change, the gross values of the associated goods must be recorded as trade in goods (negative and positive exports).

14.34. In the case that goods under a merchant's ownership are subjected to certain manufacturing services that change the condition of the goods, relevant purchases and sales of those goods should be recorded under general merchandise instead of merchanting, whereas the minor processing or packaging fee would still be recorded under manufacturing services.

14.35. Compilers are advised to also consult the present *Guide* to measuring global production for more suggestions on how to deal with the different cases with which compilers may be confronted, as well as possible solutions for compiling the related items in the goods and services account.¹⁷⁹

¹⁷⁹ ECE, Task Force on Global Production, "Guide to measuring global production", 2014). Available from www.unece.org/fileadmin/DAM/stats/documents/ece/ces/bur/2014/Guide_to_Measuring_Global_Production_-_CES.pdf.

Country experience: Czech Republic

14.36. In the movements of goods within the European Union, the processing services cannot be estimated by the difference between goods crossing borders before and after the processing (e.g., a long-term negative margin on outward processing with other European Union countries has been recorded). There are at least three main reasons for this:

- (a) The non-resident principal has the goods, after processing, shipped directly from the economy of the processor to a third economy. The resident processor had reported receiving the goods for processing in Intrastat (system for collecting information and producing statistics on the trade in goods between European Union countries), but the non-resident did not report them as goods sent after processing, but rather as a simple merchandise export;
- (b) Goods, after processing, are sold by the non-resident principal to a resident of the processor's economy (i.e., without the goods leaving the processor's economy). The non-resident principal must be registered in the processor's economy for VAT purposes. The processor had reported only acquiring goods for processing in Intrastat, but there is no cross-border movement of goods after processing between the principal's and processor's economies;
- (c) Goods sent for processing, and especially those received after processing, may be significantly affected by misreporting or asymmetrical reporting. Goods sent for processing within the European Union are not under customs control in the Czech Republic. For that reason, it is difficult to report consistently on both sides in manufacturing chains. For example, processor A reports the physical entry of goods into the country (for processing) in a certain value, eventually processes them and transfers them to processor B, which, after its own processing, reports the exit from the country with a completely different value.¹⁸⁰

¹⁸⁰ Holding gains/losses or overheads are not likely to be among them as the entity obliged to report the movements of goods across the borders in the Intra-community trade statistics (Intrastat) is the processor (not the owner of the goods).

¹⁸¹ The national concept of foreign trade in goods, which represents a change-of-ownership approach, takes into account sales and purchases by non-residents within the Czech market, and eliminates all cross-border movements of goods reported by non-residents, since those cross-border flows cannot be considered as transactions related to the Czech economy.

14.37. The reasons mentioned under (a) and (b) lead to differences between processing services and margins resulting from gross cross-border flows in goods for processing. Since the compilation of the export and import of goods is based on the change-of-ownership principle¹⁸¹ (not on the cross-border principle), there is no need for any additional adjustments. In the case of (a), the goods sent for processing by the non-resident are excluded from the non-resident's exports of general merchandise and all cross-border exports, even though they are reported as general merchandise by the resident processor. In the case of (b), the goods received for processing by the resident processor are excluded from the non-resident's general merchandise exports, and only sales by non-residents within the Czech market are recorded as the import of goods. The sales of non-residents are known from the VAT statements they submit.

14.38. However, the difference caused by point (c) must be eliminated by the additional adjustment of goods excluded from general merchandise in order to avoid affecting the balance of trade of goods and services. In fact, the first adjustment is done mostly at the level of Intrastat data collection by comparing the processing services (declared by exporters or importers of services) and declared cross-border movements of goods (reported into Intrastat by the same reporting units, as those units are usually the same and are exempt from chain-linked processing). The adjustment requires sufficient data comparison of both data sources at the individual level of the reporting units. Nonetheless, other adjustments may be needed at the aggregate level, mostly because of the misreporting caused by chain-linked processing.

14.39. For the purposes of those adjustments, an ad hoc annual survey on a voluntary basis alongside the regular survey on international trade in services is conducted among the processors (exporters of services) and the principals of goods to be processed abroad (importers of services). Detailed information is collected on the relationship between services exports and imports and the related movements of goods across the border and the transfer of transformed goods to the principal within the processor's economy. The additional adjustment of goods owing to misreporting may be carried out

in order to keep the margin between goods after processing and goods before processing in accordance with the particular processing services related to the movements of the goods (especially when the goods are returning after processing; see box 14.1).

Country experience: Hong Kong: imports of manufacturing services and related goods transactions

Case I: Outward processing to mainland China with processed goods returned to Hong Kong

14.40. In processing activities between Hong Kong (principal in the reporting economy) and mainland China (non-resident processor), the import value of the manufacturing services is derived from the total processing fee charged by the non-resident processor and the amount reimbursable by the principal for the materials procured by the processor.

14.41. The cost of materials supplied by the principal from or via Hong Kong for processing without change of ownership is not included in “exports of goods” in the BOP statistics. By the same token, the value of the processed goods returned to Hong Kong should not be treated as “imports of goods”. The cost of input materials supplied by the principal to the processor from a third economy directly is included in “imports of goods” of the economy of the principal.

Case II: Offshore trade activities involving outward processing with processed goods sold offshore

14.42. As with case I, the value of manufacturing services is reported under “imports of services”. The import value of the manufacturing services is derived from the total processing fee charged by the non-resident processor and the amount reimbursable by the principal for the materials procured by the processor. Margins earned from the offshore sale of the processed goods are not included in “exports of services”

14.43. As for trade in goods, the cost of goods for processing supplied by the principal from or via Hong Kong to the processor without change of ownership is not included in “exports of general merchandise”. The value of the processed goods sold offshore directly without their returning to Hong Kong is treated as “exports of general merchandise”. The cost of materials supplied by the principal to the processor from a third economy directly is included in “imports of general merchandise” in the economy of the principal.

Country Experience: Hong Kong: exports of manufacturing services and related goods transactions

14.44. For illustration purposes, it is assumed that a Hong Kong company provides manufacturing services on materials owned and supplied by an Australian company (non-resident principal) and the processed goods are returned to Australia. The value of manufacturing services is reported under “exports of services”. The respondent can provide the export value of manufacturing services based on the total processing fee charged and the amount reimbursable by the non-resident principal for the materials the processor procured. For trade in goods, the value of the processed goods is not treated as “exports of general merchandise” because the ownership belongs to the Australian company. Besides, the value of the input materials supplied to the processor by the principal from Australia or a non-resident are not included in “imports of general merchandise”. However, the value of materials procured by the Hong Kong company from a non-resident to be used in the processing activity has already been

already recorded under “imports of general merchandise” and would be part of the manufacturing fee.

Freight transport and freight insurance services: cost, insurance and freight and free on board valuations

14.45. It is not always possible to measure the value of freight transport and freight insurance services directly. However, freight cost estimates, including both transport and insurance premiums, can be derived from the cost, insurance and freight (CIF) and free on board (FOB) adjustments that are made to the merchandise trade statistics for BOP purposes. The difference between CIF and FOB values is considered a freight cost (transport and insurance premiums). That cost is generally deemed payable by the importer of the goods. Where that cost is provided by residents to non-residents, or by non-residents to residents, there will be recordings in the BOP. Table 14.2 displays those differences in recording.

Table 14.2
Valuation principles of merchandise statistics and balance of payments

Merchandise trade (IMTS statistics)	Imports	Statistical values for CIF (cost, insurance and freight) and statistical values for FOB (free on board)
	Exports	Statistical values for FOB
Goods (BOP statistics)	Import and exports	Statistical values for FOB

14.46. As table 14.2 shows, it is recommended that merchandise exports be valued on an FOB basis, following the BPM6 principle for recording general merchandise credits. It is recommended that imports, in international merchandise trade statistics, be valued on a CIF basis (countries are encouraged to compile FOB-type values for imported goods as supplementary information),¹⁸² whereas in the BOP, imports of goods should be valued on an FOB basis, i.e., the value of the transportation cost and insurance premiums from the border of the exporter to the border of the importer is recorded as imports of those services if the services are provided by non-residents and the remaining value is recorded as imports of goods.

14.47. Compilers should note that, when calculating the freight transport and insurance costs for BOP purposes, the statistical value does not necessarily reflect the sum of the actual invoice values,¹⁸³ but instead follows the principle adopted in the accounting framework (see the numerical example in MSITS 2010, box III.4). However, many users are also strongly interested in obtaining data on the actual costs, as they reflect the total value of freight-related services provided; that is why MSITS 2010 suggests making those data available to users on a supplementary basis (i.e., beyond the BPM6/EBOPS 2010 recommendations). The valuation of freight transport services on a transaction basis indicates market-price transactions, excluding any adjustments or estimations. Such additional information¹⁸⁴ can be used as supplements to the FOB/FOB valuation principle in BOP statistics or the CIF/FOB principle in international merchandise trade statistics.

14.48. A variety of methods for estimating freight and insurance on imports is described in the *BPM6 Compilation Guide*, table 12.2. A common approach of CIF/FOB adjustments is to calculate conversion factors, or ratios of CIF imports to FOB imports, that should take into consideration the mode of transport, the geographical distance and the type of commodity transported. International merchandise trade data from customs

¹⁸² See IMTS 2010, para. 4.8.

¹⁸³ The report from Statistics Denmark provides an overview on differences between the statistical cost, insurance and freight (CIF) and free on board (FOB) value; the EuroGrant 2009 Balance of Payments, grant agreement number 20821.2009.001-2009.715, final report May 2010. The Glaab report recommends collecting invoice values instead of statistical value and the import and export of freight services should be collected.

¹⁸⁴ MSITS 2010, para. 3.107-3.110.

can be used to estimate CIF/FOB ratios, provided that those data include information on invoice and delivery terms. Dedicated surveys are also used in some countries.

14.49. To compile the ratios between the statistical value (CIF-type) and the invoiced value (of transactions with FOB-type delivery terms),¹⁸⁵ it is suggested that compilers use transactions for which FOB-type delivery terms are available, and to calculate the ratio between the FOB-type invoiced value and the corresponding CIF-type statistical value. The ratio thus compiled can subsequently be applied to the total statistical value (CIF-type) to obtain an FOB-type value. Such a ratio should be calculated for freight transport and insurance, respectively. When there is insufficient information available from customs merchandise trade statistics, a combination of the techniques detailed above and direct data collection or surveys can be used to allow full coverage of all the cases of imports and exports, types of contracts and residence of the carrier.

¹⁸⁵ The delivery-terms FOB method was developed by Statistics Netherlands.

14.50. Freight insurance services are usually estimated by compilers on the basis of insurance premiums, the former often calculated as a ratio with the non-life insurance premiums. Depending on the terms of the freight, additional adjustments may be needed on the basis of the value of the goods being traded (i.e., if the terms are not on an FOB basis) and the terms of contract (i.e., whether the shipment between the borders of the exporter and the importer is undertaken by a resident or a non-resident).

14.51. It is advised to compile the value of total freight insurance, whereas the freight transport component must be broken down by mode, as follows: sea, air, other, of which, space, rail, road, inland waterway, pipeline transport and electricity transmission.

Country experience: Germany

14.52. In Germany, the following formula is applied for the calculation of transportation costs: transportation costs = weight x freight rate (subject to mode of transport, product group (in the case of sea transport) and distance). In order to apply that formula, the information matrix of table 14.3 is used.

Table 14.3
Information matrix to calculate transportation costs

	Weight	Product characteristic	Distance	Unit cost	Nationality
Sea cargo	x	x	(x) ^a	x	x
Air cargo	x		(x)	x	x
Inland Waterways cargo	x			x	x
Road cargo	x		x	x	x
Rail cargo	x		x	x	x
Pipelines	x		x	x	x

^a In the case of sea and air cargo, unit costs already take account of the distance.

14.53. In order not to increase the burden for reporters, the information needed for the estimation is taken from the public data sources set out in paragraphs 14.54 through 14.59.

14.54. **Weights.** The weights for imported and exported goods are taken from foreign trade statistics and are available on a monthly basis.

14.55. **Freight rates.** As a second-best solution, information extracted from online publications specialized in transport, which focus on more than 30 major carriers and data from transport services associations, is used. On the basis of that infor-

mation, the transport costs for a standard container (20 ft. equivalent unit (TEU) with an average loading weight of 14 tons) are calculated for the various modes of transport. With regard to sea transport, owing to the availability of additional information, a further breakdown of transport costs by container, bulk goods and crude oil is made.

14.56. **Transport prices.** The transport prices for each mode of transport, which fluctuate considerably over the course of a year, are updated on the basis of transport price indices calculated by the Federal Statistical Office.

14.57. **Mode of transport.** As an expedient, a “main mode of transport” is used as the basis for the estimation. The longest part of the total transport route (and, hence, as a rule, also the stretch with the highest value) is covered using that mode of transport. Information on the mode of transport is derived from foreign trade statistics, in which an obligatory inquiry is made about the active mode of transport used to cross the external border of the European Union. That is mainly sea or air, and is a good approximation of the actual main mode of transport. If another mode of transport is stated in the trade statistics, it is assumed that, in the case of non-European countries, the goods were transported by sea to large ports in the Netherlands and Belgium¹⁸⁶ and then transported to Germany on the stated mode of transport. Table 14.4 shows an example of transportation cost calculation.

¹⁸⁶ For mineral oil imports, Italy (Trieste) is assumed to be the unloading port for the Middle East countries.

Table 14.4
Example of transportation cost calculation for imports from China

Imports from China: 1,109,537 tons	Mode of transport (percentage)	Distance	Product group	Unit cost	Cost in €1,000
Sea cargo	85.6				
Sea->inland waterways	3.9				
Sea->road	8.3		€139 per ton		151,141
Sea->rail	0.2				
Air cargo	2.0		€8,479 per ton		188,022
Inland waterways cargo	3.9		€4.90 per ton		212
Road cargo	8.3	300 km	€0.08776 per ton per km		2,424
Rail cargo	0.2	300 km	€0.04636 per ton per km		30

Note: $1,109,537 \times (0.856 + 0.039 + 0.083 + 0.002) \times 139 = 151,141$

14.58. **Nationality of carrier.** A number of different sets of statistics are used to determine the relevant partner country. The nationality composition of road toll statistics is used for the regionalization of truck transport (adjusted to compensate for the disproportionately large share of German trucks due to domestic transport). The ownership (not flag) share of the countries among the world fleet is used for sea transport. Since only some sea transport is carried out using scheduled services, the breakdown of the world fleet by country can be regarded as an informative approximation. The same applies to air transport, i.e., the world market shares of the airlines are used. With respect to inland shipping, information on the flags of the ships is the sole data available, hence only that information is currently used. As cross-border rail transport has been liberalized only since 2007, no statistics for it are yet available. A robust estimation for the rail system is carried out on the basis of the technical systems of national railway networks (e.g., track width, line voltage and operating licences).

14.59. **Transport insurance.** The amount of transport insurance is also estimated using this procedure, although no further details are supplied regarding the methodological particularities of insurance companies (service fee included in the insurance premium, etc.). Unlike transport costs, the insurance costs are calculated as a share of the import value. That share is in line with the premium rates set by transport insurance brokers for transportation to and from various regions. The rates were calculated in tandem with the determination of the transport costs by surveying several international transport insurance companies. The reported country structure for transport insurance is used for the regional breakdown of those costs.

B.2. Passenger transport and travel

Introduction

14.60. *Passenger transport and travel* are service categories that are strongly related and for which compilation often involves the same or similar data sources. Passenger transport includes fares and other expenditures related to the carriage of passengers, including any taxes levied on passenger services, such as sales or VAT (see MSITS 2010, para. 3.95). Travel covers goods and services for own use or to be given away, acquired from an economy by non-residents during visits to that economy. Hence, travel is transactor-based, which makes the compilation of data on travel challenging compared with most other service categories that follow a product-based classification (see MSITS 2010, para. 3.115).

Compiling statistics for passenger transport and travel

14.61. To compile statistics for passenger transport and travel, compilers can draw from a variety of data sources, including an ITRS, which can provide information on monetary flows between travellers and tourism services providers and payments made through bank notes, traveller's cheques or credit cards, payment card data and other administrative sources, such as immigration records. However, surveys remain an especially important data source. For passenger transport, those may include dedicated transport surveys aimed at large transport enterprises, such as airlines or railway operators.

14.62. For the EBOPS travel item (exports), survey types can include traveller surveys, border surveys, household surveys and enterprise surveys, covering accommodation establishments and tourist intermediaries, such as travel agencies and tour operators. Travel agencies are the traditional intermediaries between travellers and travel-related services providers, such as hotels, car rental agencies, cruise lines and package tour operators. Direct reporting allows for a better measure of travel expenditures booked through those intermediaries than is possible with an ITRS. Travel agencies can distinguish travel components for individual travellers only when those travellers purchase tours to foreign countries. Tour operators are often better able to provide the product classification of the different services assembled for package tours. That information can be obtained through a direct report for tour operators.

14.63. Visitor surveys may provide more detailed insights, such as the purpose of travel, the type of person travelling, the structure of the expenses made during the trip and those expenses are paid. Supplemental sources include tourism activity statistics (accommodation providers' statistics) and accommodation prices in the consumer price index. On the debits side, mirror statistics from partner countries can be used.

Passenger transport

14.64. Transport services should be recorded on a gross basis: the value of passenger transport services should include fares and other expenditures, such as commissions of ticket sales, related to the carriage of passengers.

14.65. Given prevalent practices of interlining and code sharing by airlines, compilers should obtain data on revenue earned by an airline from residents of other countries, rather than data on sales by an airline to residents. It may be possible to collect such data since airlines keep records on revenue generated by country of sale. However, as not all airlines earning revenue from residents of a particular country have offices in that country, it may be difficult for compilers to obtain complete coverage of passenger fare revenue earned by non-resident operators from residents of the home country. In such cases, a data model based upon the number of non-resident passengers carried by resident operators, passengers' countries of origin and destination and average fare rates could be used to produce an estimated value.

14.66. An alternative means of measuring passenger fare revenue earned by non-resident operators is to collect information on the total value of tickets sold in the compiling country and to deduct the earnings of resident carriers from that total value. An estimate of ticket sales may be derived from a household budget survey or other surveys of individuals.

14.67. In some cases, passenger fares may be a component of package tour payments, and the compiler may, in consultation with travel industry representatives, have to separate passenger transport and other travel components.

Country experience: Ireland

14.68. In Ireland, export sales data for passenger transport are obtained from resident airline and ferry operators through receipts from non-residents for travel to and from Ireland.

14.69. Direct data on receipts for other types of resident transport companies are not available, such expenditure by non-resident visitors to Ireland being captured indistinguishably in the travel and tourism receipts (exports). Respondents may provide only their best estimates in respect of the geographical breakdown required, because of the difficulty of knowing the precise country of residence of all their customers. Payments by Irish residents to non-resident transport enterprises, in general, cannot be directly distinguished at present. Such payments (imports) are included in the travel and tourism expenditure data. Receipts by resident airline and shipping companies for freight services provided (exports) to non-residents are obtained from those enterprises, the geographical breakdown being provided on a best estimates' basis, where necessary.

Country experience: Australia

14.70. In Australia, passenger transportation services are obtained from the quarterly survey of international trade in services (SITS) of the Australian Bureau of Statistics (ABS), with estimates for freight debits derived from the ABS international merchandise trade statistics. Survey responses for passenger transport are adjusted to ensure that only international services are captured, as described in paragraphs 14.71 and 14.72.

14.71. The SITS requests non-resident providers of passenger transport services to report revenue earned from the sale of international tickets within Australia. Sur-

vey responses could therefore include tickets sold to both resident and non-resident travellers, and regardless of whether the transactions involve transport between Australia and the rest of the world or within Australia as part of an international journey. Data from the international visitors survey conducted by Tourism Research Australia and ABS overseas arrivals and departures data are used to estimate the value of international tickets sold within Australia to non-residents on non-resident airlines, and that value is deducted from the survey total for passenger transport debits. Similarly, estimates are made for the value of international tickets sold within Australia to non-residents on resident airlines, and that value is added to the survey total for passenger transport credits. It should be noted that the survey requests the same information from resident providers of passenger transport services for the sale of international tickets abroad. However, no adjustment is currently made to account for purchases by Australian residents abroad.

14.72. The value of services provided to non-residents by Australian carriers in Australia, when sold abroad as part of an international ticket (on-carriage), is collected from the carriers and allocated to travel. Services provided on purely domestic travel in Australia by non-residents, whether pre-purchased abroad or while in Australia, are also included in travel. No classification adjustments are made for non-resident earnings from residents for internal flights abroad; all earnings from sales in Australia for on-carriage in a foreign country and for pre-purchased domestic travel in a foreign country are included indistinguishably in transportation debits. Cruise fares are excluded from passenger services and included in travel, although sea passenger services sold in Australia and provided to residents travelling from one country to another and any resident sea passenger earnings are included in transportation.

Travel

14.73. The concept of *travel*, as used in MSITS 2010, is closely related to the concept of *tourism*. Thus, it is advised that trade in services compilers understand the conceptual framework of tourism statistics, including the Tourism Satellite Account (TSA). Detailed descriptions are available in two United Nations publications, *International Recommendations for Tourism Statistics* (IRTS) 2008 and *Tourism Satellite Account: Recommended Methodological Framework* (TSA:RMF) 2008), and in the *International Recommendations for Tourism Statistics 2008 Compilation Guide*.

14.74. In addition to the aggregate measure of travel exports (credits) and imports (debits), BPM6 and EBOPS 2010 recommend the compilation of further breakdowns of travel. Such breakdowns can be used not only to better assess the scope of travel activities and to gauge their possible impact in terms of economic activity, but also to ensure consistency between data on travel compiled in accordance with MSITS 2010 and other related statistics, such as tourism statistics, the TSA or the supply and use table.

14.75. Some of the aforementioned requirements, such as the mandatory split between business and personal travel and the breakdown of personal travel into health-related, education-related and other motives, are not new compared with the previous editions of MSITS and BPM. Other breakdowns, such as the alternative presentation of travel according to the types of goods and services, are new challenges for the BOP compilation. To meet those requirements, compilers should draw on the advantages of the increased proximity with agents directly involved in external operations and on the availability of more detailed information. Table 14.5 shows complementary data sources that can be used to compile different breakdowns.

Table 14.5
Travel breakdown: data sources (example)

Breakdown	Data sources
Travel purpose: business/personal	Payment card database
	Direct reporting: travel agencies and tour operators, visitor and household surveys
Personal purposes: health-related, education-related, other	Survey, administrative data
Group of travellers: border, seasonal and other short-term workers	Mirror statistics
	Survey
Types of goods and services	Payment card database
	Direct reporting: travel agencies and tour operators
	Survey

14.76. When defining the specific level of detail for each breakdown, other specifications should be considered to achieve an integrated and consistent framework that provides all details required by other statistical domains, such as the TSA, national accounts and the harmonized index of consumer prices. A needs assessment is essential for understanding how the available data sources can deliver the level of detail required. For that purpose, cooperation between different statistical authorities appears crucial for reducing compilation costs, as well as for integrating diverse statistical systems and conceptual frameworks.

14.77. In particular, compilers who are responsible for estimating receipts and expenses for travel could work closely with the ministry of tourism or similar governmental agencies. Likewise, thorough discussions should take place between the compilers of trade in services statistics and the ministry of tourism when international passenger surveys and other surveys are conducted or outsourced. Such discussions would contribute to the consistency of the primary data used for the compilation of trade in services and tourism statistics, including the TSA.

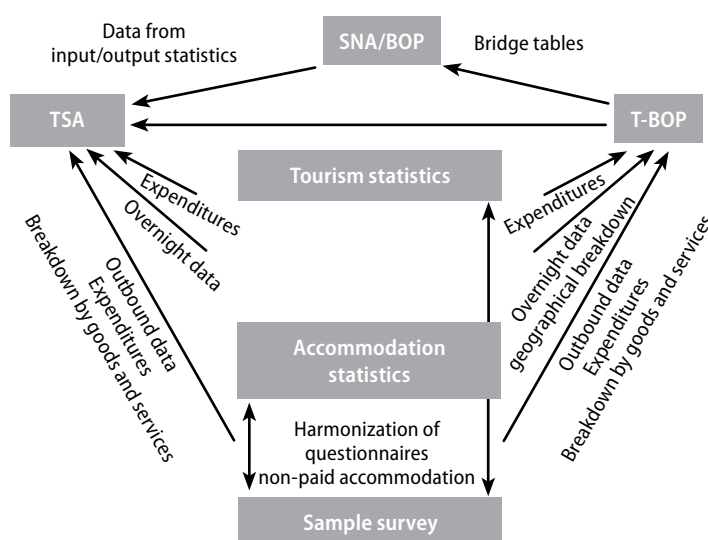
14.78. The interconnected sources can be seen as rooms on different floors of a house (see figure 14.1, which is based on the experience of Austria), where the SNA serves as the rooftop, sending inputs down to the TSA and receiving input from the travel item of the balance of payments (T-BOP). The basic tourism statistics, accommodation statistics and the sample survey are major inputs for compiling the TSA and T-BOP compound statistics. The basic statistics should be harmonized conceptually and the outcomes should be reconciled where they describe the same thing.

Country experience: Austria

14.79. In Austria, Oesterreichische Nationalbank (OeNB) and Statistics Austria run a joint survey for tourism expenditure and the travel item. For collecting or compiling domestic, outbound and inbound tourism, an accommodation statistics survey (covering inbound and domestic) and a sample survey are used. The two basic surveys cover all forms of tourism with respect to the physical flows. For variables for inbound expenditure, the T-Mona survey, designed for basic tourism statistics, is used. The sets of basic statistics stemming from the three surveys are followed by compound statistics from the TSA and the T-BOP, which, together, provide key measurements.

14.80. Since it is possible to isolate such travel components as seasonal and border workers, students, medical patients and those crossing the border but remaining within their usual environment, T-BOP data can be used as key measurements for the TSA. The TSA uses several other data sources, including accommodation statistics survey, the sample survey and the T-Mona. The T-BOP that goes beyond the concept of tourism

Figure 14.1
Integrated aspects of tourism and travel statistics



statistics also uses tourism statistics as inputs. The T-BOP serves as input for compiling the rest of the world account, delivering bridge tables for private consumption and identifying business travel, which is seen as production input in the national accounts.

14.81. **Reconciliation of basic tourism statistics.** The selection of the T-Mona sample is based on accommodation statistics, as those data are available on a detailed geographical level. Those data are further used for weighting and grossing up. In addition, the questionnaires are harmonized in major fields, so, for example, the same categories are used in both sets of accommodation statistics. The accommodation statistics do not incorporate stays at the homes of friends and relatives, but as that information is included in the T-Mona survey, inputs from the accommodation statistics are used to establish the proper sample basis.

14.82. The sample survey and T-Mona questionnaires are harmonized according to accommodation establishments and other definitions, according to the tourism concept. The data sources of both the sample survey and accommodation statistics survey cover domestic tourism. Therefore, the outcomes, at least for the physical flows of the number of overnights and arrivals of Austrian residents in Austria, are cross-checked.

14.83. The BOP travel item and tourism statistics are reconciled on both the credit and debit sides of T-BOP as follows:

- (a) **Credit side of the T-BOP.** The first major data source for the compilation of the credit side of the T-BOP is T-Mona questionnaire, as it delivers the average expenditure of non-resident tourists in Austria in paid and non-paid accommodation establishments. The expenditure questions in the T-Mona meet T-BOP needs and are harmonized with concepts used in BPM6 and MSITS 2010. The second major data source for the compilation of the credit side of the T-BOP is the accommodation survey, which delivers the population of non-resident tourists in paid accommodation establishments by country of origin. However, due to survey restrictions, the number of countries directly surveyed is limited to 60. In contrast to that limited geographical breakdown, the T-BOP considers data from credit and debit card companies delivered by the OeNB and, therefore, delivers detailed informa-

tion about the geographical breakdown. Therefore, that data can be used to further break down the accommodation statistics geographically on the basis of expenditure data;

- (b) **Debit side of the T-BOP.** The major data source for the compilation of the debit side of the T-BOP is a sample survey. As that sample survey is based on the tourism concept, harmonized questions are implemented to meet the needs of the travel concept of the T-BOP. Besides the differentiation between business and personal travel, same-day visitors are also included; T-BOP does not distinguish between lengths of stay, as only the expenditure variable is important. Credit and debit card data, which are implemented in the T-BOP, are used for doing plausibility checks with the outcome of the sample survey. The data are also used to create a detailed geographical breakdown of the sample survey, since in the sample survey, the geographical breakdown is limited to approximately 10 because of sampling error. That reconciliation exercise helps to overcome the limits of the sample survey.

Country experience: Portugal

14.84. The framework designed in Portugal to compile travel statistics is to a large extent based on the instruments used to pay for travel expenditures, that is to say (a) payment cards, (b) traveller's cheques and (c) cash. Regarding transactions settled in cash, the introduction of the euro resulted in an additional difficulty for compilers, particularly in the euro area countries. It is necessary to estimate those expenditures and that estimation can be quite challenging, since the use of cash differs according to the type of good or service acquired by travellers.

14.85. The selection of the data sources mentioned above to use in such a framework depends upon the moment of payment of the expenditure, pre-payment or local payment, and upon the channel used to book and/or pay for travel arrangements: (a) direct reservation or (b) reservation made through a travel agency or tour operator (resident or non-resident). The approach and sources selected for compiling travel credits and debits may be somewhat different, taking into account that the scope of data sources available and the degree of coverage that is possible to obtain from each data source individually can differ for the credit and the debit sides.

14.86. Tables 14.6 and 14.7 present an overview of the main sources selected for each combination of channel, moment of payment and payment instrument used. The combinations showed in the tables are the ones that are more likely to occur. For example, the pre-payment of a trip booked through a direct reservation channel most probably will not be performed in cash. Therefore, that alternative was excluded from both tables.

Country experience: Hungary: health-related travel

14.87. The Hungarian Central Statistical Office (HCSO) compiles services transactions between residents and non-residents. Data for business and transportation services are based on annual and quarterly conducted surveys by HCSO. The statistical units are the resident enterprises, Government and non-profit organizations, which supply services to non-residents and use services of non-residents. The surveys contain a list of 62 service types, including health services. According to the methodology, respondents should report all services of category 86 of the Statistical Classification of Economic Activities in the European Community (NACE) between residents and non-residents, provided by physicians, nurses and other qualified personnel working in health care. Even services provided from a distance, such as laboratories through the Internet, should be included.

Table 14.6
Main source for travel credit (supply side)

Channel used to carry out travel arrangements	Moment of payment	Payment instruments	Data sources
Direct reservation	Pre-payment	Payment card	Payment card database
		Payment card	Payment card database
	Local payment	Cash	Direct reporting: banks and money transfer operator
			Payment card database
		Survey	
Traveller's cheque	Direct reporting: banks		
Reservation made through a travel agency or tour operator (resident or non-resident)	Pre-payment	Payment card	Tourist activity statistics; accommodation prices;
		Cash	
	Local payment	Payment card	Payment cards database
		Cash	Direct reporting: banks and money transfer operator
			Payment cards database
Traveller's cheque	Survey		
		Traveller's cheque	Direct reporting: banks

Table 14.7
Main source for travel debit (demand side)

Channel used to carry out travel arrangements	Moment of payment	Payment instruments	Data sources
Direct reservation	Pre-payment	Payment card	Payment card database
		Payment card	Payment card database
	Local payment	Cash	Direct reporting: banks and money transfer operator
			Payment card database
		Survey	
Traveller's cheque	Direct reporting: banks		
Reservation made through a resident travel agency or tour operator	Pre-payment	Payment card	Direct reporting: travel agencies and tour operators
		Cash	
	Local payment	Payment card	Payment card database
		Cash	Direct reporting: banks and money transfer operator
			Payment card database
Traveller's cheque	Survey		
Reservation made through a non-resident travel agency or tour operator	Pre-payment	Payment card	Payment card database; survey
		Payment card	Payment card database
	Local payment	Cash	Direct reporting: banks and money transfer operator
			Payment card database
		Survey	
Traveller's cheque	Direct reporting: banks		

14.88. The main data provider for health services is the National Health Insurance Fund (OEP). Among the other companies that reported export data for health services were university hospitals, air emergency rescue companies and pharmaceutical trade companies. According to an agreement between OEP and HCSO and, based on international methodology, the insurance fund export data cover emergency and other health services provided by Hungarian health institutes for foreigners in Hungary. The invoices are paid by foreign health insurance companies or by foreigners at the site.

14.89. Imports cover emergency and other health services provided by foreign institutes for Hungarians, invoices paid by OEP directly and services paid for by Hungarians at the site and reimbursed by OEP later. Health services for Hungarians who travel abroad for the verified purpose of medical treatment are considered to be part of the tourism service and are not reported here. The differences between the methodology of external trade statistics and the system of health accounts (SHA) have, as result, different values for the national health accounts of Hungary and the international trade in health services. In the trade statistics, the difference is part of the tourism services import.

14.90. **Data on tourism expenditure is based on two surveys:** a questionnaire on foreigners visiting Hungary and a questionnaire on travel abroad. The stratified non-probability sample, which excludes truck drivers, covers outgoing foreign and incoming Hungarian citizens who cross the border, including participants in package tours. On a yearly basis, the average sample sizes are approximately 120,000 questionnaires for foreigners and approximately 50,000 questionnaires for Hungarians. The selection of days for data collection is systematic and casual. Data collection is conducted through personal interviews. The surveyed locations are 24 road border stations and Budapest-Liszt Ferenc International Airport. Participation in the survey is voluntary.

14.91. Out of the entire set of questions, two contain information that can be related to health care, namely the questions on the purpose of visit and on expenditures. The purpose of visit, among others, can be "medical treatment" and "spa, wellness". In the latter, both spending at spas based on a physician's prescription and spending for the purpose of well-being or recreation should be accounted for.

14.92. However, the mechanical use of data from tourism statistics may lead to double-counting on the aggregate level, since household survey data (the Hungarian out-of-pocket expenditure data being based mainly on the household survey) contain all household spending whether it took place in the country or abroad, even though the household survey guide makes no reference to payments abroad. The exports of health services to non-residents are greater than the imports, given the lower prices of Hungarian health care providers.

Country experience: United States: education-related travel

14.93. Exports of education services measure foreign students' education expenditures in the United States. Foreign students are defined as individuals enrolled in institutions of higher education in the United States who are not United States citizens, immigrants or refugees. Data on the number of students are obtained from an annual survey of about 2,700 accredited United States institutions, conducted by the Institute of International Education (IIE). Characteristics of the population used in the estimates include the geographic area of origin (residence), type of institution (public or private), enrolment status (part-time or full-time) and academic level of institution (two-year or four-year college or university).

14.94. Estimates of average expenditures for tuition and for room and board are developed from annual surveys of most United States accredited institutions conducted by the National Center for Education Statistics, Department of Education, and matched by the Bureau of Economic Analysis (BEA) to the characteristics of the

student population. Data on living expenses are based on estimates by the Bureau of Labor Statistics of the Department of Labor, of low-income-level family budgets in metropolitan and non-metropolitan areas, reduced to a single person, and adjusted for inflation each year. Estimates of foreign students' expenditures are made by multiplying the number of students by the average expenditure.

14.95. Imports of education services measure United States students' expenditures abroad. Those students are defined as (a) United States residents who receive academic credit for study abroad from an accredited institution of higher education in the United States and (b) students who enrol directly with foreign institutions, including medical students, and who receive no academic credit from United States institutions. The total of United States students' expenditures abroad is the sum of the estimates for the two groups of students.

14.96. For students who receive academic credit from United States institutions, data on the number of students are obtained from an annual survey of about 1,300 United States institutions conducted by IIE. Characteristics of the population used in the estimates include country of study, type of institution (public or private) and academic level of institution in the United States (two-year, four-year or university). Data do not include students who study abroad without receiving academic credit from a United States institution or students enrolled for a degree overseas.

14.97. Student payments to United States colleges and universities for tuition and room and board are assumed to be forwarded to foreign institutions. Estimates of average expenditures for tuition and room and board are developed from an annual survey of most accredited United States institutions; the survey is conducted by the National Center for Education Statistics. Average living expenses are estimated by applying a ratio of United States-to-foreign living costs to the low-income-level family budget series developed for foreign students who study in the United States. Estimates of United States students' expenditures abroad are made by multiplying the number of students by average expenditures for tuition and room and board and for average living expenses.

14.98. For students who enrol directly in foreign institutions and receive no academic credit from United States institutions, supplemental estimates of education payments for Australia, Canada, Ireland and the United Kingdom of Great Britain and Northern Ireland, based on national data from those countries, are used to capture the expenditures of United States students.

B.3. Construction

Introduction

14.99. Construction covers the creation, management, renovation, repair or extension of fixed assets in the form of buildings, land improvements of an engineering nature and such other constructions as roads, bridges and dams. It includes related installation and assembly work, site preparation and general construction, as well as specialized services such as painting, plumbing and demolition (see MSITS 2010, paras. 3.132-3.135).

14.100. Construction is valued on a gross basis, i.e., inclusive of all goods and services used as inputs to the work (whether subcontracted or not), other costs of production and the operating surplus that accrues to the owners of the construction enterprise.¹⁸⁷ Construction is also valued on a gross basis in the sense that it can be disaggregated into construction abroad and construction in the compiling economy. The construction exports (credits) would result from summing up the credit entries (a) from construction abroad and (b) from construction in the compiling economy.

¹⁸⁷ BPM6 *Compilation Guide*, para. 12.95.

¹⁸⁸ *Ibid.*, paras. 12.99 and 12.101.

Similarly, the construction imports (debits) would consist of debit entries (a) from construction abroad and (b) from construction in the compiling economy.¹⁸⁸ If the external operations of a construction company are substantial enough, a separate branch, resident in the host economy, may be constituted which will usually give rise to a direct investment relationship between the parent company and the branch.

Compiling statistics for construction

14.101. With respect to the value of the goods and services used as inputs to the work, compilation difficulties may arise when it is not possible to identify separately the goods purchased in the home economy and the host economy. For practical reasons, the compiler may need to estimate a breakdown, or otherwise attribute all goods purchased to either the host or the home economy of the construction enterprise (see also box 14.2). Also, it may not always be possible to identify the purchase of goods and services separately from labour costs. In that case, the compiler will need to estimate a breakdown or, alternatively, allocate all costs either as goods and services or as compensation of employees (for employees that are residents of the host economy).

14.102. In order to correctly compile the item, it is particularly important to precisely identify the residence of the enterprise realizing the construction work. Indeed, a construction enterprise established in one economy may undertake construction projects in another economy directly (no local entity created) or through a branch, i.e., via a direct investment relationship. In the former case, the construction activities are regarded as export of services, whereas in the other case, they are considered direct investment operations.

14.103. In the case of long-term projects where no local entity needs to be created, MSITS 2010 and BPM6 suggest a number of factors to identify if a unit of one economy, which is active in another, has operations substantial enough to consider that the unit has a branch resident in that other economy (see MSITS 2010, para. 3.142). The operations, therefore, need to be analysed to identify if they are substantial. In particular, compilers should avoid creating too many notional units.

14.104. First of all, the compiler should identify the duration of the construction project. If the project extends over a period of at least one year, it is a strong indication that the compiler should investigate the project further. If certain other factors are met, the construction work undertaken is to be treated as if a separate institutional unit—a branch (subsidiary)—has been created that is resident in the economy in which the activity is being carried out. That branch would be considered a direct investment enterprise. If some or all of those factors are not met, the activity is to be treated as an export by the construction enterprise. The other suggested criteria are the following:

- (a) The maintenance of a complete and separate set of accounts for the activity (i.e., income statement, balance sheet, transactions with the parent company, etc.);
- (b) The activity being subject to tax in the host country;
- (c) The existence of a substantial physical presence;
- (d) The receipt of funds for its work for its own account, etc.

14.105. The decision is based on the weight of the evidence for a set of criteria and not on any single criterion; for example, it would be very difficult to identify a branch if, for the construction activity, a separate set of accounts cannot be prepared or maintained. Construction activities involving major projects (bridges, dams, power stations, etc.) that are carried out through unincorporated site offices, in many cases meet the criteria of a direct investment enterprise and thus are treated as part of the production of the host economy, not as an export of services to that economy.¹⁸⁹

¹⁸⁹ *Ibid.*, paras. 12.92-12.94.

14.106. In the case of construction projects conducted in the context of aid programmes, the treatment should be to record a transaction under services if relevant (i.e., if the project is small scale, using the criteria defined in the previous paragraphs) between the economy in which the aid agency financing the project is located (credits) and the economy in which the construction is taking place (debits). The counterpart entry should be in the capital account. If the contractor is not a resident of the economy of the donor, then there would also be some construction transactions to record between the economy of the donor and the economy from which the contractor is conducting its operations, using a gross recording.¹⁹⁰

¹⁹⁰ Such treatment is not limited to construction.

14.107. To compile statistics on construction, both an ITRS and surveys can be used as sources of information regarding construction. However, surveys may provide more detailed and relevant data than the ITRS, in particular when it comes to gathering information on construction abroad (debit) and construction in the compiling economy (credit). The complexity of cross-border construction activities is another reason to prefer a survey, in particular if the compiling economy has many international construction projects, either exports or imports. If countries decide to use ITRS data, particular care should be taken to measure transactions involving bank accounts

Box 14.2

Numerical example of measurement of construction

A construction enterprise resident in economy A starts a construction project in economy B on 1 February. The end date of the project is 10 April of the same year. The gross construction value is 100,000. The project is considered a construction service, as it lasts less than one year (69 days). The enterprise is requested to report the construction project in the questionnaires related to both the first and the second quarters, specifying the project start and end dates, the counterpart country and the gross value of the construction.

In order to undertake the construction project, the enterprise purchases inputs (materials, services and labour) in the first quarter. The purchases are reported as follows:

- Goods purchased in Italy: 20,000
- Goods, services and labour purchased/acquired abroad: 50,000

The gross construction value pertaining to Q1, to be allocated in A's BOP as construction abroad (export with counterpart country B) is computed as follows:

$$(100,000 / 69 \text{ total days}) \times (59 \text{ days in the quarter}) = 85,507$$

The reported goods, services and labour purchased/acquired abroad are allocated as construction abroad (import with counterpart country B). The reported goods purchased in Italy are deducted from the goods exports, again with partner country B, of the BOP. The complete recording for Q1 is shown in the table that follows:

Q1 BOP

	Export	Import
Construction abroad	85,507	50,000
Goods (adjustment)	-20,000	

- In Q2, the enterprise does not purchase any input either in Italy or abroad. Thus, it has only to report the construction start and end dates, the counterpart country and the gross construction value. The construction value pertaining to Q2, to be allocated to the BOP as construction abroad (export with counterpart country B) is computed as follows:

- $(100,000 / 69 \text{ total days}) \times (10 \text{ days in the quarter}) = 14,493$.

Q2 BOP

	Export	Import
Construction abroad	14,493	

of construction companies in the host economy, because some of those companies may meet the criteria for treatment as residents.¹⁹¹

¹⁹¹ A survey collecting data on construction could also jointly collect information on foreign direct investment and other resident/non-resident transactions (BPM6 *Compilation Guide*, table 12.4).

Country experience: Italy

14.108. In the system of Italy, the construction activity is regarded as an FDI-related operation if the construction work extends over a period of at least one year or as a service transaction if the construction work takes less time. In Italy, the gross construction value of projects lasting one year or more largely exceeds that of short-term projects, both for construction abroad (98 per cent vis-à-vis 2 per cent as an average in the period 2008-2012) and for construction in Italy (80 per cent vis-à-vis 20 per cent).

14.109. **Construction lasting less than one year.** The quarterly non-financial transactions questionnaire (TTN questionnaire) collects specific information needed to compile the construction item. In particular, for constructions abroad only, firms are required to report the following transactions, in relation to the reference quarter (see chapter 6, paras. 6.78-6.87, for data collection for construction):

- (a) **Goods, services and labour purchased/acquired abroad, used to compile the construction abroad debits.** According to MSITS 2010, the goods and services acquired by the construction enterprise from third economies should be recorded under the appropriate general merchandise or services item. However, in order to reduce the reporting burden, firms are not required to split the inputs purchased in the host economy from those acquired in third countries; as a consequence, the inputs purchased abroad are all allocated to construction abroad debits, and to the host economy as the partner country. Moreover, labour costs are included in construction abroad debits, as it was not feasible for firms to separately identify that cost component;¹⁹²
- (b) **Goods purchased in Italy, used to adjust the BOP goods item, by deducting the corresponding amounts from merchandise exports.** This is necessary in order to avoid duplication, as the goods purchased in Italy by the resident construction enterprise are also recorded in merchandise exports on the basis of foreign trade statistics.¹⁹³ In principle, the services acquired by the resident construction enterprise from residents of the home economy should be excluded; however, in order to simplify the reporting, it is assumed that all services are acquired from the host economy.

¹⁹² MSITS 2010 para. 3.141.

¹⁹³ *Ibid.*, para. 3.140, footnote 14, and BPM6, para. 10.22 (d).

14.110. Table 14.8 shows the various sources used for each component of construction services. The construction abroad, as exports, and the construction in Italy, as imports, are computed assuming that the gross construction value is uniformly distributed throughout the duration of the work.

14.111. For construction in Italy, detailed information is usually not available to the reporting enterprises receiving the service. In order to fill that information gap, an assumption is made that the cost structures of construction abroad and in Italy are similar. Therefore, the missing information (i.e., the goods, services and labour purchased/acquired in Italy and the goods purchased in the country of residence of

Table 14.8

Methodology for the compilation of the construction services item in Italy

	Export	Import
Construction abroad	Total contract value pertaining to the reference quarter	Goods, services and labour purchased/acquired abroad
Construction in Italy	Goods, services and labour purchased/acquired in Italy (estimated)	Total contract value pertaining to the reference quarter

the construction firm) is estimated on the basis of the ratio of the corresponding items reported for construction abroad to the gross construction value.

14.112. **Construction lasting one year or more.** Also in the case of construction lasting one year or more, the gross construction value is uniformly distributed throughout the entire duration of the work. The quota pertaining to the reference quarter is considered an increase of FDI equity stock (FDI abroad, or assets, in the case of construction abroad, and FDI in the reporting economy, or liabilities, in the case of construction in the compiling country).

14.113. For construction abroad, in the quarter in which the construction project ends, the reporting agent has to report the additional information on the net margin, i.e., the difference between the gross construction value and all costs incurred by the construction enterprise in relation to the project. For construction in Italy, the compiler estimates the net margin, which is not directly available to the reporting agent, by applying to the gross construction value the average rate of return observed for construction abroad.

14.114. Consequently, in the BOP for the quarter in which the construction ends: (a) the gross construction value is recorded as FDI disinvestment (on the assets side, in the case of construction abroad; on the liabilities side, in the case of construction in Italy), since the construction is delivered to the client and (b) the net margin is recorded as FDI income on the credit side, in the case of construction abroad; on the debit side, in the case of constructions in Italy.

B.4. Insurance, pension and financial services

Introduction

14.115. The present subsection describes the compilation of insurance and pension services as well as financial services, maintaining consistency with the recommendations of the *BPM6 Compilation Guide*.¹⁹⁴ Some of those services are provided without explicit fees, which are included in property income and other flows. Thus, the calculation of services needs a certain degree of estimation or imputation, based on balance sheet and/or profit/loss, which is often provided through supervisory reports. Other services, in particular auxiliary services, are provided with explicit fees.

14.116. According to MSITS 2010, insurance and pension services are disaggregated into four separate subcomponents: direct insurance, reinsurance, auxiliary insurance¹⁹⁵ and pension and standardized guarantee services.¹⁹⁶ Direct insurance is further broken down into life insurance, freight insurance and other direct insurance. Pension and standardized guarantee services is further broken down into pension services and standardized guarantee services.

Insurance and pension services

Introduction

14.117. The insurance and pension services reflect the output of specific industries whose calculation is best described in the context of balance-of-payments recordings. BPM6, appendix 6, provides some background to the operation of the insurance and pension schemes and the *BPM6 Compilation Guide*, appendix 2, provides more details on the overall recording of transactions in the balance of payments, including the relevant services. The present section summarizes the main aspects related to the calculation and data sources for insurance and pension services.

¹⁹⁴ The *BPM6 Compilation Guide* provides recommendations on the treatment of insurance, pension and financial services, in particular, in its appendix 2, "Insurance transactions and positions and pension schemes" and appendix 3, "Financial intermediation services indirectly measured".

¹⁹⁵ According to MSITS 2010, auxiliary insurance services are included in insurance and pension services. That fact should not be confused with the sectoral classification of the 2008 SNA, whereby insurance brokers and alike are classified under "financial auxiliaries".

¹⁹⁶ MSITS 2010 does not recognize fees paid to administrators of pension funds as a separate category, while the 2008 SNA recommends that pension fund managers (administrators of pension funds, which only manage the activities of pension funds without taking ownership of the assets or liabilities), be classified as financial auxiliaries.

Compiling insurance and pension services

14.118. The estimation methods and necessary data for various insurance and pension services, if they are provided without explicit fees, are basically a variation¹⁹⁷ of those for direct insurance, as shown in paragraphs 14.119 through 14.127 and in the example in box 14.3. The insurance services are calculated on the basis of premiums earned and losses incurred pertaining to the accounting period:

	Gross premiums earned (from direct business)
<i>plus</i>	net income from investments attributable to policyholders (premium supplements)
<i>minus</i>	estimated claims incurred (adjusted for claim volatility, if necessary)
<i>equals</i>	insurance service charges

¹⁹⁷ The value of the output of standardized guarantee providers can be calculated in the same manner as that of non-life direct insurance. For reinsurance, commission payable should be further deducted from the premiums earned and the claims adjusted for profit sharing in excess of loss reinsurance.

Box 14.3

Numerical example of direct insurance services

For resident insurers with separate data on policyholders abroad:

Premiums earned from abroad	100
Claims payable abroad	95
Income attributable to policyholders	20
	(premium supplements)
Insurance service charge is .....	.25 [=100+20-95]

14.119. For life insurance and pension services, the net increase in life insurance actuarial reserves or pension reserves (pension entitlement) should be further deducted, as such increase is regarded as asset accumulation to their policyholders.

	Gross premiums earned
<i>plus</i>	premium supplements
<i>minus</i>	benefits due
<i>minus</i>	net in life insurance actuarial reserves
<i>equals</i>	life insurance service charges

14.120. To compile the exports of insurance services, compilers can generally obtain comprehensive data from surveying resident insurance enterprises, particularly in countries in which surveys are the major source of data for trade in services data collection (see paras. 6.46-6.59).

14.121. Alternatively, if comprehensive surveys are not feasible, compilers may be able to obtain information directly from domestic insurance corporations that would allow them calculate an approximate insurance service in a given reporting period. Specifically, if they can collect data on the breakdowns of premiums received from resident clients and those from non-resident clients, insurance services provided to non-resident clients can be calculated assuming that the service-to-premium ratio is the same between resident and non-resident clients. Such a ratio could also be used for estimating imports of insurance services, if payments of insurance premiums are captured through general enterprise surveys, as shown in box 14.4. Nevertheless, compilers should pay attention to possible differences between the service-to-premium ratio of domestic insurance companies and that of foreign insurance companies.

14.122. Compilers, depending on the ITRS as a main source data, may not be able to compile a comprehensive set of accounts to approximate insurance services exports. However, from the ITRS, compilers may obtain settlement data for insurance premiums received from abroad and insurance claims paid abroad. Also, compilers may also obtain settlement data for insurance premiums paid abroad and insurance

claims received from abroad to estimate insurance services imports. Insurance services can be estimated by multiplying those data by a service-to-premium ratio (box 14.5). Premiums are a better indicator than claims for determining the service charge because claims are contingent on events incurred to trigger payments, and there may be periods without claims or with unusually large claims. The service-to-premium ratio needs to be fixed and revised periodically by checking financial reports of domestic insurance enterprises or direct inquiries to them.

Box 14.4

Numerical example of exports of insurance services

For resident insurers with separate data on policyholders abroad for premiums only:

Total insurance services (to residents and non-resident clients combined)	50
Total premiums	200
Of which: premiums from residents	120
Premiums from non-residents	80
Estimated insurance services provided to non-residents are	20 [= (80/200)x50]

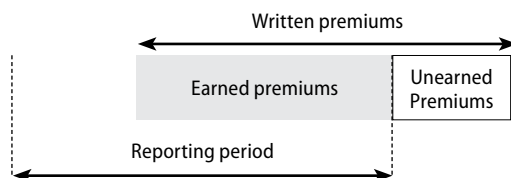
Box 14.5

Numerical example of imports of insurance services

Premiums from residents	40
Ratio of service charge to premiums (average from data on insurers abroad)	25
Estimated insurance services from non-residents	10 [40x0.25]

14.123. The concept of accrual recording is an important aspect of calculating insurance services as insurance contracts may spread over different periods of time than the ones used in the compilation of statistics. In estimating insurance services on an accrual basis, compilers need to differentiate between the earned premiums and the written premiums. The estimation of insurance services should be based on the earned premiums, which are consistent with accrual recording. At the time that a policy is first written, the total of the premium may be unearned, as premiums are often fully paid at the inception of the policy. Direct written premiums are the amount charged to and actually paid over the life of a contract by the policyholders for insurance coverage. Each day thereafter, the premium amount accrues to the insurance unit until the end of the policy. At the end of the reporting period, the insurance corporation assesses the premium reserves representing the unexpired terms of the policy. The earned premiums plus the unearned premiums for a policy equal the written premium.

Figure 14.2
The relationship between earned premiums and written premiums



14.124. For insurance services, major catastrophes that may require large payments of claims are expected to occur once in several years. When they do occur, the payments of claims in the year of the catastrophe could exceed the value of premiums. If only the claims incurred in the accounting period are used in the formula, the value of insurance services could be highly irregular and, in some cases, could even be negative. Therefore, an adjustment in claims due is required to reflect a more long-term view of the functioning of the insurance sector, in line with the decision-making process in the insurance industry. The adjustment for claims volatility shows the difference between the actual claims in the period and the normally expected value of claims, where the expected value of claims removes the effects of claims volatility. In periods in which large values of claims are incurred, the adjustment, if it is to be made, would be negative, while in other periods the adjustment would be positive.

14.125. Regarding the adjustment for smoothing the amounts of claims by policyholders on insurance corporations, BPM6, appendix 6c, paragraph 22, proposes three methods: (a) the expectation approach, (b) the accounting approach and (c) the sum of cost plus “normal profit” approach.

14.126. In the expectation approach, output is calculated as premiums plus expected premium supplements minus expected claims. That approach replicates the ex-ante model used by insurer corporations to set their premiums on the basis of their expectations. In accepting risk and setting premiums, insurers consider both their expectation of loss (claims) and of income (premiums and premium supplements). Ideally, the microdata of the insurance corporations accounts could be used in the expectation approach for estimating the output of the insurance corporation. However, that information is seldom available to the compiling agencies. In the absence of such data, a statistical technique to simulate that approach can be applied by using macrostatistics, to smooth past data to forecast the expected claims.

14.127. In the accounting approach, output is calculated as actual premiums earned plus premium supplements less adjusted claims incurred, where adjusted claims are determined by using claims due plus the changes in equalization provisions and, if necessary, changes to own funds. In the sum of cost plus “normal profit” approach, the output is calculated as the sum of costs (including intermediate costs, labour and capital costs) plus an allowance for “normal profit”.

Country experience: United States: insurance services

14.128. The United States method for measuring trade in insurance services most closely conforms to that outlined in example 4 in MSITS 2010.¹⁹⁸ In addition to premiums minus a proxy measure of expected claims (actual claims payable with an adjustment for claims volatility), called normal losses, and premium supplements, as outlined in table 14.9, the United States measure of insurance services also includes a measure of auxiliary insurance services. The measure includes separate estimates of trade in direct insurance and reinsurance. Although both the present *Guide* and BPM6 recommend estimating life and non-life insurance separately, the United States treats all direct insurance as non-life insurance because United States cross-border transactions in life insurance are thought to be insignificant.

14.129. The United States measure of trade in insurance services is compiled using data from a variety of sources. The main source is a survey of United States insurance enterprises. That survey, conducted by the Bureau of Economic Analysis (BEA), collects quarterly data on reinsurance premiums sold to and purchased from abroad and annual data on reinsurance claims paid and received, primary insurance

¹⁹⁸ See MSITS 2010, box III.7.

premiums sold and claims paid and auxiliary insurance services. Every five years, BEA conducts a benchmark survey of insurance enterprises to collect information on enterprises that fall below the reporting threshold on the quarterly survey. A separate survey of United States businesses, also conducted by BEA, collects data on primary insurance premiums purchased and claims received by non-insurance enterprises and additional data on auxiliary insurance. Data on the income generated by insurance enterprises' reserves, used to calculate premium supplements, are from *Best's Aggregates and Averages: Property/Casualty* by A.M. Best Company.

14.130. Insurance services include three components: (a) premiums less normal losses, called "risk-pooling services", (b) premium supplements and (c) auxiliary insurance. The calculation of risk-pooling services requires information on current premiums and a measure of what insurers expect their claims to be. Premiums are collected on BEA surveys as outlined above. The proxy measure for insurers' expected claims, called normal losses, is estimated by applying a ratio based on historical premiums and claims to current period premiums. That method assumes that insurance enterprises base current premiums on their expectation of current period losses and that they base their expectation of losses on their loss history.

14.131. The United States method assumes that insurance enterprises plan for two basic types of losses: (a) regularly occurring losses that occur every period and (b) catastrophic losses that occur at infrequent intervals. Separate estimates are made for the two types of losses. To calculate separate estimates, catastrophic losses must be separated from regularly occurring losses in the loss data reported by insurance enterprises. When a catastrophe, such as a major hurricane, occurs, the magnitude of the related loss is estimated using data from the survey of insurance enterprises and publicly available reports from insurance enterprises affected by the event. Losses other than catastrophic losses are considered regularly occurring.

Table 14.9
Numerical example of measuring insurance services in United States

	2010	2011	2012
1 Primary insurance receipts (line 2 plus line 3 plus line 4)	1,090	1,575	1,350
2 Risk-pooling services (line 5 minus line 6)	825	1,200	1,015
3 Premium supplements (line 5 times line 9)	165	260	210
4 Services auxiliary to insurance (from survey)	100	115	125
Primary insurance supplementary information			
5 Premiums received (from survey)	1,500	2,000	1,750
6 Normal losses (line 5 times line 8)	675	800	735
7 Actual losses paid (from survey)	500	3,000	800
8 Normal loss ratio ^a	0.45	0.40	0.42
9 Premium supplement ratio ^b	0.11	0.13	0.12
10 Catastrophic losses paid (from survey and public reports)	0	1,750	0
Non-service entries in balance-of-payments accounts			
11 Current transfers (line 6 minus line 7 plus line 10) ^c	175	-450	-65
12 Capital transfers (line 10 with sign reversed) ^c	0	-1,750	0
13 Income payments (line 3 with sign reversed)	-165	-260	-210

^a Based on a six-year moving average of premiums and losses, see paras. 14.57-14.61.

^b Based on a moving average of investment gains to premiums, see para. 14.63.

^c Negative sign denotes outflow from US insurance company to foreign policy holder.

14.132. Expected regularly occurring losses are estimated by applying to current period premiums a six-year arithmetic moving average of each prior period's ratio of regularly occurring losses to premiums. Loss data for the current period are not included in the average in order to achieve an ex-ante concept of regularly occurring losses.

14.133. Because catastrophic losses occur much less frequently than regularly occurring losses, they are assumed to affect loss expectations over a much longer period. To account for this, catastrophic losses are removed from current period losses, and spread over the 20 years following their occurrence in equal increments. Similar to regularly occurring losses, expected catastrophic losses are estimated by applying to current period premiums a six-year arithmetic moving average of the ratio of each prior period's share of catastrophic losses to premiums. Thus, only a small fraction of catastrophic losses is factored into each year's calculation of expected claims.

14.134. Normal losses are the sum of expected regularly occurring and catastrophic losses. Separate estimates of normal losses are calculated for primary insurance, reinsurance and credits and debits. For the United States, the ratio of losses to premiums is lower for primary insurance than for reinsurance because administrative and financial intermediation services differ for those two types of insurance. Primary insurance is more retail-oriented, with a large number of individual policies sold and written, and, thus, may have higher administrative and other costs than reinsurance, which involves fewer, larger transactions between insurance enterprises.

14.135. BEA does not directly collect information on the technical reserves of insurance enterprises on its surveys because such collection is deemed too burdensome for enterprises. Due to the lack of data on technical reserves, it is not possible for BEA to use a relationship between investment returns and technical reserves to estimate premium supplements. As a result, BEA developed a ratio of expected investment gains to premiums, and multiplies that ratio by current premiums to estimate premium supplements. The ratio of investment income to premiums is from *Best's Aggregates and Averages: Property-Casualty* by A.M. Best Company. A.M. Best provides data on investment gains that are attributable to insurance transactions, as opposed to investment gains attributable to the insurers' own funds. The ratio is a weighted moving average of the previous ratios of actual investment gains to premiums. In the cross-border trade data, the expected investment gains-to-premiums ratio is estimated separately for primary insurance and reinsurance, in recognition of the fact that reinsurers may have different ratios of net gains to premiums than primary insurers. The different ratios may arise because reinsurers hold larger reserves than primary insurers, or because reinsurers hold reserves for a longer period of time.

14.136. Once those ratios have been calculated, they are applied to the estimates of premium receipts for direct insurance and reinsurance obtained from BEA surveys to derive premium supplement receipts. Because similar data on the investment income of foreign insurance enterprises are not available for payments, the ratio used for receipts is applied to the estimates of premium payments in order to estimate premium supplement payments.

14.137. Auxiliary insurance services cover items such as agents' commissions, actuarial services, insurance brokering and agency services and salvage administration services. Data are collected on BEA surveys. Auxiliary insurance is a component of primary insurance; there are no auxiliary services associated with reinsurance.

Country example: Japan: recording insurance services on an accrual basis

14.138. Since Japan employs an ITRS as a major data source, recording insurance services on an accrual basis has been challenging. To deal with the problem, Bank of Japan (BOJ) adjusts ITRS data in implementing a method that most closely conforms to that outlined in example 3 in MSITS 2010, box III.7. The method measures insurance services by multiplying actual premiums earned by the insurance service ratio.

14.139. The ITRS captures premiums actually paid rather than actual premiums earned that accrue to the accounting period. Thus, data are adjusted under the following assumption: BOJ assumes that insurance premiums payable cover 12 months' risks and, as insurance premiums are generally paid at the inception of a policy, actual premiums earned are calculated by equally allocating premiums in the subsequent 12 months (figure 14.3). That adjustment is made for other direct insurance and reinsurance.¹⁹⁹

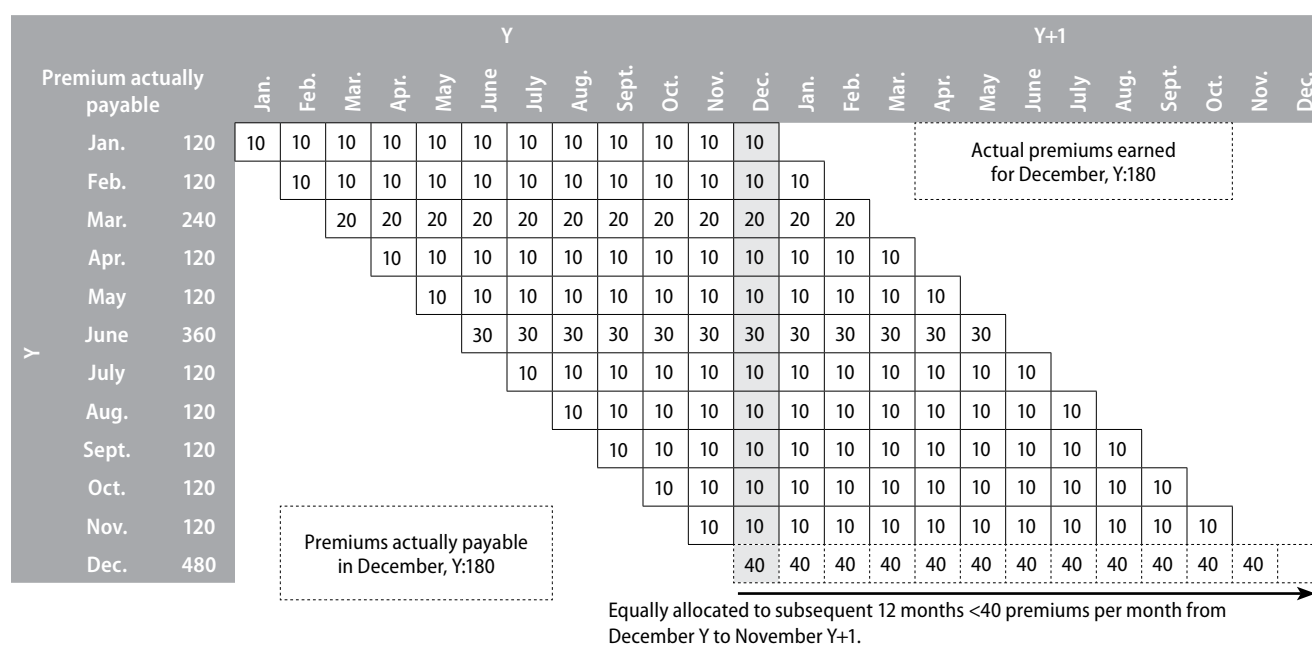
14.140. The insurance service ratio for other direct insurance and reinsurance, which is the ratio of service charges to gross premiums earned, is estimated from resident non-life insurance enterprises' financial statements and is applied to both imports and exports. Operating and administrative expenses are regarded as costs for providing insurance services, and the service ratio is estimated by dividing aggregated operating and administrative expenses by corresponding premiums. That ratio is fixed for a year and is updated when new financial statements become available. The insurance service ratio for freight insurance is captured separately and obtained from resident insurance enterprises.

14.141. Insurance services are calculated by multiplying the service ratio by monthly actual premiums earned.²⁰⁰ Premium supplements are regarded as zero, as retained incomes for nonlife insurance reserves are negligible. Claims are recorded when paid, under secondary income for normal claims, and under capital transfer for high claims when catastrophic events occurred.

¹⁹⁹ Since freight insurance policies cover a single contract, which is usually short-term, the same adjustment is not applied to freight insurance premiums. Life insurance and pension services are excluded from the estimation of services, as cross-border life insurance and annuity contracts are negligible in Japan.

²⁰⁰ Freight insurance premiums receivable on both exported and imported goods are obtained through a direct report from resident non-life insurance companies. The corresponding values for imported goods are also used to derive a premium ratio. Freight insurance premiums paid by a resident to a non-resident on imported goods are estimated by excluding those earned by resident insurance companies from the total value. The total value is derived by multiplying the premium ratio on imported goods by the total value of imports.

Figure 14.3
Estimation of actual premiums earned



Box 14.6

Numerical example of actual premiums received and claims paid to non-residents

Actual premiums received for December.....	¥180
Insurance service ratio for year	40 per cent
Claim paid to non-resident in December	¥85
Insurance service (export)	72 (=180 x 40 per cent)

14.142. That method is likely to stabilize outputs. Compared with a simple cash-based method, which calculates premiums minus claims, the volatility of the outputs is substantially reduced. More importantly, negative figures, which are due mainly to lumped claims, are avoided.

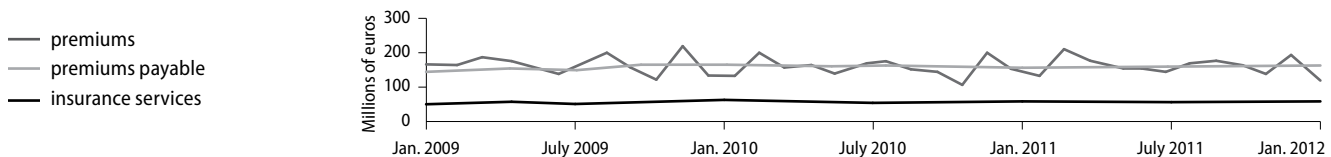
Country Example: Germany: smoothing of insurance premiums paid/received

14.143. **Calculation of insurance imports.** In Germany, there is no administrative data for compiling imports of insurance services. Therefore, the data available from external sector statistics, which are available on a monthly basis, are used. Those data are not detailed enough, however, and must be supplemented by the following types of estimates:

- (a) Adjustments for premiums paid to premiums payable;
- (b) Estimates for premium supplements;
- (c) Estimates for changes in insurance technical reserves;
- (d) Estimates on the stock of insurance technical reserves.

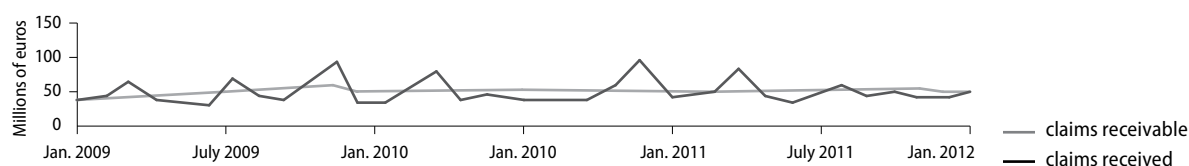
14.144. The first step is to smooth the premiums paid, which are relatively volatile, to premiums payable by using a 12 month moving average. The decision is related to the fact that premiums usually are paid in advance for one year. The second step is to apply the ratio of premiums earned to service derived from the export side to the smoothed premiums of the import side, in line with the BPM6 recommendations.

Figure 14.4

Premiums paid from Germany to insurance companies abroad

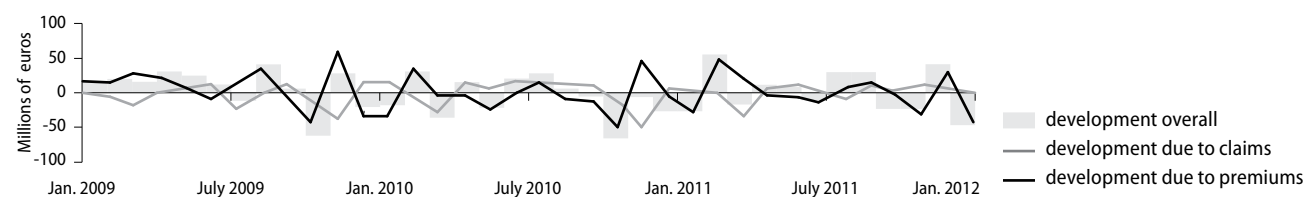
14.145. **Premiums received but not yet earned.** The technical reserves represent the amounts identified by insurance companies to account for prepayments of premiums and claims submitted, but not yet paid. Germany intends to use the same approach as for smoothing premiums paid to premiums payable for the two components which contribute to the development of technical reserves, the premiums paid to insurance companies abroad and the claims received. If the premiums paid are larger than the premiums payable, the technical reserves increase; if the other way round, they decrease.

Figure 14.5
Claims received in Germany from insurance companies abroad



14.146. If the claims received are larger than the claims receivable, the technical reserves decrease; if the other way round, they increase. The sum of the changes of technical reserves must be recorded in the financial account.

Figure 14.6
Development of technical reserves in Germany



14.147. It is still necessary to estimate premium supplements as the interest on technical reserves. There are two ways to make that calculation: (a) to calculate interest on the estimated stock of technical reserves or (b) to apply a ratio to the premiums payable derived from the export side. The intention of Germany is to use the second possibility since it is immediately available.

B.5. Financial services

Introduction

14.148. Financial services may be charged for explicitly or implicitly, and some transactions in financial assets may involve both explicit and implicit charges. The most common implicit charges relate to (a) margins on buying and selling transactions; (b) asset management costs deducted from property income receivable, in the case of asset-holding entities; or (c) margins between the interest rate and the reference rate on loans and deposits (FISIM). EBOPS 2010 identifies FISIM separately from all other financial services.

14.149. Among financial services provided without explicit fees, margins on buying and selling are regarded as services charged by securities dealers. In theory, margins are identifiable for each transaction by securities dealers. Thus, one way to collect the data is to process such microdata if they can be collected. Another way, which appears more realistic, is to estimate margins on an aggregate basis, for example by multiplying their transaction volumes by spread ratio. Transaction volumes can be obtained from the financial accounts of balance-of-payments statistics and spread ratio can be obtained from financial market data providers. The *BPM6 Compilation Guide*, chapter 12, paragraphs 114 to 116, provides additional detail on data collection for such services.

Compiling financial intermediation services indirectly measured

14.150. The 2008 SNA and BPM6 recognize financial intermediation services indirectly measured (FISIM) produced only by certain financial corporations and

only on the loan and deposit instruments on their balance sheets. Thus, FISIM *exports* are calculated on the loan assets and deposit liabilities of resident financial corporations for which the counterparty is a non-resident unit as follows:

- (a) For loans, it is the difference between the interest receivable by a financial corporation and the interest cost of funds calculated at a reference rate on the loan balance;
- (b) For deposits, it is the difference between the interest payable at the reference rate on the deposit balance and actual interest payable to the depositor.

14.151. FISIM *imports* are calculated on the resident institutional sector's (mostly non-financial) loan liabilities and deposit assets with non-resident financial corporations.

14.152. The 2008 SNA refers to the cost of funds at the *reference rate* as "SNA interest". Determining the reference rate is a key element in compiling FISIM. The reference rate should contain no service element and should reflect the risk and maturity structure of deposits and loans. The rate prevailing for interbank borrowing and lending may be a suitable choice as a reference rate. However, different reference rates may be needed for loans and deposits in other currencies, in particular for transactions with non-resident financial institutions. The reference rate changes over time with market conditions.

14.153. For FISIM *exports*, the reference rate is, in principle, the cost of funds from the liability side of balance sheets of resident financial corporations. However, exports of FISIM on loans to non-residents can be estimated, using the reference rate for domestically produced FISIM, as interest receivable less the product of the loan position and the (domestic) reference rate, if it can be assumed that transactions are mostly in national currency. Exports of FISIM for deposits of non-residents (excluding financial corporations) can be estimated as the product of the deposit position and the domestic reference rate, less interest payable (*BPM6 Compilation Guide*, appendix 3, para. A3.11).

14.154. For FISIM *imports*, the reference rate is, in principle, the cost of funds from the liability sides of the balance sheets of non-resident financial corporations by economy of residency. Imports of FISIM for loans received from non-residents can thus be estimated as interest payable to non-resident financial corporations, less the product of the loan position and the reference rate for the applicable funds lent. Imports of FISIM for deposits with non-resident financial corporations can be estimated as the product of the deposit position multiplied by the reference rate for the funds deposited, less the deposit interest receivable from the non-resident FISIM provider (*BPM6 Compilation Guide*, appendix 3, para. A3.13).

14.155. The most comprehensive source data for exports and imports of FISIM come from (a) resident financial corporations (surveys or administrative data collection or financial supervision authorities), which can identify deposits and loans with non-residents, as well as (b) surveys of selected non-financial corporations and households as well as non-profit institutions serving households, which could provide data on residents' accounts with financial corporations abroad to support the compilation of FISIM imports (see chapter 6). FISIM imports by general government are often derived from administrative data (see chapter 9) or government financial accounts. Information on interest flows and deposit and loan positions can alternatively be sourced from the compilation of balance of payments and the international investment position. Statistics on interest rates and/or data on interest flows are used to calculate the reference rate as well as deposit/lending rates.

14.156. The data sources available for economies' own financial corporations sectors and for those of their FISIM trading partners will tend to control the specific approach to determining the relevant reference rates for international trade in FISIM.

14.157. Additional difficulties in sourcing data may be encountered in compiling FISIM imports. Thus, partner country data, including data sourced from international organizations (most relevant here, the Bank of International Settlements) may provide useful information. In that context, the domestic reference rates of the economies supplying financial intermediation services may be used. To ensure data consistency, it would be helpful for economies to disseminate their domestic reference rates for possible use by non-resident compilers.

14.158. For economies in which cross-border FISIM is small, it can be measured with relatively simplified methods based on aggregated data. For example, FISIM for deposits with financial corporations is calculated by deducting deposit interest flows from the value obtained by multiplying deposit stocks by the reference rates. FISIM for loans from financial corporations is calculated by deducting the value obtained by multiplying loan stocks by the reference rates from loan interest flows. More elaboration on calculating the imports and exports of FISIM is provided in the BPM6 *Compilation Guide*, appendix 3.

14.159. In general, the FISIM of financial corporations (calculated on loan assets and deposit liabilities) is expected to be positive. However, the calculation of the FISIM of financial corporations can be negative if the reference rate temporarily becomes higher than the lending rate and/or lower the deposit rate temporarily. In that case, for practical reasons, the compiler may wish to assume that the value of the FISIM is zero. A negative FISIM may reflect erroneous calculations and inappropriate reference rates. If the negative values continue for a long time, compilers should review the calculation of the reference rates.

Reference rate in FISIM

14.160. Given the complexities involved in estimating imports and exports of FISIM the Advisory Expert Group on National Accounts (AEG), at its May 2013 meeting, provided a series of recommendations applicable to international transactions. Those recommendations are summarized below and trade in services compilers are encouraged to follow them.

14.161. For estimating imports and exports, FISIM should be calculated by at least two groups of currencies, both national and foreign. The reference rate for a specific currency need not be the same for FISIM providers, which are residents in different economies. However, they are normally expected to be relatively close. Use of partner country information or other relevant information is thus encouraged, when national estimates are not available.

14.162. The calculation (definition) of the reference rate should be determined according to national circumstances, using preferably one of the following approaches:

- (a) A reference rate based on a single observable exogenous rate for a specific instrument, such as interbank lending rates;
- (b) A reference rate based on a weighted average of observable exogenous rates of maturities with different terms (weighted by the stock of loans and deposits in each maturity);
- (c) A weighted average of the endogenous interest rates on loans and deposits.

14.163. Estimation of FISIM over periods of volatile movement in reference rates should be carefully monitored, in particular if the results are negative, particularly for depositors, but also for borrowers. In such cases, countries are encouraged to review the applicability of the underlying reference rate for that period to calculate FISIM.

14.164. Research continues in the area of credit default risk related to FISIM and the merits of its exclusion from FISIM, including for practical reasons.

Country experience: Estonia: calculating FISIM

14.165. For Estonia, external FISIM is less important compared with internal FISIM because most of the banking sector belongs to foreign banks, and loan resources for the local economy are made available through interbank transactions. The latter form the overwhelming majority in external transactions of loans and deposits. Having considered the size of the external FISIM, a cost-effective approach has been taken and simplifications have been made in compilation practice, instead of additional data collection with its increase in burden for data providers.

14.166. The compilation process is based on the stock and interest income figures available through BOP surveys and banking statistics. To compile FISIM, the average interbank rate is needed to calculate and apply for stock figures. FISIM is the margin between the interest actually charged and the adjusted interest.

14.167. For stocks data, the balance of loans and deposits is needed. In the case of assets related to loans and liabilities related to deposits, stock data are needed only for institutional sectors S.122 and S.125 of the European System of National and Regional Accounts (ESA 2010).

14.168. The main difficulty is that assets and liabilities between financial intermediaries should be excluded from the stock data. Therefore, the counterpart data must be taken into account when determining the stock from which FISIM is derived. This does not concern banking sector statistics that already have data from counterpart sectors. For other financial intermediaries (S.125), no loan data are available from counterpart sectors or the aggregation of the data is too great (leasing companies). The compilation of stocks for S.125 includes the assumption that they have loan liabilities against financial intermediaries. On the asset side of loans, all stocks of S.125 are taken into account, reflecting those with other financial intermediaries.

14.169. Another issue concerns stock data of households for which the main data source is the ITRS, which does not give a good indication of positions. One solution is to use mirror data, i.e., banking sector statistics of other countries by counterpart sector. However, the household sector continues to be estimated.

14.170. The reference rate is derived from the credit institutions report on the balance of loans and resources from which the stocks against non-resident financial intermediaries are taken by currency and maturity. Each stock is multiplied by the corresponding contractual interest rates from the same reports. The amounts to be paid or received are then divided by the stocks. The result of that compilation is an average weighted interbank rate that is used as a reference rate.

14.171. Before multiplying stocks with the reference rate, both the stocks and unadjusted interest income are distinguished by counterpart sectors. That step is taken to exclude the stocks and interest income between financial intermediaries. Data by counterpart sectors for both items could be derived by using the credit institutions report on the balance of loans and resources. However, the stocks and income cannot be divided for other financial intermediaries due to the lack of proper data sources.

14.172. Experiences up to the present indicate that preconditions still exist to eliminate stocks and income between financial intermediaries properly. Therefore, data sources have to include data by currency and by counterpart sector for other financial intermediaries as well. For the household sector, further estimations for stocks must be developed. Additional estimations are also needed in the case of negative FISIM. This usually occurs with large transactions in deposits by the general government sector, in which the stocks at both the beginning and the end of the period

were zero, while at the same time interest was earned. In order to keep a cost-effective approach for data providers, detailed sectorized data in different currencies are not required. Instead, the weighted average reference rate itself reflects the weights of the currencies and maturity.

Country experience: Japan: margins on buying and selling transactions

14.173. Dealers implicitly charge services by incorporating a spread between their buying and selling prices. Japan estimates margins on debt security transactions by multiplying their transaction volumes by the corresponding spread ratios. Transaction volumes and spread ratios are estimated as follows.

14.174. In most cases, a resident dealer exports services through inward investment transactions. Correspondingly, a resident investor imports services through outward investment transactions.

14.175. Therefore, Japan assumes that the export of services occurs only in inward investment, and that the import of services occurs only in outward investment. Some inward (outward) investment transactions are conducted with non-resident (resident) dealers, and such transactions are excluded. Volumes (the sum of buying and selling transactions) of inward investment and outward investment by type of security are obtained from direct reports from financial institutions and ITRS.

14.176. A spread ratio is the difference (as a ratio) of an ask price and a mid-price, where a mid-price is the average of an ask price and a bid price. The spread ratio varies by every transaction, but there is no perfect data source. Therefore, Japan chooses the most common products and uses their spread ratios for approximation. For inward investment (export of services), spread ratios of Japanese Government Bonds (JGB) are used. For outward investment (import of services), spread ratios of six major countries' government securities, that account for the majority of outward portfolio investment, are used and applied to investment in corresponding countries. As they are significantly different, spread ratios of short-term securities and spread ratios of long-term securities are separately measured. Data are obtained from Bloomberg.

Table 14.10

Numerical example of exports involving margins on buying and selling (billion yen, percentage)

	[Bid price for ¥10 JGB]		101,675	
	[Ask price for ¥10 JGB]		101,695	
→	Mid-price [(bid + ask) / 2]:		101,685	
	Spread [(ask – mid) / mid]:		0.01%	

Country of investor	Transaction volume (inward investment)			Spread on JGB (percentage) (d)	Margin (c) x (d)
	Credit (a)	Debit (b)	Total (c) = (a) + (b)		
A	65,000	17,000	82,000	0.01	8.2
B	1,800	25,000	26,800	0.01	2.68
C	9,000	5,000	14,000	0.01	1.4
D	16,000	2,000	18,000	0.01	1.8
Total	...	...	...	...	14.08

Table 14.11
Numerical example of imports involving margins on buying and selling
(billion yen, percentage)

Country of issuer	Transaction volume (outward investment)			Spreads on government bonds (percentage) (d)	Margin (c) x (d)
	Credit (a)	Debit (b)	Total (c) = (a) + (b)		
E	1,000	1,500	2,500	0.04	1.0
F	1,500	2,700	4,200	0.05	2.1
G	7,000	1,800	8,800	0.03	2.64
H	9,000	2,000	11,000	0.01	1.1
Total	...	...	...	...	6.84

Country experience: Luxembourg: e-commerce (merchandising) services

²⁰¹ By combining the advantages of both European directives (Council of the European Union directive 2002/38/ EC and Council of the European Communities directive 77/388/EEC), the subsidiaries from international groups providing e-commerce services were allowed to apply the Luxembourg rate of 15 per cent VAT on services provided, and not the higher VAT rates applicable in the country of residence of European clients.

14.177. Luxembourg hosts an increasing number of subsidiaries of international groups²⁰¹ that provide worldwide e-commerce services and are active in well-diversified domains (distribution of music, audio books and audiovisual products, online trading platform services, operation of websites for the purpose of selling, auctioning, renting or otherwise distributing products and services, etc.). Thus, “service merchandising” has become one of the important components of telecommunications, computer and information services, audiovisual and related services, royalties or other business services.

14.178. Given the importance of the international transactions of such subsidiaries, the aim of Luxembourg was to include all of them in its monthly BOP report for services. While there are a few international groups that operate through different local operational entities, in most cases, the international groups act through a single operational legal entity with a low physical presence through which services are provided to a multitude of clients, especially inside the European Union, whereas expenses (i.e., imports) are often intercompany retrocessions in different forms of services (including royalties), both within and outside the European Union. Therefore, while the gross flows may be sizeable, in many cases, on a net basis, the international trade in services transactions nearly cancel out because the overall accounting result of the resident legal entities is often around zero, due to the intercompany retrocessions. Thus, because the value of merchandising services exported from and imported to Luxembourg is recorded on a gross basis, the resulting values may seem inflated, given the fact that there is a low physical presence of international groups in Luxembourg. That treatment is applicable because most of the firms hosted in Luxembourg trade services that are classified to the appropriate specific service classification (such as telecommunications, computer and information services, audiovisual and related services, charges for the use of intellectual property n.i.e. or other business services), and if the firms act as agents on a commission basis, only the commission is recorded as the service provided.

14.179. Luxembourg covers external transactions through its survey and completes monthly figures with an estimate for FDI income.

B.6. Services related to intellectual property products

Introduction

14.180. The present subsection discusses the compilation of services related to intellectual property products (IPP), and covers the EBOPS category entitled use of

intellectual property n.i.e., as well as parts of other main EBOPS categories, including telecommunications, computer, and information services, other business services and personal, cultural and recreational services. The present *Guide* combines those components in the present subsection because of the partial overlap of and interrelationships among the categories.

14.181. Services derived from IPP cover the following items in the EBOPS 2010:

- (a) Charges for the use of intellectual property n.i.e. (main EBOPS category);
- (b) Computer and information services (included in telecommunications, computer and information services);
- (c) Research and development services (included in other business services);
- (d) Architectural, engineering, scientific and other technical services (included in other business services);
- (e) Audiovisual and related services (included in personal, cultural and recreational services).

14.182. Recent decades have seen an explosion in transactions related to those categories. Many of the transactions relate to the use of an underlying produced asset (typically research and development, software, databases and audiovisual originals). However, the categories present significant measurement challenges. Firstly, because the distinction between the categories from a reporter's perspective may not always be clear (for example, software versus research and development, or software versus audiovisual). And, secondly, because intrafirm transactions may be affected by transfer pricing phenomena or indeed by more general tax planning issues, meaning that the distinction between flows recorded as trade in services and flows recorded in the primary income account of the BOP as property income may not always be clear-cut.

14.183. The present section provides a detailed description of each of the service categories derived from IPP. It focuses on the particular challenges concerning flows relating to IPP recorded as assets in the system of national accounts. Special mention is also made of the treatment of transactions related to franchise and trademark licence fees. Such fees usually also reflect payments for the use of marketing assets, which are considered to be non-produced assets. As a consequence, in theory, transactions should be recorded in the primary income account in the balance of payments. However, given that the payments also include a service element, and if it is not possible to make the distinction with the income element, then by convention the full value is recorded under franchise and trademark licence fees.

14.184. Despite the guidance offered below, it is important to note that it is unlikely that compilers will ever be able to fully account for transactions in intellectual property in a way that is consistent with the underlying principles of economic ownership. However, it is at least possible to make progress on achieving more coherence both internationally, by encouraging compilers to engage in asymmetry reconciliation exercises, and nationally, by improving the coherence of capital stock and productivity estimates. Ultimately, pragmatic approaches to measurement are necessarily advocated here. Improvements in a few key areas could significantly improve quality.

Use of intellectual property n.i.e.

14.185. Charges for the use of intellectual property n.i.e. are defined in paragraph 3.214 of MSITS 2010, and include franchises and trademark licensing fees, licences for the use of outcomes of research and development, licences to reproduce and/or distribute computer software, licences to reproduce and/or distribute audiovisual products and licences to reproduce and/or distribute other products.

14.186. *Franchises and trademark licensing fees* are, in theory, related to charges for the use of non-produced assets (marketing assets). As such and, if one were to follow the underlying principles of national accounts, payments would not be recorded in production accounts of national accounts nor in the goods and services account of the BOP. Rather, the payments correspond to property income. However, the payments are often bundled with additional service items that make it difficult to disentangle the pure payments for the use of the underlying brand and, as such, both the 2008 SNA and BPM6 recommend that such payments be recorded as payments for services. Nevertheless, outright purchases of the entire brand (the marketing asset) or indeed rights to use the brand in certain regions, such that the licence has the characteristics of a *licence to reproduce*, should not be recorded in the goods and services account and should instead be recorded in the capital account.

14.187. *Licences for the use of outcomes of research and development* include payments for licences to use and licences to reproduce. The latter reflects a transaction in a pre-existing produced asset in the SNA corresponding to negative gross fixed capital formation (GFCF) for the unit selling the licence and positive GFCF for the acquiring unit.

14.188. Care should be taken to differentiate between payments included in that category from those included in EBOPS category 10.1, which includes payments for customized (made to order) research and development as well as acquisitions of entire research and development originals. Differentiating between sales/purchases of licences to reproduce and sales/purchases of entire originals may not always be trivial, but the latter will usually, at least for transactions between unaffiliated parties, be accompanied by sales/purchases of legal instruments, such as a patent or copyright.

14.189. Since the 1993 SNA, when software was recognized as a produced asset for the first time, significant improvements have been made in measuring software and software-related transactions, and the proposed changes for more details in the latest EBOPS classification system should consolidate those advancements. To assist in efforts to estimate GFCF in software the national accounts community requested the inclusion of a separate category, "licences to reproduce and/or distribute computer software", which specifically relates to licences to reproduce and not licences to use, which are included in EBOPS category 9.2. Licences to reproduce (with a contract period of more than one year) are recorded as GFCF by the purchaser and negative GFCF by the seller.

14.190. Similar improvements have been made with respect to other intellectual property products, such as databases, audiovisual, literary and other artistic originals. "Licences to reproduce and/or distribute audiovisual products" and "licences to reproduce and/or distribute other products" refer only to licences to reproduce and not licences to use.

Computer services

14.191. MSITS 2010, in paragraph 3.224, defines "computer services" as covering "hardware- and software-related services and data processing services". Compilers should take particular care with respect to the coverage of computer software, in particular its distinction from "licences to reproduce and/or distribute computer software" (see also MSITS 2010, para. 3.225).

14.192. The key difference vis-à-vis licences to reproduce concerns the recording of flows in the national accounts. Whereas "licences to reproduce" of more than one year are not considered to reflect new output, transactions in computer software, with the potential exception of "software originals", which may have been produced in prior periods, are. That item does not include the value of software embodied in other

products, such as a computer, and sold as a bundle where the software component and value are not separately invoiced. Moreover, with the exception of sales to households and expenditures on licences with one year or less, all domestic expenditures in this category are typically recorded as GFCF in the national accounts.

14.193. Also of note is the recording of software provided on a physical storage device with a periodic licence fee as transactions in services, whereas software acquired on physical media with a one-off payment are recorded as transactions in goods.

14.194. It is clear that the blurring of lines between a good and a service, magnified by the difficulties that may exist in differentiating between the two categories in practice, complicates measurement. A complementary grouping (C.3) in EBOPS is included for “computer software transactions”, which includes all related transactions whether embodied on physical media or not (see paragraph 14.196). An additional grouping, C.3.1, is included to separately identify transactions that concern licences (explicit or otherwise) whose duration is for more than one year, which are recorded as GFCF when acquired by producers.

14.195. “Other computer services” (EBOPS 9.2.2) includes all other related transactions that are generally not recognized as investment in the national accounts. The detailed coverage of other computer services is given in MSITS 2010, paragraph 3.230.

Information services

14.196. MSITS 2010 divides information services into news agency services and other information services. Those are defined in paragraph 3.232 of MSITS 2010. One particular issue worthy of mention here concerns database-related transactions. The use and outright purchase or sale of originals and copies of databases are included in that category. However, some care is needed to ensure that software development costs in developing databases are not included in that category but in “computer software”.

Research and development services

14.197. Research and development services are defined in paragraph 3.234 of MSITS 2010. EBOPS 2010 recommends a breakdown of research and development services into two subgroupings: work undertaken on a systematic basis to increase the stock of knowledge, reflecting the coverage of research and development within a 2008 SNA context, and other research and development services.

14.198. It is important to note that the categories above within the provision of customized and non-customized research and development services (10.1.1.1) primarily relate to “new” research and development, such as newly produced customized software, or transactions in “originals”, where ownership and the concomitant rights are transferred to the purchaser. Care is needed in that context to differentiate between licences to reproduce and originals. Most, if not all, of such expenditures will be recorded as investment in the accounts of the importing country. Note, too, that not all acquisitions necessarily need reflect patented, copyrighted or other protected forms of research and development. In many cases, companies may deliberately opt not to patent the outcomes of some of their research and development. This may be motivated by a desire to preserve secrecy, by the cost of patenting, which may be perceived as outweighing the benefits, or by the research and development subject matter not being patentable.

14.199. Other research and development services primarily reflect other research and development-related expenditures that are not expected to add to the stock of knowledge as defined in the OECD *Frascati Manual* and recognized in the SNA and, therefore, will not be treated as investment in the national accounts.

14.200. There are other borderline issues to consider however. They chiefly concern design originals and the potential overlap with “architectural, engineering, scientific and other technical services”.

Audiovisual and related services

14.201. “Audiovisual and related services” relates to the production of motion pictures on film, videotape or disk or transmitted electronically; radio and television programmes, live or on tape; and musical recordings (see MSITS 2010, para. 3.256). As noted above, care should be taken to ensure that “licences to reproduce and/or distribute audiovisual products” are not included in that category. There may, however, be borderline issues concerning the rights acquired by transmitters such as television companies and radio stations, when the contractual arrangements allow for multiple transmissions. Where the fees are paid on a “pay as you go” basis, for example, when a royalty payment is made every time a song is played on a radio station, they should be recorded under 11.1.1 (audiovisual). If, however, a one-off fee is paid that provides for unlimited airtime it should be recorded as being equivalent to a licence to reproduce (intellectual property).

14.202. Performing arts and other live entertainment event presentation and promotion services, namely, live performances such as concerts and plays, are excluded from audiovisual services and are instead included in artistic-related services. The transaction corresponding to the performance of resident actors, musicians or other artists for the shooting of a movie (or other types of visual programmes) or musical recording by a non-resident entity (and vice-versa) is also included under artistic services, under the condition that artists are not in an employer-employee relationship with the recording entity. However, the subsequent transactions for the result of the recording will be included in audiovisual services. If for the recording the services of an independent recording studio or similar services are outsourced, then transactions will be included under audiovisual services if they are between residents and non-residents, and there is no employer-employee relationship, if the transactions correspond to the services of an independent service provider. Also included in audiovisual services are amounts receivable or payable for rentals of audiovisual and related products and charges for access to encrypted television channels, such as those offering cable and satellite services.

14.203. Like software, a complementary grouping is provided for “audiovisual transactions” in recognition of the grey borderline between transactions in goods and services. In the same way a complementary grouping is included to account for transactions that reflect investment expenditure in the national accounts (i.e., licences for more than one year), when undertaken by producers.

14.204. For artistic-related services, care should be taken to ensure that transactions are included only if the service providers are not employees of the entity making payments; otherwise, they should be recorded as compensation of employees.

14.205. Sales of ownership rights of literary or other artistic originals (excluding those covered under audiovisual), should be recorded under 11.1.2 (artistic-related services). There may be borderline issues for rights that restrict reproductions to certain markets or languages, where transactions should be recorded under EBOPS 8.4.2 (intellectual property).

14.206. Other borderline issues may concern transactions relating to the selling of exclusive rights before any originals have been created (for example, the exclusivity of a publisher to publish future literary works of an author). Those types of rights should be recorded as contracts for future production, and therefore payments should

be included in the capital account. However, at the point in time when the “original” is produced, an imputation should be recorded for either (a) the transfer of the entire ownership from the “author/producer” to the “funder” or (b) a licence to reproduce.

Compiling intellectual property product-related services

14.207. Despite some of its current shortcomings in identifying international transactions in trade in research and development services, with the addition of supplementary questions, the Frascati-based²⁰² survey approach provides perhaps the best mechanism for improving the measurement of trade in research and development services. The OECD *Handbook on Deriving Capital Measures of Intellectual Property Products* describes a prototype questionnaire with a comprehensive list of questions that could inform the design of new or modified surveys (see also paragraph 14.214 and the country experience of Germany in paragraphs 14.215 through 2.19).

²⁰² OECD, *Frascati Manual*.

14.208. The key challenge for measuring research and development flows, however, concerns transactions between affiliated parties. Research and development-related transactions between affiliated enterprises are not always observable and, often, payments that are implicitly related to research and development are instead recorded in the primary income account of BPM6. At the same time, flows may also be channelled through convoluted chains of affiliates, including special purpose entities, that have been set up to maximize post-tax profits for the controlling multinational enterprise.

14.209. The Task Force on Global Production²⁰³ and its predecessor, the Task Force on Globalization in the National Accounts, have the goal of developing guidance on the issue of ensuring that flows for the funding, performance and use of research and development align with the concept of “economic ownership” in the national accounts. Since the conclusions reported in the interim “Guide to measuring global production” of the Task Force on Global Production are still under discussion in other intergovernmental bodies at the time of writing of the present *Guide*, more concrete guidance on those issues will be provided on the online version of the *Guide*. In the interim “Guide to measuring global production” the Task Force proposes that the most expedient approach to ensuring an underlying consistency between payments for the use of an asset and economic ownership would likely be through adjustments to balance sheets and, where possible, through the recording of transfers of assets from one affiliated party to another.

²⁰³ See *Guide to Measuring Global Production*, chap. 4 (forthcoming).

14.210. Central to that proposition is a desire to remain close to recorded and observed flows. This partly reflects practicalities, in particular the difficulties in making corrective imputations in the absence of complementary data. It also reflects a desire to retain a close consistency between recorded profits and taxes paid, even if such payments suggest departures from the principles of economic ownership. Nevertheless, in two specific cases, the Task Force on Global Production suggests imputations to correct for flows recorded “incorrectly” as property income, where evidence is available.

14.211. The first case relates to affiliates using an underlying asset, owned by the parent or other affiliate, but where no explicit payment for use is recorded, and, instead, related flows are recorded as property income. In such circumstances, the interim “Guide to measuring global production” proposes that, in principle, an imputed payment for the use of the underlying asset should be recorded as charges for the use of intellectual property n.i.e.²⁰⁴ The imputation could be based on observable flows in property income that can be related to the underlying asset. Or, failing that, the imputation should be based on the affiliate enterprise’s share of total relevant multinational enterprise output multiplied by the total income generated by the underlying asset. However, the data requirements are arduous because such an approach requires not only information income generated by the asset, or proxies, such as the value of capital

²⁰⁴ Since the conclusions reported in the forthcoming *Guide to Measuring Global Production* are still under discussion in other intergovernmental bodies at the time of writing of the present *Guide*, more concrete guidance on those issues will be provided on the online version of the present *Guide*.

services provided by the asset. As such, more often than not, it is unlikely that such imputations will be made in practice. Nevertheless, if compilers do make such imputations, they should ensure that counterpart transactions (in particular, international transactions) should be coherent, requiring coordination with other statistics agencies.

14.212. The second case concerns dedicated affiliates engaged in the production of intellectual property products for use by other affiliated parties in production, but where the affiliate producing the intellectual property does not itself use the asset in production or receive any revenue through sales of licence to use or reproduce the asset or related income. Often such units have no recorded output beyond the production of the asset itself, which is recorded as own-account production of GFCF. In such circumstances the interim "Guide to measuring global production" proposes that an imputation be made such that the produced asset is transferred (exported in cases of international transactions) to the parent company. Sources of such information are scarce but some potential sources or approaches exist.

14.213. The first source relates to firm-level data and, in particular, data collections on the activities of multinational enterprises and foreign affiliates. Units classified to research and development activity (ISIC rev.4, division 72) but with no identifiable output, except for own-account production of research and development originals, or with no expectation of revenue through sales of licences (which can be indicated if historically this is also the case) can be considered as satisfying the criteria established in the interim "Guide on measuring global production" for imputing unrecorded or misreported exchanges of research and development assets to their parents. In such cases, the value attributed to the asset should be equivalent to the valuation used in estimating the own-account production (typically based on the sum of costs with an estimated mark-up for gross operating surplus).

14.214. A second potential source is the surveys used for the collection of research and development data in the Frascati framework. Data on the external funding of business research and development are collected in a large number of countries as part of that framework. The information includes funding from abroad by affiliated and non-affiliated enterprises. Although business enterprises mainly perform market transactions, those flows of funding might include donations and subsidies and not necessarily represent acquisitions of research and development, so some care is needed in interpreting the information. Nevertheless, the source can serve as a useful proxy or diagnostic for investigating flows recorded as acquisitions of research and development originals or payments for customized research and development services within the EBOPS category for research and development services.

Country experience: Germany: Charges for the use of intellectual property

14.215. Germany collects all BOP-relevant service transactions via a cut-off survey directly from enterprises, public authorities and natural persons on a monthly basis. Therefore, a generic questionnaire must be used by respondents to submit all their service transactions to Deutsche Bundesbank, as long as the value of a single transaction is above the reporting threshold of €12,500. Thus, the collection of data on "charges for the use of intellectual property" builds only one block in the frame of the general approach. Instead of asking explicitly what kind of intellectual property has been used and charged for in the reporting period, respondents must report only a transaction code indicating for which licences payments have been made/received (use or reproduction).

14.216. The list of transaction codes for filling out the forms is part of the basic law on the collection of BOP data. However, as the list may not always be self-explanatory enough for respondents, Deutsche Bundesbank has published, in addition,

an explanatory note on the code list. As for other BOP items, in the case of intellectual property, the note describes, in more than three pages and in an understandable way, what types of transactions should be reported under a specific code and explains the differences between codes.

14.217. In the excerpt from the explanatory note in Figure 14.7, it can be seen that, at the beginning of the section on intellectual property, a small table summarizes all relevant codes falling under that category.²⁰⁵ The structure of the table mainly follows the structure presented in table III.1, treatment of intellectual property, in chapter III, subparagraph 8, of MSITS 2010. Subsequently, for each category (licences, distribution rights and purchase/sale) a general definition of the category is given, followed by detailed remarks about and examples of transactions to be reported under the respective codes. All the codes are in line with the recommendations of MSITS 2010 and BPM6.

14.218. Currently the reports of the reporting agents are the only source used to compile the item “charges for the use of intellectual property”. Besides the transaction code, the respondent must provide for each transaction (credit and/or debit), the partner country and the amount paid.

²⁰⁵ It becomes obvious from the table that, under this section, not only codes belonging to the item “charges for the use of intellectual property” are listed, but also codes for transactions with intellectual property which have to be assigned to other Extended Balance of Payments Services Classification (EBOPS) items. This is done for practical reasons because respondents usually get confused if transactions in intellectual property are spread over various service items.

Figure 14.7
Treatment of intellectual property

Codes relating to intellectual property			
Items	Licences	Distribution rights	Purchase
Software	613	623	633
Audiovisual media	614	624	634
Patents/research findings	615	-	635
Brands and trademark rights	616	-	636
Other rights	617	627	637

1. Royalties and licences

The buyer, generally by acquiring licences, is given permission to use legally protected intellectual property for himself or for products that he produces.

Special features

In Germany, income from licences is subject to income tax if a domestic enterprise acquires a licence from a non-resident that does not have a notice of exemption from the foreign tax authority, the German enterprise is obliged to deduct tax from the licence payment and to pay this amount to the German tax authorities. The amount that should be reported is not the amount of the licence payment minus the tax deduction but the actual invoiced amount.

Equally, German companies, as licensors, are subject to tax liability in various different countries. The licensee pays the taxes to the foreign tax authorities and only pays the licence amount minus the deducted taxes.

The income should be reported gross (excluding foreign withholding tax deductions) as licences, with the tax withheld abroad reported as an expense using code 810. If this tax is refunded, the corresponding incoming payment should also be reported using code 810.

467/507 Emissions allowances should be reported as “Other capital investment” using the financial transaction codes (p. 83/102).

613 Use of software Z4

The use of intellectual property relates to transactions based on the acquisition of a licence, even if, from the buyer’s perspective, this looks like a software purchase (e.g., acquisition of software for office applications). One indication that such a licence has been acquired is that the acquired software must not be copied or distributed to third parties.

The following receipts and expenditure should be reported:

- Licences for individually produced or customised software, regardless of form in which supplied (CD, download, etc.). If the software company has the right to also

distribute this individual software to third parties, the client’s payment for the individual software should be reported here (code 633);

- Licence fees (periodic and one-off payments) for standard software, if the software is downloaded via the Internet;
- Periodic licence fee for standard software supplied on a physical data carrier (e.g., DVD);
- Creation and production of software documentation;
- Charges from end customer to dealers or points of sale for use of software.

Special feature

In the case of a one-off fee for standard software that was exported or imported on a physical data carrier or through having been pre-installed on hardware (pre-installed on PCs), checks should be made to determine whether there is a reporting obligation in relation to external trade statistics (intrastat or extrastat).

Given that the purchase of software generally entails the purchase of a licence and not acquisition of the proprietary rights to the full software (code 633), code 613 should be applied if there is any doubt.

614 Use of audiovisual products and other artistic copyrights Z4

Audiovisual and other artistic products can only be used as end user or for further use in own products. In the event of the latter, generally only extracts from relatively large works will be used. This includes, for example:

- Movies, documentaries, television films
- Videos (DVD, Blu-ray, etc.)
- Online media libraries
- Musical compositions
- Literary copyright
- Licence payments to authors
- Design patents
- Designs
- Access to encrypted television channels (e.g., pay TV)
- Charges received by the distributor from the distribution of audiovisual products.

Special feature

624 Public playback or broadcast of audiovisual products

13 Use of research findings, inventions and processes Z4

This includes, for example, receipts from and expenditure on the use of patents through the payment of licence fees.

14.219. The incoming reports are checked by staff members for plausibility and completeness, mainly by cross-checking them with the reports of former periods. In case of doubt about accuracy, declarants are contacted to clarify the transaction in question. In the event that an open request could not be answered in due time by the respondent, imputations are made at least for important reporters.²⁰⁶ The monthly values for the total and each partner country are then calculated by aggregating the transaction codes belonging to the item “charges for the use of intellectual property” of all individual reports. Codes for transactions with intellectual property belonging to other EBOPS items, for example, use of software (code 613 in the table above), are separated automatically and assigned to the appropriate item, such as software services.

²⁰⁶ Usually they are replaced by the confirmed or corrected transaction in the following month.

B.7. Education and health services

14.220. For the compilation of data on resident/non-resident transactions in education or health services, additional sources of information from administrative sources (e.g., the ministry of education or health), specialized entities or other third-party sources may be necessary, or other types of sources. In particular, on the receipts side, relevant ministries usually gather such information (i.e., for mode 2, but also other modes) or would have an interest in doing so. Another option is to collect data from all higher education institutions and universities operating in the country with the aim of collecting data on foreign students studying in the compiling economy. Additional questions relevant to mode 2 could be added to the survey questionnaires. Data from health insurance companies could be used and combined with administrative sources and information from travel surveys for further analysis of health services.

14.221. Embassies and consulates may also hold information for both exports and imports of such services. For health services, it is advised that compilers use administrative data from health and social insurance programs. Other breakdowns could also be encouraged for sectors of particular interest to an economy; e.g., cultural services or leisure.²⁰⁷

²⁰⁷ For example, given the interest of Australia in the exports of education services, the Australian Bureau of Statistics compiles a breakdown of education travel data by type of expenditure (i.e., education fees and other expenditures) and type of institution.

14.222. Given the increasing demand for information on health-related or cultural services, for example, and the complexity of some existing questionnaires, other methods could be envisaged to compile more details on such services, such as combining household surveys with administrative data, or health insurance and credit card data expenditures to health care providers, as that information could be extracted by the appropriate merchant code categories.²⁰⁸

²⁰⁸ For example, Austria derives information on health-related services that residents consume in the neighbouring country Hungary from a household survey, together with administrative information from the project Health Region – Regional Network for the Improvement of Healthcare Services, which is run by the European Union. Both relevant information sources are combined to establish sound estimations.

14.223. Some information on health services could be derived from the travel purpose variables used for education-related travel by including a breakdown for study and courses and medical treatment. Additional information could be derived from linking the aforementioned sources with administrative data, such as VAT data (from the national tax and customs administration).

B.8. Government goods and services n.i.e.

Introduction

14.224. While services supplied by and to Governments should be classified to the relevant service category (business services, health, etc.), if possible, services related to government functions that cannot be classified to another specific service category should be classified as government services. Transactions covered by government goods and services n.i.e. include trade of goods and services between the government unit and the territory in which it is physically located because government and international organization enclaves are not residents of the territory in which they are physi-

cally located. Other official entities are also considered government transactors, such as aid missions, government tourism information and trade promotion offices, and international organizations. Other examples of such transactions include charges for visas, payments for police-type services, technical assistance under certain circumstances and government supply of a licence or permit classified as the provision of a service.

14.225. MSITS 2010 recommends that government goods and services n.i.e. be further classified according to the following breakdown based on the transactor: embassies and consulates, military units and agencies and other government goods and services n.i.e. Administrative costs incurred in the donor economy as a result of providing technical assistance or aid should be included under the specific services provided. Technical assistance provided by a Government or international organization is classified under government goods and services only when not specified to a service and if the technical assistance personnel are employed by the donor Government or an international organization.

14.226. If the issue of government licences involves little or no work on the part of the Government, with the licences being granted automatically upon payment, it is likely that they are simply a device through which to raise taxes and should therefore not be considered a service. For example, by convention, amounts payable by households for licences to own or use vehicles, boats or aircraft, along with licences for recreational hunting, shooting or fishing, are treated as taxes. On the other hand, cases in which the licensing is used to check the competence or qualifications of the person concerned, to check the efficient and safe functioning of equipment or to carry out some other form of control, the payments made should be treated as purchases of services from the Government, unless the payments are clearly out of all proportion to the cost of providing the services.²⁰⁹

14.227. All expenditures on goods and services by diplomats, consular staff and military personnel and dependent members of the same household in the economies in which they are located are also included in “government goods and services n.i.e.” However, the expenditures of locally engaged staff of embassies, military bases and so forth, and international organization staff are not included in “government goods and services n.i.e.” Moreover, all staff of international institutions staying in the host economies for 12 months or more should be regarded as residents of those host economies and their expenditures are therefore not included.²¹⁰

Compiling government goods and services n.i.e.

14.228. As discussed in chapter 11, the majority of government services transactions are most commonly compiled using administrative records. Data on government expenditures abroad should also be available from an ITRS.²¹¹ Moreover, estimates of expenditures of diplomats and other government personnel posted abroad could be based on the wages paid to those persons, details of which should be available from administrative records, and an assumption about the percentage of wages spent on such expenditures.²¹² It may be more difficult to capture expenditures by foreign Governments and international institutions located in the compiling economy using an ITRS, in which case an enterprise survey of non-resident bank accounts or a survey of foreign embassies and international institutions could be used. When comprehensive data collection is difficult, existing replies to past surveys could be used as representative values.

14.229. For provision and receipt of aid, compilers of the donor country could obtain information on the cost and type of provided services from official sources. In the recipient country, compilers could obtain information from the embassy of the donor country or the relevant domestic ministry or agency. An ITRS can also provide information on several related transactions (e.g., current transfers to Government received

²⁰⁹ MSITS 2010, paras. 3.277-3.279.

²¹⁰ On the other hand, staff of international institutions staying in host economies for less than 12 months should be regarded as residents of the economies in which they maintain permanent households, which are typically their economies of origin (see *BPM6 Compilation Guide*, chap. 12, footnote 37).

²¹¹ See *BPM6 Compilation Guide*, para. 12.150.

²¹² *Ibid.*

through the banking system) or from customs (data on imports of materials and equipment). An alternative source is OECD official development assistance records.²¹³

²¹³ *Ibid.*, para. 12.159.

14.230. If data on government expenditures abroad are not timely, or source data provide only broad aggregates or partial data, it may be necessary to extrapolate certain series or create data models based on past survey data or historical trends. In such cases, government expenditure policies, budget planning and decisions and observed statistical relationships among historical indicators should be considered.

Country experience: Denmark

14.231. In Denmark, information for the expenditure side of government goods and services n.i.e. is provided by the Ministry of Foreign Affairs and the Ministry of Defence. Data on the personal expenditure of officials (ambassadors, military personnel, etc.) in the host country in which they are located is based on their wages. Importantly, Statistics Denmark assumes that those government officials spend 50 per cent of their salary on personal expenditures in the host country in which they are located. The data for military units, however, is based purely on expenditure data rather than data on wages.

14.232. The revenue side of government goods and services n.i.e. is compiled by combining information from different sources. The Ministry of Foreign Affairs provides lists of embassies and international organizations located in Denmark, which Statistics Denmark contacts to obtain the number of their employees of Danish and foreign origin. Non-responses are supplemented by information from the Ministry of Foreign Affairs. It is assumed that government officials of foreign origin located in Denmark spend a similar amount on personal expenditures in Denmark as Danish government officials spend when abroad. Thus, the number of staff of foreign origin per embassy or international organization located in Denmark is multiplied by the average expenditure on goods and services of Danish government officials located abroad, which Statistics Denmark has previously estimated as described above.

Country experience: Japan

14.233. Japan relies on an ITRS as the data source for most of its BOP statistics, including government goods and services n.i.e, when possible. However, there are certain transactions of government goods and services that are carried out with no monetary settlement, which therefore cannot be captured by the ITRS and must be estimated.

²¹⁴ See BPM6, para. 12.49.

²¹⁵ Data on government spending are not released in Japan until the end of the fiscal year, which is too late for inclusion in the compilation of the relevant statistics.

²¹⁶ Government budget data in Japan are released before the beginning of the fiscal year.

14.234. Following BPM6 convention,²¹⁴ the value of transactions that occur without monetary settlement in the absence of appropriate market prices is regarded as the sum of the relevant costs of providing the good or service (in this case, government expenditures for providing the goods and services in question). Actual government expenditure data in Japan have certain limitations that preclude their effective use in the statistical compilation process; namely, such data are not timely²¹⁵ and are not reported according to official BOP definitions. Therefore, Bank of Japan (BOJ) uses government budget data, which are more timely than government expenditure data²¹⁶ and follow BOP classifications, in place of actual government spending data in order to compile government goods and services n.i.e. when the ITRS does not suffice. The discrepancy between the budget data and the actual expenditure is usually insignificant, according to BOJ research. The budget data are then allocated to the correct time period in accordance with the duration covered by the budget. If a supplementary budget is passed, it is also incorporated into the budget data used to compile government goods and services transactions.

C. Allocation of resident/non-resident trade in services to modes of supply

C.1. Introduction

14.235. MSITS 2010 recommends that statistics on the international supply of services also be broken down by mode of supply on the basis of the resident/non-resident trade in services and FATS statistical frameworks. FATS output data for services should be used to measure mode 3, whereas the resident/non-resident trade in services data need to be broken down by mode. Different options exist to compile such information, either via a simplified allocation of EBOPS 2010 categories, or on the basis of collected data. The present section describes those options in more detail (it should be noted that deriving modes of supply using a data model is also a possibility; that option is described in chapter 17).

14.236. The present section starts with an explanation of the MSITS 2010 recommendation that, in the absence of special data collection, compilers use a simplified (mechanical) allocation of FATS and balance-of-payments data to modes of supply.²¹⁷ (C.2). Subsequently, given that the goal is ultimately to implement data collection and the compilation of a breakdown of the international supply of services by mode of supply on the basis of collected data, section C.3 describes the steps compilers can take to set up such data collection in the most efficient and policy-relevant manner. Section C.4 concludes with suggestions on how more detailed information regarding modes 2 and 4 can be compiled.

²¹⁷ See also MSITS 2010, chap. V and table V.2, and chap. 1, para. 1.5.

C.2. Resident/non-resident trade in services data by mode of supply: a simplified allocation

14.237. Given that the compilation of resident/non-resident trade in services data broken down by mode of supply is a relatively new area of data compilation, and given that amending existing data collection mechanisms or creating new ones may be difficult, it is recommended to adopt a step-by-step approach for compiling such a breakdown. In the absence of relevant data, or if only some sporadic information is available, it is first proposed that compilers conduct a simplified allocation of existing statistics, as given in table V.2 in MSITS 2010.²¹⁸ That method consists of attributing EBOPS service categories to either one dominant mode or to several modes using a distribution, on the basis of an assumption of how specific EBOPS 2010 service items are most probably supplied by exporters (or to importers) of the economy.

²¹⁸ Ibid.

14.238. That method provides a first set of estimates on modes of supply comparable at the international level, which also could be disseminated in a common manner; (see chapter 20 for more information). Such an allocation has the advantage of being a relatively low-cost solution, as the compiler can start working with the available BOP services data and gradually build his/her knowledge of how services are supplied internationally. However, compilers should treat such an allocation only as a first rough approximation of resident/non-resident services transactions by mode of supply as the technique has important limitations. The present *Guide* strongly encourages compilers to undertake efforts to develop more precise estimation procedures at a later stage.

14.239. Using table V.2 in MSITS 2010, compilers are advised to make the allocation in three steps: (a) allocate (b) evaluate and (c) refine, as described in paragraphs 14.240 through 14.244.

14.240. Firstly, compilers can allocate each service item to one of the columns identified in the table on the basis of an assumption of how a specific service item is most probably supplied by exporters (or to importers) of the economy. In order to provide a first approximation in a comparable way, all compilers are strongly encouraged to conduct such a generic allocation.

14.241. Secondly, compilers should evaluate if the “generic” allocation as conducted at the first step is relevant for their economy, and review results accordingly. For example, it may be worthwhile for the compiler to discuss with the institution in charge of trade in services negotiations if the results reflect their knowledge of how services are supplied abroad and to their national economy, as far as it relates to transactions recorded in the BOP.

14.242. Thirdly, and based on the results obtained in the second stage, compilers can refine their allocation by gathering additional information to improve the knowledge of some specific service sectors. Such additional information can be gathered in cooperation with the institution in charge of trade in services negotiations and may validate the assumptions made earlier by statisticians or negotiators.

14.243. Various ways of gathering more information may be envisaged, such as contacting major services providers or trade or consumer associations, conducting qualitative interviews with one or two relevant services providers in a specific sector (e.g., legal services, computer services, consultancy, construction, etc.) or conducting interviews with employment agencies that have international services transactions with clients abroad. Compilers can also approach relevant ministries, in particular for sectors in which internationalization is known to be important (e.g., the ministries of industry, education or health), or approach compilers in other statistical domains to obtain further information on particular sectors and to adjust the allocation if needed (e.g., through microdata linking).

14.244. When making refinements to the initial allocation, compilers should also consider such other factors as the business structure of the compiling economy (e.g., the dominance of large enterprises or small and medium-sized enterprises/microenterprises), the type of service traded (some specific or technical services require the physical presence of the service provider), the geographical location of the compiling country and/or the distance to the trading partner (i.e., the less distant the partner, the more likely trade in modes 2 or 4 can occur), language barriers, the evolution of business strategies and tradability over time (e.g., technological advances).

Limitations to the simplified allocation

14.245. The compiler should always keep in mind that table V.2 of MSITS 2010 and the methods described in paragraphs 14.239 through 14.244 are simply theoretical guides for classifying resident/non-resident services transactions according to the most likely predominant modes of supply. In each specific economy, other modes than those indicated may be involved for some specific services categories, considering their nature. For example, in table V.2, personal, cultural and recreational services are shown as deemed to be provided or consumed through modes 1 (cross-border) or 4 (temporary presence of service provider, either himself/herself, if self-employed, or his/her employee). However, in the case of countries that are important destinations for the shooting of films, mode 2 (presence of consumer abroad to consume services) may also need to be considered. In other words, such assumptions may need to be reviewed to identify how well they respond to national needs. It would also be useful to conduct some analysis of contracts for specific groups of persons to better understand how they operate in the context of trade in services.

14.246. There are also other shortcomings to be considered when following the procedures outlined above. Compilers should ask themselves such questions as the following: How is the most significant mode allocated? Regarding enterprises that report their main economic activity, how should secondary economic activities be treated? Regarding manufacturing enterprises that also provide production services or services packages relating to high-value goods, how should such services be treated? Even if the proposed framework provides an approach for a first rough measurement of trade in services by mode of supply with a minimum use of resources, relevant qualitative background information and research are needed. Compilers need to consider such aspects when performing the conceptual allocation.

14.247. Compilers are encouraged to make use of their own information about modes of supply and other possible country-specific distributions among services beyond the general allocations. Allocations to the modes may be based on the knowledge compilers have about the provision of services from their close contact with respondents or on the basis of their knowledge of the business structure gained in the enterprise survey design process. More generally, such an exercise is encouraged for improving the knowledge of compilers with respect to the international supply of services.

C.3. Resident/non-resident services transactions by mode of supply: towards full data collection and compilation

14.248. The ultimate goal is to implement data collection and compilation of a breakdown of resident/non-resident services transactions by mode of supply. That compilation can be done in much detail for (a) specific service sectors of interest to the compiling economy (i.e., using the simplified allocation for the other sectors of less interest) or (b) through the compilation for all services sectors. The compilation of such data may entail a number of challenges, mainly because it may be difficult to collect the raw data itself. However, it should be noted that once the relevant details are collected, there are no additional compilation issues besides the general considerations (i.e., grossing up, dealing with non-response, the quality of information obtained and data confidentiality, etc.).

14.249. A variety of options have been developed or can be envisaged by countries to set up a new data collection system or to add questions to existing data collection systems regarding trade in services by mode of supply.²¹⁹ A broader data collection exercise, as well as collaboration with other agencies and institutions, can be envisaged as described in paragraphs 14.250 and 14.251. Alternatively, data on modes could be derived through the combination of multiple sources of information, e.g., through a data model, as described in chapter 17.

²¹⁹ Another possibility would be for the data compiler to establish a data model for certain services categories or modes (see chapter 17).

Broad data collection and generic surveys

14.250. For collecting data on the value of supply of services by mode of supply, the most relevant source would be through surveys, mainly enterprise surveys (see chapter 6). By amending existing surveys, for example, or integrating appropriate questions in survey forms, data from existing enterprise surveys can be used as a way forward to estimate the value of the international supply of services by mode. Hence, potentially, such estimates could be generated without establishing a new and additional data collection system while still being of acceptable quality. Even efforts targeted towards a limited number of relevant services categories in the compiling economy can ensure the production of policy-relevant results. Importantly, because the expected respondents' burden could be high, it would be good practice to con-

duct, at the initial stages, sample surveys of enterprises, which should address questions needed to estimate or allocate services by modes. At a later stage, questions on modes of supply could be integrated into the existing questionnaires as mandatory data elements.

14.251. That approach, of amending existing surveys in a step-by-step manner, would necessitate some knowledge building from the compiler's side. As a starting point, the considerations outlined in the section on the conceptual allocation could be followed. In addition, a "screening" survey could be conducted to identify the sectors and enterprises that should be targeted, or existing academic research could be reviewed to identify how services are generally rendered. Relevant enterprises could be extracted from existing business registers (see also chapter 5, section E, and chapter 6) focusing as a first step only on some key business services, such as legal, engineering or computer services.²²⁰

²²⁰ See also Eurostat, A detailed module for structural statistics on business services, annex VIII of European Parliament and Council of the European Union regulation No. 295/2008 (see <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:097:0013:0059:EN:PDF>).

²²¹ Information on small and medium-sized enterprises and specific characteristics of enterprises related to a particular breakdown of activities might be important for national policy to promote cross-border services trade for enterprises which do not export services, or to support enterprises that are already active in the export of services.

14.252. Structural business statistics provide compilers with additional information regarding business structure, size and class, employment, etc., which could be useful for national industry policies.²²¹ Important service sectors could be identified from the shares of the services in the GDP or share in total services. Some countries compile jointly international trade in services and structural business statistics, making the whole business population available; the relevant subpopulation of interest for a specific mode could be derived from that source. In some cases, the information is also available in internally maintained registers, so-called BOP registers.

Specialized surveys

14.253. A *focused or specific data collection system* could be developed on the basis of economic, political-economic and socioeconomic issues; for example, mode 4 could be integrated into a broader concept of cross-border movements and related international transactions in globalization theories. In addition to enterprise surveys, surveys of persons and households (see chapter 7) could also be partially useful for certain mode 4 niches; e.g., services provided by self-employed persons, or households as consumers of services provided by contractual service providers, although the latter may not be significant for the majority of compiling countries (small proportion of population, small transactions as compared to mode 4 transactions of enterprises). Surveys of persons and households could also be used to identify mode 2 (i.e., travel).

14.254. Finally, a *pluralistic-integrated* approach, i.e., a sector-specific survey that integrates various statistical domains, including trade in services (but also FATS, SBS, innovation or others), can provide relevant statistical information for different statistical domains. Focusing on different user interests, specific sector studies would serve several purposes; policymakers could also be interested in specific studies, such as those incidental to agriculture or environment services. A more in-depth approach for such surveys, identifying modes for more detailed services categories, could be implemented, but in many cases policy needs would have to be identified by the national authorities for such surveys to be developed.

Specialized surveys in collaboration with other agencies

14.255. As described in chapter 6, the collection and compilation of resident/non-resident statistics on the international supply of services by mode of supply could also be established in collaboration with agencies, such as ministries of the economy or trade, that have specific interests in obtaining such data. In such circumstances, it is important for the agency in charge of the collection and compilation of official trade in services statistics (generally, the national statistical office or central bank) to coordi-

nate with the specialized agency so that international recommendations are followed and to ensure that the collected information can be used in a broader context.

14.256. An example of such a data collection is presented in chapter 10, paragraphs 10.63 to 10.67. That example shows that for a number of years the International Legal Services Advisory Council (ILSAC) of Australia has been conducting its own compilation of statistics on the international supply of legal services to non-residents. That approach benefited from the assistance of the Australian Bureau of Statistics. Such collaboration has highlighted the desirability, from the point of view of ILSAC, of increasing the focus on compiling data that is more closely aligned to the specific modes of service delivery recognized by economies in trade negotiations and, although it does not mention it, to ensure that the data collected follows international standards as closely as possible. That experience is as an example of positive collaboration between the body in charge of compiling trade in services statistics and an institution with a strong interest in collecting sector-specific data. Although from the statistical compiler's perspective, it would seem difficult to replicate the process for all services sectors, such an experience can prove useful for improving the quality of statistics, as well as for providing some first estimates according to the four modes.

14.257. Similarly, large employment or recruitment agencies²²² that might have important cross-border activities could be targeted. Those might include agencies working with persons from new European Union member countries or persons in so-called regional or border clusters. It might be possible to use the data from such agencies on types of contracts to identify the services relevant for measuring mode 4.

²²² For example, since 1994, recruitment agencies in Germany have been able to recruit in all occupational fields; before that year, there were some exceptions in management and artistic-related activities.

C.4. Compiling more detailed mode of supply statistics for resident/non-resident trade in services

Specific considerations regarding mode 4

14.258. It is suggested that the compiler investigate how to collect and compile more details for items where mode 4 (presence of natural persons) is deemed important for the compiling economy. Professional and management consulting services (mainly business services) are generally considered to be predominantly provided (or consumed) through mode 1 (cross-border supply) or mode 4 as the provision of those services often necessitates proximity to the consumer. Alternatively, providing processing services or maintenance and repair services would most likely involve mode 2 (consumption abroad) or mode 4. Therefore, including a question that asks for the share of mode 4 for specific services categories may be sufficient to greatly improve the statistics on the international supply of services by mode.

Specific considerations regarding mode 2

14.259. As presented in MSITS 2010, some EBOPS components are strongly linked to the supply of services through mode 2, including manufacturing services, maintenance and repair services, travel and waste treatment. Travel has the most obvious link to mode 2 supply of services. In that context BPM6²²³ and MSITS 2010²²⁴ propose an alternative breakdown of travel into goods, local transport services, accommodation services, food-serving services and other services. That level of detail would already serve many information needs, including those related to mode 2. It is particularly important to identify goods separately, as they are of minor interest from a GATS-trade in services perspective.

²²³ See BPM6, paras. 10.85-10.100.

²²⁴ See MSITS 2010, paras. 3.115-3.131.

14.260. There are various possibilities for compiling such breakdowns for the travel item, such as the use of credit card data, border surveys or household surveys, which are often used in the context of data models. Tax-free purchases could be used as complementary sources to separately estimate the goods purchased by persons going abroad for travel reasons, because those travelling can request a refund for the VAT paid on the goods when exporting the goods.

14.261. In the case of credit card data, the use of information included in merchant codes is suggested. That could enable a more detailed analysis of travel and tourism data and would also allow the identification of transport services and the extraction of data separated by goods and services. For example, payments by or to a company that provides maintenance and repair services would be reported, since that company provides services and the payments must be reported. Also, such merchant code categories as hotels/motels/inns/resorts, car rentals or tourist attractions and exhibits are subject to reporting. Using merchant code information from credit card data has several advantages, including the relatively low cost for compilers, and the fact that, in addition to the EBOPS travel item, other services categories, namely other business services, communication services, government services, could be compiled or verified.

14.262. In addition, customs data could help to identify thresholds in order to adjust travel and goods, according to the EBOPS concept, accordingly (i.e., durable goods and valuables).²²⁵ Such adjustment would entail the calculation of totals on travel-related inflow from travel survey data or credit card data and the value of the total amount of valuables and durable goods in excess of custom thresholds from customs data; efforts must be made to avoid double-counting.

²²⁵ BPM6, MSITS 2010 and ITRS 2008 have different treatments concerning some goods purchased by those travelling. The BPM6 and MSITS 2010 travel item excludes purchases of valuables and consumer durables above a customs threshold, whereas ITRS 2008 includes all such purchases, irrespective of the threshold; see MSITS 2010, box III.5, for the relationship between data on travel and tourism statistics.

Country experience: New Zealand on collecting data on modes of supply

14.263. The user is invited to read the experience of New Zealand in collecting data on modes of supply as presented in the country example of chapter 6. In New Zealand, respondents were asked in the 2011 census of international trade in services and royalties to estimate the percentage of the export value delivered through modes 1, 2 and 4. Testing showed that most respondents understood the modes of supply concepts, although feedback suggested that the guide provided along with the questionnaire was helpful as well.

Country experience: Turkey

14.264. The compilation system of Turkey entails some advantages for mode of supply analysis. The first advantage stems from the prior existence of a breakdown of travel, that comes close to an EBOPS 2010 classification, by type of product for mode 2 purposes for both travel credit and debit and personal and business travel. (Expenditure on package tour—the share pertaining to Turkey for credit and that pertaining to non-residents for debit—is not included). The travel item is broken down as follows: (a) goods, (b) local transport services, (c) accommodation services, (d) food-serving services, (e) health services and (f) sports, education and culture.²²⁶ In addition, some mode 4 type of transactions can be identified through ITRS forms.

²²⁶ In EBOPS 2010, the distinction regarding "other services" is between education services and health services.

14.265. It may be useful to provide more information on the Turkish Statistical Institute's travel surveys, which are conducted in cooperation with the Central Bank of the Republic of Turkey (CBRT) and the Ministry of Culture and Tourism, in connection with mode 4 purposes. These are quarterly face-to-face surveys conducted at the border gates, on a nationality basis. For instance, the departing non-resident visitors survey for travel credit is carried out at 25 border gates, covering 90 per cent of all departing visitors according to the departure mode (air, road, rail and sea). Over the

years, new departure gates have been added and existing gates excluded. The purpose of the survey is to determine the traveller's profile (age, sex, education level, occupational status) and travel characteristics (purpose of visit, place stayed, accommodation type, nights spent, types of expenditures) in order to estimate the travel income for Turkey from foreigners and citizens residing abroad. The number of foreign visitors is based on the administrative border statistics of the Directorate General for Security for the related periods that cover all arrivals and departures at all border gates, in terms of the details covered, which include citizen or foreign status, nationality, month and border gate, for both overnight visitors and excursionists.

14.266. The survey is carried out for overnight visitors and excursionists with a 0.5 per cent sample rate to estimate on the basis of means of departure and nationality, and estimations are provided quarterly for 26 selected nations and 10 country groups.²²⁷ The sample survey results estimate average expenditures, with a breakdown of overnight stays and excursions, which are expanded with the related border statistics of the Directorate General for Security. In order to estimate average expenditure figures for Turkish travellers abroad, sample surveys are also conducted on a quarterly basis for resident visitors arriving in Turkey.

²²⁷ Turkish Statistical Institute, Tourism Statistics (2011). Available from www.turkstat.gov.tr/PreTablo.do?alt_id=1072.

14.267. In the light of the above considerations, the departing non-resident visitors survey has questions on general occupational status and purpose of the visit, with one of the options being "business (conferences, meetings, assignments, etc.)", albeit with no further breakdown. That option may be broken down further into (a) conferences, meetings, trade fairs and exhibitions, etc., (b) as a contractual service supplier and (c) other. The next step would be to modify the questions on general occupational status to identify the type of employer-employee relationship for those whose purpose of visit is business and professional activities, determining if their employer is in Turkey or outside Turkey. The resulting matrix of the questions mentioned above may then prove to be useful, provided that a statistically meaningful expansion can be achieved, which should be assessed with statistical scrutiny.

14.268. The compilation of the additional item on tourism services-related expenditure in travel and passenger transport should also be encouraged to establish a clearer link between the BOP and tourism statistics. Finally, it is necessary for BOP and tourism statisticians to cooperate and, in particular, to investigate if more detailed services categories would be of interest. Also, some data for TSAs could probably be integrated.

Country experience: Portugal

14.269. A separate alternative breakdown of travel into types of goods and services is recommended by BPM6 and MSITS 2010. Box 14.8 shows the level of product detail required as supplementary breakdowns for travel according to BPM6 and EBOPS 2010, integrated with additional requirements to provide the necessary level of detail for other statistical domains and respond to mode 2 information needs.

14.270. The forthcoming payment card database can provide important information for meeting those new requirements, using the activity sector code of the goods and service provider. For payments made in Portugal with cards issued abroad, the NACE category of the point of sale (POS) owner is available, while for payments made abroad with cards issued by resident institutions, the merchant category code (MCC) of the POS owner is provided. Those variables are used as proxies. A correspondence table between the NACE or MCC codes and the different travel expenditures on goods and types of services must be developed. Furthermore, to identify local transport services, other than rental services, separately from international transport services, the border survey will be used.

Box 14.8

Level of product detail required for supplementary breakdown of travel

BPM6 / EBOPS-2010	Type of product
1.A.B.4.0.1	Goods Fuel Other goods
1.A.B.4.0.2	Local transport services Air transport Rail transport Road transport Other transport Rental services
1.A.B.4.0.3	Accommodation services
1.A.B.4.0.4	Food-serving services
1.A.B.4.0.5	Other services
1.A.B.4.0.5.1	Health services
1.A.B.4.0.5.2	Education services Cultural and recreational services Other services

14.271. In addition, when travel expenditures are prepaid to resident travel agencies, in terms of both travel credits and debits, the direct reporting by such companies will provide the breakdown by good and type of service for both travel credits and debits. That information complements payment card data. For the same breakdown of payments made to non-resident travel agencies, on the debits side, the border survey is being considered as a possible data source. In terms of travel expenditures on goods, BPM6 recommends the acquisition of valuables, consumer durable goods and other consumer purchases for own use or to give away acquired by travellers in excess of customs thresholds to be registered under general merchandise and not under travel. To identify the acquisition of such goods, different variables from the payment card database must be combined, namely, restricting the activity classification of the goods provider to jewellery, art, cars and electronic goods, and considering a minimum threshold for the value of the operation.

D. Service transactions between related (affiliated) enterprises

14.272. MSITS 2010 acknowledges that information on the value of all transactions between affiliated enterprises is helpful in understanding the degree to which the globalization of services is taking place. Such intrafirm trade in services can take up a substantial share of total services trade; for example, transactions between related (affiliated) enterprises accounted for 28 per cent of both United States exports and imports of private services in 2013.²²⁸ In addition, statistics on intrafirm services trade can highlight the role of services, in particular those related to intellectual property products, provided by one unit but used throughout the multinational enterprise. For example, the information for the United States shows that intrafirm trade accounted for 59 per cent of receipts of royalties and licence fees and 71 per cent of payments of charges for the use of intellectual property in 2013.

14.273. MSITS 2010, therefore, recommends that data on resident/non-resident transactions in services separately identify transactions with related and unrelated enterprises. Although such a breakdown would be most informative at the level of the

²²⁸ United States cross-border trade in private services excludes transactions by the United States Government (including the military). Trade in private services is the most appropriate basis for comparison because intrafirm trade covers only trade by businesses.

detailed EBOPS 2010 classification, it is recognized that this could place an additional burden on both suppliers and compilers of data and could raise issues of confidentiality. In that connection, MSITS 2010 recommends that such a breakdown be carried out at the aggregate level for total services transactions (under the complementary grouping of EBOPS entitled total services transactions between related enterprises), although countries willing to provide additional detail are encouraged to do so for some relevant aggregated EBOPS 2010 categories.²²⁹

14.274. MSITS 2010 associates related enterprises (intrafirm trade) to direct investment relationships.²³⁰ Should the criteria for related enterprises depart from that recommendation, it is good practice to clearly describe the criteria chosen in a country's trade in services metadata.

14.275. It is good practice to carefully examine the valuation of services transactions between related enterprises, as the recorded transactions could underestimate or overestimate and misrepresent the real flows of trade (as measured by market prices) if such transactions between related enterprises are based on transfer prices (see also chapter 1 for transfer/market prices).

Country experience: United States

14.276. For conceptual reasons or due to source data limitations, the Bureau of Economic Analysis (BEA) of the United States presents statistics only on intrafirm trade for selected types of services. Transactions between individuals and businesses are considered to be between unaffiliated parties. Thus, personal and business travel services, which are transactions by individuals who travel to foreign countries; education, which consists of expenditures for tuition and living expenses of students studying in foreign countries; medical services, which cover expenditures by patients in foreign countries; and expenditures by non-resident workers, are all considered to be unaffiliated transactions. Passenger transportation, which covers transactions between individuals and foreign airline or vessel operators, are also considered to be unaffiliated transactions. Transactions in insurance services are deemed to be unaffiliated even when they are between affiliated companies because the services are deemed to be provided to the policyholders who pay the insurance premiums and are unaffiliated with the multinational company. Transport services, other than passenger transport, are treated as unaffiliated because the source data do not allow transactions between affiliated parties to be separately identified from transactions between unaffiliated parties.

14.277. The remaining categories, including charges for the use of intellectual property; telecommunications, computer and information services; financial services; and other business services, can have affiliated transactions. The source data for those statistics are BEA surveys.²³¹ On the surveys, United States companies are asked to report their transactions in a specific service type by country and, for each country, by whether the transaction was with their foreign affiliates, with their foreign parent or with foreign affiliates of their foreign parent or with unaffiliated parties.

14.278. The definitions of affiliated parties are the same as those used to identify a direct investment relationship. A foreign affiliate is a foreign business enterprise in which a United States person directly or indirectly owns or controls 10 per cent or more of the voting stock in an incorporated business enterprise or an equivalent interest in an unincorporated business, including a branch. A foreign parent is the first person outside the United States that owns or controls 10 per cent or more of the voting stock in an incorporated United States business enterprise or an equivalent interest in an unincorporated United States business, including a branch. Foreign affiliates of the

²²⁹ See MSITS 2010, para. 3.56. Note that for some transactions/services items, compiling such a breakdown would not be relevant, e.g., transactions in which individuals are consuming services and education services.

²³⁰ See MSITS 2010, paras. 4.58-4.60 for further details.

²³¹ Financial services are collected on the United States Department of Commerce, Bureau of Economic Analysis BE-185 Quarterly Survey of Financial Service Transactions between United States Financial Service Providers and Foreign Persons and the BE-180 Benchmark Survey of Financial Service Transactions between United States Financial Service Providers and Foreign Persons. Telecommunications and most business, professional and technical services are collected on the BE-125 Quarterly Survey of Transactions in Selected Services and Intangible Assets with Foreign Persons and the BE-120 Benchmark Survey of Transactions in Selected Services and Intellectual Property with Foreign Persons. Those surveys can be found on Bureau's website, www.bea.gov, by looking under "International" and clicking on "Survey forms and related materials."

foreign parent are defined according to more restrictive criteria than above as they are any foreign persons, proceeding up the foreign parent's ownership chain, that owns more than 50 per cent of the person below it up to and including that person that is not owned more than 50 per cent by another foreign person and any foreign persons, proceeding down the ownership chains of each of those members, that is owned more than 50 per cent by the person above it.

14.279. By collecting data on transactions with foreign affiliates separately from those with foreign parents and foreign affiliates of the foreign parent, transactions within United States multinational enterprises, i.e., between United States parent enterprises and their foreign affiliates, can be distinguished from those within foreign multinational enterprises, i.e., between United States affiliates and the foreign multinational enterprises that invest in them.

14.280. Multinational enterprises sometimes allocate expenses across various divisions or parts of the enterprise, rather than billing them separately. Such allocations, often called allocated expenses, headquarters services or miscellaneous charges, are sometimes for a designated service, such as for research and development, but sometimes no specific service is designated. It is important to note here that the management of patents and licence fees, which may be similar to allocated expenses, should be recorded in other business services n.i.e. If the type of headquarters service is known, BEA asks reporters to include those allocated expenses in its data for that type of service. If the type of service is not known, BEA asks reporters to include them in the category of "management, consulting and public relations (including allocated expenses)."

Chapter 15

Compilation of foreign affiliates statistics and the international supply of services

15.1. Chapter 15 deals with the compilation of foreign affiliates statistics (FATS) and contains the following sections: a summary of good practices (section A); the general purpose and a description of FATS compilation (section B); FATS variables and their compilation (section C); and selected additional data compilation issues (section D). Specific country experiences have been included in the main text, and the full texts of country contributions will be made available on the website dedicated to the present *Guide*.

A. Summary of good practices

15.2. FATS describe the activities of foreign-owned or foreign-controlled enterprises in host economies. Those statistics relate to commercial presence in GATS (mode 3), but they are more broadly of interest in the context of globalization.²³² As described in MSITS 2010, FATS focus particularly on variables related to the supply of services. The present *Guide* provides advice on compilation issues in relation to FATS and provides more details on items for which services measurement deserves more attention. Partial information on the presence of natural persons may also be obtained in the process of FATS compilation, if data on employment by foreign affiliates is collected and if the foreign employees (such as corporate transferees) can be separately identified. For such purposes, FATS are of interest in their own right, but it will often only be possible to ascertain their full significance when they are viewed in conjunction with other information, such as comparable information on total investor-country or host-country economic activity and on services supplied through modes other than commercial presence.

²³² See chapter 1.

15.3. Consequently, the collection of data based on balance sheet information and activity measures, such as sales, employment, imports, exports or value added figures, provide a more complete picture of the international supply of services. While the production and use of services provided by foreign affiliates are part of the national accounts of the host country (including exports of such services to other countries), those measures do not appear in the national accounts of the investing country.

15.4. Good practices Given the complexity of the FATS compilation framework, the following step-by-step approach is advised:

- (a) While setting up the FATS compilation programme, a thorough analysis of data needs for FATS must be conducted in the context of various possible options for the organization of data collection and the data compilation process. Given that inward FATS are generally easier to obtain than outward FATS, and that this information is directly connected to international negotiations, it is good practice for countries to concentrate first on the compilation of inward FATS;²³³

²³³ It is important to note that a country's outward foreign affiliates statistics (FATS) should match conceptually its partner's inward FATS.

- (b) A review of all available sources should be conducted (e.g., FDI statistics, enterprise surveys, registers and administrative sources). Procedures for the identification of the relevant population, either directly or through linking exercises, should be developed and tested. The identification of the ultimate controlling institutional unit (UCI) is particularly important for compiling FATS;
- (c) A list of the most important variables for compilation must be established early on the basis of the list of core (and eventually additional variables) identified in MSITS 2010. The present *Guide* suggests, as a starting point, to concentrate on sales/turnover or output (the latter being the preferred measure out of the two), employment and number of enterprises;
- (d) The choice of the statistical unit must be made, although in many cases, it will be determined by the existing definitions used in other domains of national economic statistics (e.g., for business statistics, the unit will be defined by national accounts concepts);²³⁴
- (e) Ideally, data should be compiled annually and, if possible, on a calendar year basis;
- (f) The compilation of data broken down by economic activities is advised for all activities, with sufficient detail to respond to the needs related to services negotiations (see International Standard Industrial Classification of All Economic Activities (ISIC), rev.4 Categories for Foreign Affiliates in services (ICFA rev.1) in MSITS 2010). For output or sales/turnover, the feasibility of disaggregation into total sales/output of goods and total sales/output of services for each activity should be investigated to respond better to information needs relating to the measurement of the international supply of services;
- (g) Given the complexity of the FATS framework and the often high level of detail in the collected information, compilers should pay particular attention to ensuring data confidentiality when cross-classifying information by activity/product and partner country; proper procedures for evaluating what data can be publicly disseminated should be developed and systematically applied.

²³⁴ Compilers should note that this may differ between inward and outwards FATS (see section D.1).

B. General Description

15.5. FATS data should be compiled for as many variables as possible. Some are more closely related to the needs of GATS (output or turnover, employment and number of enterprises), but for broader analytical purposes other variables would be of interest, such as assets and research and development. The main elements of the FATS conceptual framework and its scope for services are described in chapter IV of MSITS 2010. For additional guidance, compilers are advised to refer to the *OECD Benchmark Definition of Foreign Direct Investment*, 4th edition, chapter 8, as well as *Measuring Globalization: OECD Handbook on Economic Globalization Indicators* (HEGI).²³⁵ All sources identified above also include some practical information on FATS compilation.

15.6. FATS are the main data source for assessing mode 3, or commercial presence.²³⁶ In the majority of cases, that mode of supply corresponds to the activities of entities that are controlled or owned from abroad in the territory in which they are established. The supply of services through mode 3 by non-resident suppliers to residents of the compiling economy is made by the resident affiliate of that supplier (i.e., recorded as transactions between residents of the same economy).

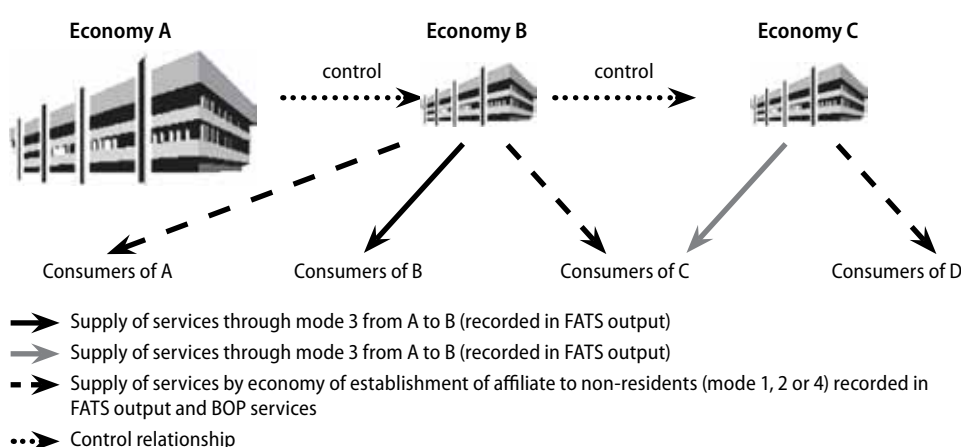
²³⁵ Another valuable source of information for compilers is the *Foreign Affiliates Statistics (FATS) Recommendations Manual*, produced by Eurostat.

²³⁶ Mode 3 also refers to cases in which there is the establishment of a non-resident entity (e.g., for less than one year) delivering services to customers of the economy of establishment. In such cases, international transactions in services will be recorded in the BOP statistics. However, MSITS 2010 recommends considering those only if it is believed that such cases are important for the compiling economy.

15.7. The main interest, from a mode 3 perspective, is in compiling data broken down by destination/origin of control and service type. However, in the absence of data by service type, or if such a breakdown is difficult to compile, it is possible to estimate the most likely type of service being provided according to the primary activity of the firm. For example, a company in the telecommunications services industry is likely to have been set up abroad to provide mainly telecommunications services.

15.8. FATS will include such variables as output or turnover/sales and employment. Although the interest, from a mode 3 perspective, is not limited to such output, output is the measure of the mode 3 supply of services, which, in a GATS context, is analogous to exports and imports of services recorded in the BOP (corresponding to modes 1, 2 and 4). In the absence of output data, a solution could be to use FATS sales/turnover of services data, keeping in mind the mode 3 measurement issues associated with wholesale and retail trade, financial services and insurance services (see section C.1.).

Figure 15.1
Output of foreign affiliates and mode 3 supply of services: a statistical view



15.9. It is also important to consider what has in fact been supplied to consuming entities of the economy in which the affiliate is established. The measure of mode 3 supply of services is a subset of a foreign affiliate’s output figures, i.e., output that is not exported to third economies or back to the economy of the controlling enterprise. As shown in figure 15.1, company B’s production and delivery of services to consumers of B is supply of services through mode 3 for economy B (originating from A). Company B’s exports of services to the rest of the world are part of output figures as a FATS variable, but are not included as economy B’s mode 3 consumption of services. It could be supply of services through modes 1, 2 or 4. Similarly, company C’s production and delivery of services within economy C is supply of services through mode 3 to consumers of C (from economy A). The services output produced by company B (or company C), but provided to non-resident consumers outside their economy of establishment should be accounted for as trade in services (either mode 1, 2 or 4) between the economy of residence of that company and the economy of residence of the consuming entities. In other words, that information is already covered in the BOP services data of the respective economies. When analysing the international supply of services by mode, only data derived from the FATS framework that correspond to mode 3 should be considered, to compare to data derived from the BOP services account.²³⁷

²³⁷ Keeping in mind other considerations with respect to the comparability of those data, see chapter 20, on data and metadata dissemination.

15.10. Within the list of variables recommended for FATS compilation, employment is also of great interest, particularly if compilers are able to separately identify the portion of employees from abroad (i.e., non-residents). That information would be useful in relation to mode 4 commitments, as further described in section C.4 of the present chapter, as well as in chapter 16. Data on the number of intracorporate transferees would be useful, particularly given the high level of commitments made in trade negotiations for that category of persons.

15.11. The variables should be broken down as follows:

- (a) The country of location of the foreign affiliate for outward FATS, or the origin of ultimate control/FDI for inward FATS;
- (b) The activity of affiliates;
- (c) The type of products produced by the foreign affiliates for the variables for which such a breakdown is possible, at a minimum distinguishing services from goods. Although that is generally seen as a longer term goal, some compiling economies have already compiled such data, or such a breakdown is feasible;
- (d) For output or sales, distinguishing among those within the host economy, the home economy and third economies.

15.12. Supplementary data may also need to be compiled as a separate data set depending upon the specific circumstances of some economies, such as the existence of significant joint ventures, or where control cannot be determined solely using the guideline of more than 50 per cent ownership of voting power, or in economies in which control is not possible by law.

15.13. FATS often require the integration of multiple data sources, which can present measurement challenges. Different data sources are often necessary to identify the population covered by the framework, as well as the breakdowns by partner country.

C. Selecting data sources

15.14. Data sources for FATS are described in chapters 5, 6 and 10. Comparison of data sources is shown in chapter 11. To select data sources when beginning FATS compilation, one should take into consideration the fact that mode 3 supply of services, as measured through FATS, is most likely to occur in the context of multinational groups, in particular those with important and numerous FDI relationships. In other words, on the outward side, in particular, large companies are more likely to be the most important players for supplying services abroad. As a starting point, it may, therefore, be useful to consider focusing on larger services companies or those with important FDI transactions and positions, which could provide an intermediate low-cost solution for compilation. However, one should not underestimate the role of smaller companies because (a) in the context of inward FATS, foreign affiliates of large multinational groups may not necessarily be large themselves and (b) in the context of outward FATS, the international role of small and medium enterprises is becoming increasingly important. That means that although such an intermediate solution may be useful in the short run, in the longer run, compilers should consider compiling a FATS data set representative of the entire population. In the context of employment, it is also important to note that larger services companies/affiliates are more likely to recruit non-resident employees (i.e., from the perspective of the compiling economy) or have important intracorporate movements of their personnel.

15.15. Collecting source data and compiling FATS imply the need for various stakeholders to cooperate. For compiling FATS, as is done in many economies, the data sources should be used in a complementary way, in particular for inward FATS. For example, although the main data source for collecting data may be a survey under the responsibility of one agency (e.g., the statistical office or the central bank), often the information relating to the identification of the population, or the part of the population, to be covered and/or the UCI is available from another data source (e.g., other surveys or enterprise registers) that might be under the responsibility of another agency (e.g., the central bank or another administrative body). In addition, in many economies, the collection of data from financial institutions is conducted by the central bank, whereas the collection of data of other types of units is conducted by the statistical office.

15.16. It is, therefore, good practice to assess whether the cooperation of various stakeholders is necessary and, if so, to identify possibilities and responsibilities for linking information (e.g., a common identifier in registers and administrative sources) before beginning FATS compilation. That process has been implemented by many economies, and often enables the compilation of FATS with little or no additional burden for reporters or work for compiling agencies. Information on legal frameworks and institutional arrangements is provided in chapters 2 and 3, respectively. If there is a difference in statistical units underlying (a) information on ownership or financial information at the enterprise level and (b) operational data at the establishment level, then compilers must account for that difference in their compilation procedures.

Which data source to choose?

15.17. A comparison of data sources for FATS is shown in chapter 11. Chapter 6 provides more detail on the information that should be sought from those data sources and how they could be used.

15.18. Inward FATS variables can in general be obtained from four main sources:

- (a) A survey used to collect information on a compiling economy's business structure, identifying the foreign-controlled population of firms, as well as the country of the UCI. That information could be sourced from the survey itself by including the appropriate items or by cross-referencing with information available from other sources, e.g., a business register or an FDI register. Coverage of services activities is an important consideration when choosing such a source, as in many cases it covers only business activities, i.e., excluding education, health, recreational service activities and agricultural and mining activities;
- (b) A survey used to collect FDI information, in which questions would be included to identify the variables of interest. Again, it would be necessary to identify within the population of FDI enterprises those that are foreign-controlled, as well as the economy of the UCI;²³⁸
- (c) A dedicated FATS survey;
- (d) Administrative sources, including business registers, tax return or regulatory reports, such as those for banks or insurance companies or, more generally, reports on foreign investment or privatization monitoring.

15.19. For economies with business statistics, that source may be preferred for inward FATS. That option has been implemented by many economies. Others have preferred using existing FDI surveys to collect FATS. In fact, that may be an interesting solution, as the FATS population may be relatively easy to isolate (directly from the survey, or from the register used for establishing the FDI survey). But one needs to

²³⁸ The identification of the ultimate controlling unit (UCI) is discussed in sections F.4.

keep in mind the need not to overload an FDI survey, in particular if it needs to be run with a quick turnaround.

15.20. Outward FATS characteristics are usually collected on the basis of (a) FDI surveys and (b) dedicated FATS surveys. Outward FATS information is believed to be more difficult to obtain, as it relates to the activities of firms established outside the compiling economy. As a starting point, it may be useful to consider using an FDI survey to obtain data on outward FATS, keeping in mind the advantages and disadvantages of using such a source. A number of economies have chosen that option, particularly when starting to collect the most important outward FATS characteristics. Alternatively, a FATS survey could be developed.²³⁹ In general, it is advisable to conduct a periodic census for outward FATS, including all units identified as belonging to the target population of reporting units. Between censuses, sample surveys could be conducted. Administrative data could also be considered for compiling outward FATS, if the data include relevant variables.

²³⁹ For example if the foreign direct investment (FDI) survey needs to be run on a quick turnaround, or if compilers do not want to unduly overburden FDI firms that are not part of the population to be covered by FATS.

15.21. For some of the variables, supplementary sources may be needed, such as merchandise trade statistics or BOP data on goods or services for the trade variable, research and development surveys for relevant variables or administrative or other sources for data for some specific services activities, such as finance, insurance, oil, mining and other major industries). If needed, compilers may also refer to other sources to gather information on structures or operations of multinationals, such as industry associations, free-zone authorities, stock exchange and securities commissions; special registers of foreign companies, such as those maintained by international organizations (e.g., the United Nations Conference on Trade and Development (UNCTAD), OECD, Eurostat) or private companies (e.g., Dun and Bradstreet); the Internet; and partner country statistics. Again, compilers need to be cautious of how all that information, including the data collected, aligns with the FATS recommendations. Those sources could also be useful for verifying or validating some of the compiled FATS information. For counterpart statistics, it is important to note that the information is likely to be confidential and should not be able to provide information on individual businesses. Aggregate information may be available, but care should be taken in the interpretation of concepts and with the implications of different compilation methods.

15.22. Although not advised, some countries apply cut-off thresholds. For practical reasons (reduction of cost and burden), such thresholds can, nevertheless, be considered acceptable as long as they are kept to a minimum and estimations are provided for the population under the threshold.

15.23. To summarize, compilers may have multiple options for sourcing their data for compiling FATS, and the choice will depend on the situation in each country. However, the following recommendations should be noted:

- (a) For inward FATS, it may be preferable to consider sourcing data from business statistics, keeping in mind that such statistics may need to be complemented for activities that they may cover, e.g., agricultural activities or various types of social services. Another solution, at least as a starting point, could be to consider an existing inward FDI survey;
- (b) For outward FATS, an FDI or dedicated FATS survey could be used, although the former may be easier to implement as a first solution;
- (c) If an FDI survey is used, response burden should be considered, particularly if the survey is conducted with a quick turnaround and because a portion of FDI firms are not part of the FATS universe (i.e., firms with influence relationships, but not control);

- (d) The link with FDI, in particular to identify the statistical population, is an important point that should be considered when choosing a data source and when identifying the population to be covered and the UCI.

Country experience: Austria

15.24. The two major sources of inward FATS statistics in Austria are the comprehensive structural business statistics (SBS) that Statistics Austria collects and the direct investment survey that Oesterreichische Nationalbank (OeNB) conducts. Foreign-controlled enterprises are a subset of direct investment enterprises, which also include minority holdings above a 10 per cent threshold and below the 50 per cent majority holding level. The fact that OeNB has, for many years, compiled direct investment information on a per-enterprise basis and has included a question on the UCI in its survey allows OeNB to analyse multiple minority ownership structures and to establish the country in which the ultimate parent is located, as required for FATS statistics.

15.25. As OeNB direct investment survey includes only enterprises above a certain threshold, instances of foreign-controlled ownership below the threshold need to be identified for the inward FATS statistics in a second step. That is done by an automated analysis of the administrative company register data. However, the information available does not allow for determining whether the corporate headquarters of such generally small enterprises are located in a third country; therefore the country in which the institutional unit exercising immediate control is located is, by default, considered the country of ultimate control.

15.26. In a third step, the enterprises under direct foreign control, determined on the basis of OeNB surveys and information technology-based analyses of company register data, are checked for any first- and second-tier affiliates they may have in Austria. To that end, an algorithm is applied to company register data to establish, in a step-by-step procedure, all majority holdings in Austria of the enterprises identified thus far. The process described above enables OeNB to submit an exhaustive list of all resident foreign-controlled enterprises to Statistics Austria.

15.27. Statistics Austria's first task is to link the OeNB list of enterprises with the entries in its own business register. This is feasible using three common identifiers, namely the OeNB internal key, the national statistics institute unit identifier and the official company code that is stored in the public company register. Those identifiers are available in both databases, thanks to a long-standing practice of the mutual exchange of register information (including name, address and economic activity of the unit). Usually 100 per cent of the units can be matched automatically, without any manual intervention. Next, Statistics Austria checks the data once more, thereby eliminating inactive business units from the OeNB list. Such inactive units may appear if they have not yet started economic activity or if enterprises are being liquidated. In some cases, the control relationship may be unclear (e.g., where a change of ownership occurs during the reference year) and may be corrected.

15.28. The most important step is then to retrieve the required characteristics for inward FATS from the existing database for SBS. The values in that database may be either a direct result from the SBS survey, if the enterprise in question was part of the sample. Alternately, they may be imputed data, based on regressions, with employment and turnover as exogenous variables, if the relevant enterprise was not part of the sample. In any case, the data used for reporting inward FATS statistics are exactly the same as for SBS statistics, which is an important aspect of quality. Every second year, the data is supplemented by information about the research and development

activities of foreign affiliates in Austria. The research and development characteristics of foreign affiliates are to be derived from the available research and development statistics by linking data sets at the individual enterprise level.

Country experience: Spain

15.29. The National Institute of Statistics (INE) of Spain has long recognized the importance of indicators of Spanish subsidiaries of foreign companies and carried out several pilot studies or surveys on subsidiaries abroad in the years before the entry into force of the European regulations. Reducing the statistical burden is a strategic objective of INE. In view of that objective, one of the theoretical principles it considers when developing new statistical projects is to promote the use of administrative data and to prioritize such data in relation to collection in the field, whenever a reliable and timely administrative source that supports the research objectives is available.

15.30. Consistent with that view, and in parallel with pilot studies, INE explored the possibility of obtaining information from the foreign investment registry of the Ministry of Economy and Competitiveness (MINECO). That registry contains statements on flows and stocks from the Directorate General for Trade and Investment, and more specifically the Directorate General of International Trade in Services and Investment, collected on foreign investment in Spanish companies and Spanish investment in foreign companies.

15.31. Specifically, in the case of Spanish investment stock in foreign companies, Spanish resident investors that make investments in foreign companies whose net worth exceeds a threshold and in which the investor's share capital or total voting rights are equal to or greater than 10 per cent, must submit an annual report on the development of foreign investment in the first nine months of each calendar year. Also included in that report is the investment in foreign companies whose activity is the holding of shares in the capital of other companies, regardless of the amount of the investment. Holders of foreign branches also report the size of the investment in the annual report. Information is obtained from the companies in which the investor invests and, in turn, from investee companies. Finally, the third level of the chain of participation in subsidiaries is reached, although less detailed information from these is collected.

15.32. The foreign investment registry covers FDI in Spain and Spanish direct investment abroad, with statistics published in the national statistical plan (PEN) biannually, annually and quarterly. Foreign investment registry statistics on flows and position are also obtained on Spanish investment in foreign securities and foreign investment in transferable securities. In meetings held between MINECO and INE, the two institutions involved, officials discussed methodological alternatives, implementation procedures and legal issues arising from the eventual transfer of the relevant files. Further analysis of the information provided by the register and comparative studies conducted with pilot surveys highlighted the quality and wealth of information, as well as the role it could play as a source of primary data to meet the objectives.

15.33. Finally, after evaluation of the various advantages and limitations associated with each of the procedures, the administrative source was chosen as a more effective means of achieving the objectives of the research. However, it should be noted that while the data derived from the investment register are considered to be the primary basis for generating key information, the data has been supplemented with information from the European Register of Groups in order to obtain the final results of the investigation. It should be noted that the coverage of branches in the Investment Register is not complete as far as the population of subsidiaries are concerned because,

according to the current rules, companies are not required to declare investments in companies with assets of less than a threshold. The results of the subsidiaries from the third level of the chain of participation are not shown either. It has therefore been necessary to perform additional processing and estimation taking into account the EuroGroup Register, which contains information on enterprise groups from private databases and records units in the statistical offices of the individual member states and the countries of the European Free Trade Association, to measure the activity of those subsidiaries and, through appropriate adjustments, to derive the final statistics.

15.34. In conclusion, the statistical design for the primary data generated from the foreign investment registry of the Ministry of Economy and Competitiveness can reduce the statistical burden on enterprises, while allowing for national dissemination of the main results on Spanish subsidiaries abroad.

D. General compilation issues

D.1. Which statistical unit to consider?

15.35. For inward FATS, the statistical units are all the enterprises or establishments and branches that are under foreign control, and for outward FATS, the statistical units are all the enterprises or establishments and branches abroad that are controlled by an institutional unit resident in the compiling economy.

15.36. MSITS 2010 makes no recommendation as to the choice between enterprises or establishments for statistical units and explains that both approaches have strengths and weaknesses (see chapter 6 and MSITS 2010, paras. 4.13 to 4.14). In addition, if the collection takes place at the enterprise level, it is possible that it is also done at the local enterprise group level.²⁴⁰ There is, therefore, an even greater risk of interpretation of the activities of the local enterprise groups as it will regroup units engaged in multiple activities, making data classification more difficult when it comes to compilation. The statistical unit for FATS will, in fact, depend heavily on the statistical units of the existing national statistical systems if defined, or on the limitations that exist in the data collection system. Because the statistical units can have an important bearing on how the statistics are interpreted, both in isolation and in comparison with other data sets, the compiler should consider this when compiling FATS. In addition, it is good practice to disclose metadata on the statistical units used in collecting FATS in explanatory notes, given that the level of consolidation may affect users' interpretation of the statistics.

15.37. Compilers should also consider that units may differ between inward and outward FATS. For example, to the extent that for inward FATS, SBS surveys are the basis, the unit for that compilation is likely to be an establishment (recognizing the need for a degree of industry homogeneity within the unit); for outward FATS, the use of FDI surveys as a basis will tend towards an enterprise or local enterprise group as the unit for compilation. The use of different units for inward and outward FATS will make within-country comparisons and balances difficult, particularly for business counts. That is why compilers, in the longer term, should identify ways of aligning the statistical units used in both inward and outward FATS.

²⁴⁰ It is advisable for enterprises in the host economy that are part of a common enterprise group to be identified, and to see how that consolidation can be addressed.

D.2. Choice of reference period, periodicity of compilation and valuation of monetary variables

²⁴¹ *Measuring Globalization: OECD Handbook on Economic Globalization Indicators (HEGI)* recommends that the calendar year be used as a reference period.

15.38. MSITS 2010 does not make any recommendation as to the choice of the reference period for compiling FATS.²⁴¹ In practice, economies that compile FATS use years as a reference period. At the time of the present writing, such a choice seems reasonable from the perspective of users, as well as with respect to the reporting and compilation burden. However, in the future, there may be a need for data referring to shorter periods of time, e.g., quarters, at least for some main FATS aggregates.

15.39. MSITS 2010 does not make any recommendation as to the periodicity of update of FATS data, either. In practice, agencies producing FATS do so every year, at least for the variables that are deemed the most important (i.e., priority variables). In some cases it may be reasonable to consider compiling FATS less frequently (e.g., every odd year) for the variables and breakdowns of minor importance or for those that are the most complicated to produce.

15.40. In principle, data for a given reference year should correspond to the calendar year, but firms may report on a fiscal or accounting year basis if that is what is available. In addition, it should be noted that some characteristics are compiled from already existing data, in particular for inward FATS. For those characteristics, the reference period may have to be taken as a given and might not always coincide with the calendar year. Compilers should clearly inform users of the reference period used and whether there are any deviations for some variables.

15.41. Consistent with other economic statistics, activity should be recorded as it occurs rather than when the related payment is made (accrual basis). Flow variables should be recorded for the whole reference period, while stock variables should, if possible, be recorded from the end of the reference period. An exception is the employment variable, for which use of a period average is preferable (see also section D.4) if the employment is subject to strong seasonal variation. Data for a given reference period are mainly valued at the average prices and, if relevant, average exchange rates of that period. For stock variables (for example, property plant and equipment), values of source data might be recorded at historical cost and will largely reflect prices at the time the asset was acquired rather than the prices of the reference period. In such a case, revaluations to reflect current-period prices should be made by the compiler.

D.3. Treating the activities of special purpose entities in a FATS context

15.42. Special purpose entities (SPEs) engage in various activities and take various forms. Thus, compilers should pay attention to the treatment of SPEs in compiling FATS. Although there is no precise definition of SPEs in the 2008 SNA, BPM6 and the *OECD Benchmark Definition of Foreign Direct Investment*, 4th edition (BD4), those publications include some elements that help to better identify SPEs and their activities.

15.43. A unit can be considered an SPE if it meets the following criteria:

- (a) It is a legal entity (a) formally registered with a national authority²⁴² and (b) subject to fiscal and other legal obligations of the economy in which it is resident (see 2008 SNA, para. 4.6, for the definition of a legal entity;
- (b) The entity is ultimately controlled by a non-resident parent, directly or indirectly;

²⁴² This excludes non-resident units that have been registered for VAT purposes only, which may be the case in some European Union-countries acting as a hub for the imports of goods to the European Union.

- (c) The entity has few employees, or none, little or no production in the host economy and little or no physical presence in the economy in which it is created by its parent, which is typically located in another country;
- (d) Almost all the assets and liabilities of the entity represent investments in or from other countries;
- (e) The core business of the entity consists of group financing or holding activities; i.e., the channelling of funds from non-residents to other non-residents. However, in its daily activities, managing and directing plays only a minor role.

15.44. According to the 2008 SNA, judgment must be made regarding the independence of an SPE as an institutional unit. However, non-resident SPEs owned by residents (and resident SPEs owned by non-residents), which are the main focus of FATS, are treated as independent institutional units by convention. When those SPEs transact by their own decision, their transactions, in principle, should be recorded in the same manner as those of non-SPE foreign affiliates.

15.45. At the same time, however, it should be considered that SPEs are often established to facilitate cross-border ownership of enterprises and thus generally do not have any substantive services activities. Therefore, special treatment of SPEs in FATS (and FDI statistics) might provide economically more meaningful data and thus enhance their usefulness.²⁴³ For example, it would be relevant to separately identify SPEs and to compile supplementary data without considering certain types of SPEs.

²⁴³ See BD4 for more information.

15.46. Nevertheless, some SPEs are engaged in services activities in addition to passing through funds, and such types of entities should not be ignored in FATS. The appropriateness of considering SPEs in FATS depends on their activities. Identifying their activities is not straightforward, but one way of doing so is to classify SPEs according to the 2008 SNA sector classification, assuming that such classification is conducted by the statistics compilers of host countries.

15.47. Among the various types of SPEs, holding corporations, shell companies and conduits are often established only to channel the funds between non-residents. Thus, supplementary data looking through such pass-through entities could be useful for users in relation to FATS. In contrast, royalties and licensing companies, merchanting companies, and securitization companies engage in non-captive financial and non-financial activities. The other types of SPEs provide financial services, although most of them are captive financial corporations. Thus, those non-pass-through entities should not be included.

15.48. Compilers should also consider that it may be difficult to collect information on SPEs given that they have only a small physical presence, or none, or given the ways in which they are accounted for in the national statistical system. In fact, the treatment of SPEs in national statistics will strongly influence the options for the FATS compiler (see chapter 6 for more information).

15.49. More guidance on SPEs and their treatment in statistics may be found in the Eurostat *Foreign Affiliates Statistics (FATS) Recommendations Manual*, as well as in chapter 4 of the United Nations Economic Commission for Europe (ECE)/OECD/Eurostat publication entitled “The impact of globalization on national accounts”.

D.4. European Union practice

15.50. In the European statistics, special purpose entities are relevant for both inward and outward FATS. The Eurostat FATS Recommendations Manual further clarifies that “they should be excluded from the target populations of statistical or reporting units only if they had no turnover and no employment during the reporting period.”

15.51. There is no single approach to how SPEs should be treated, even though the main principle to be followed is that the SPEs should not be automatically excluded from the target population, as they carry out important economic transactions with their respective parents or associated enterprises. SPEs should be excluded only if they had no turnover and no employment during the reference period.

D.5. Other considerations

15.52. It is good practice for compilers to evaluate the validity of reported data and establish checking procedures in the context of FATS (e.g., registers, etc.). Survey processing staff will need to evaluate the reported data to ensure accuracy, consistency and reasonableness, and that is particularly relevant for FATS. Many of the techniques will be related to the usual work expected from compilers in other statistical domains. For compilers who have chosen such a solution for gathering FATS data, the strong link between the SBS and inward FATS should be taken into consideration when validating the data. Consistency of information, in particular for the identification of the population or UCI could be ensured by checking with other registers that some compilers may have at hand, for example registers of enterprise groups or foreign-owned enterprises. More information on evaluating the validity of reported data is available in chapter 19.

15.53. In most countries, there are legislative requirements for confidentiality that necessitate avoiding the disclosure of information, and those requirements would also naturally apply to FATS. Multinational companies that, by definition, are involved with FDI and FATS may be particularly sensitive about such matters for competitive reasons. Even countries with mandatory FDI and FATS data collection maintain strict confidentiality. This is particularly relevant given the granularity of the data obtained through the compilation system, i.e., breakdowns by detailed country, detailed activity and product.

15.54. For example, when compiling data by activity (e.g., according to ICFA rev.1 categories) categories may sometimes have to be suppressed (that is, not separately shown) so as to preserve the confidentiality of those data for individual companies. The need for suppression occurs most often at the most detailed level of the classification, when smaller countries are involved or in cases in which the data are cross-classified by country or area. Other possibilities exist to ensure confidentiality of information, such as perturbation techniques, which may be sufficient to mask individual responses and increase the utility of the statistics for the analysts. The compiler should therefore identify appropriate techniques for ensuring the confidentiality of data reported by individual companies (see chapter 20 for further details on dissemination and confidentiality issues).

E. Compiling FATS variables

15.55. Economic variables, both operational and financial, with regard to FATS should be collected primarily for their usefulness for trade policy needs and for analysing the globalization phenomena. Practical issues associated with obtaining data must also be considered. With such considerations in mind, and in the interest of harmonization with other international guidelines (see para. 15.6), MSITS 2010 recommends that the FATS variables to be collected include at least the following basic measures of foreign affiliate activity:

- (a) Sales (turnover) and/or output;
- (b) Employment;

- (c) Value added;
- (d) Exports and imports of goods and services;
- (e) Number of enterprises.

15.56. In the context of the present *Compiler's Guide*, output and/or sales (turnover) are the variables of most interest, followed by employment and number of enterprises. Although the five variables identified above constitute a basic set that can provide answers to a variety of questions, additional variables may prove useful in addressing specific issues; among those additional variables are compensation of employees, gross fixed capital formation, total assets and research and development expenditures). MSITS 2010 suggests several additional measures that might be considered for collection by countries able to compile such information. Most of the "basic" and "additional" variables, as well as their definitions, have been drawn from the 2008 SNA.²⁴⁴ It may not always be specified, but there is a particular interest in obtaining detailed data for services sectors (either activities or products if relevant) for all the variables listed in sections E.1 through E.6.

E.1. Sales (turnover) and output

15.57. Sales and turnover are terms that are used interchangeably in this *Guide*. They refer to the totals invoiced for the sales of goods or services rendered, including all duties and taxes, excluding consumption and sales taxes (i.e., VAT type taxes). Sales/turnover also includes all other charges passed on to the customer (transport, packaging, etc.), even if those charges are listed separately in the invoice. Reductions in prices, rebates and discounts as well as the value of returned packing must be deducted. Charges for the use of intellectual property are included. Income classified as other operating income, financial income and extraordinary income in company accounts is excluded from turnover. It is important to note that revenue of long-term contracts, such as building contracts, should be recognized by reference to the stage of completion of the contract. For insurance, turnover/sales correspond to gross premiums written and, for pension funds, they refer to total pension contributions. For financial services, excluding insurance, pension funding and auxiliary services, turnover refers to the explicit fees charged for the services provided (fees and commissions receivable) as well as interest and leasing income, income from shares, net profit on financial operations, income on foreign exchange transactions and other operational income.

15.58. The variable sales or turnover is usually easy to compile because it is easy to collect and, besides the usual adjustments for non-response, underreporting or grossing-up, no specific calculations are needed to produce the final data. In addition, sales or turnover generally offer more options for disaggregation, in particular for breaking down by service product.

15.59. As indicated above, output²⁴⁵ is a preferred variable when considering the mode 3 supply of services. Output is a superior and more refined measure than sales for most purposes and is recommended as the preferred variable for compilation. Following the 2008 SNA, output differs from sales mainly because it includes changes in stocks of finished goods and work in progress. In general, such considerations do not apply to services. There are also differences in measurement applicable to wholesale and retail trade, insurance and financial services industries. For affiliates in wholesale and retail trade, insurance and finance, sales may include non-service elements or may exclude the value of services provided without an explicit charge.

15.60. For wholesalers and retailers, output of services should be measured as trade margins: wholesale or retail sales of goods or services less the goods and services purchased for resale. While not in the core list of variables to compile, and even though

²⁴⁴ Other variables not mentioned in MSITS 2010 as basic and additional variables may also be collected in order to cover important needs, in particular "hours worked" (2008 SNA, para. 19.78), which are relevant in the context of the measurement of productivity. More details on variables and their definitions may be found in BD4 and HEGI.

²⁴⁵ Output can be valued at producer or basic prices. The latter is generally preferred.

it is mentioned only as a suggestion for compilation in MSITS 2010 (para. 4.65), compilers need to make sure that data on purchases of goods and services for resale in the same condition as received are collected or can be estimated.

15.61. For insurance, international economic accounting guidelines recommend measuring output as gross premiums earned plus premium supplements minus estimated claims incurred (either estimated claims or benefits due) and, in the case of life insurance, minus the net increase in life insurance actuarial reserves. For financial intermediaries, in addition to the explicit fees charged, compilers should include a measure of implicit service fees as well as financial intermediation services indirectly measured.

15.62. In general, output statistics can be compiled directly from data collected (i.e., services sales or turnover) or extracted from existing sources, making necessary adjustments and taking the above points into account. The latter may require additional data collection, data from outside sources and estimation methodologies. The suggested practice is as follows:

- (a) Output is the preferred measure, but sales/turnover is easier to compile as a first step and may offer more options for disaggregation. For wholesale and retail trade, insurance and finance, additional calculations are needed to compile output;
- (b) Activity/product breakdown:²⁴⁶
 - i. Output or sales/turnover should first be compiled by activity;
 - ii. A breakdown of output or sales/turnover into total goods and total services products for each activity should be provided;
 - iii. As a long-term goal, compilers should strive to produce product detail, if possible compatible with EBOPS 2010;
- (c) Output or sales/turnover should not be broken down only by country of UCI for inward or by establishment of affiliates for outward, but a distinction should be made as to the output actually delivered to clients in the host economy. This is further elaborated in the section on trade variables.

Country experience: United States

15.63. The United States Bureau of Economic Analysis (BEA) compiles data on sales/turnover by industry, with a distinction between sales of goods and sales of services for each industry. To estimate the output of wholesale and retail trade, insurance and finance, the BEA initiated new data collections, developed new compilation methodologies and identified data from other sources.

15.64. To construct estimates of distributive services supplied through affiliates, BEA collects data on the cost of goods sold and the beginning- and end-of-year inventories of the goods for resale on its censuses of FATS, which are conducted every five years.²⁴⁷ In between its censuses, BEA uses data on the domestic wholesale and retail trade industries to produce estimates of distributive services supplied through affiliates on the basis of movements in trade margins.

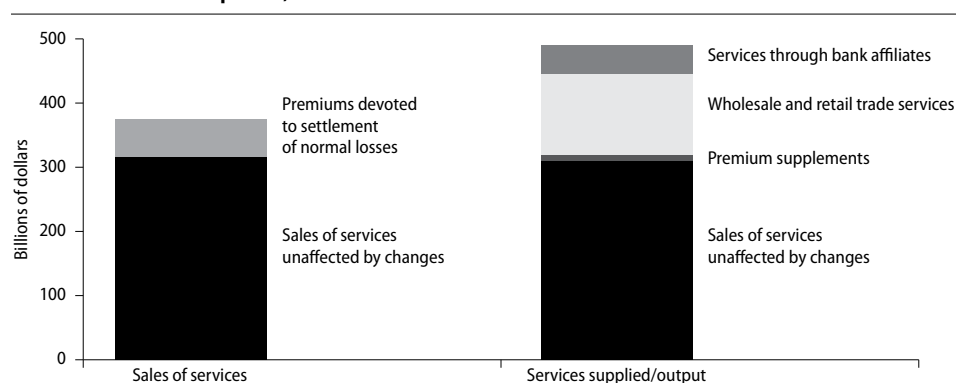
15.65. To estimate the value of insurance output supplied through affiliates, BEA deducts “normal” losses—a proxy for insurers’ expectations—from premiums earned. To do so, it uses data collected in its FATS surveys on premiums earned and losses paid by majority-owned affiliates with operations in insurance. BEA uses a six-year moving average of the relationship between premiums earned and losses paid to estimate normal losses. When it first introduced this compilation method, to avoid having to wait until six years of data had been collected on premiums and losses, BEA used data on the relationship between premiums and losses from the domestic insur-

²⁴⁶ More information on breakdowns by partner or service activity and products is provided in section F.

²⁴⁷ Originally the data were collected through annual surveys, but now only benchmarks are collected to reduce the burden on reporters and the resources of the United States Department of Commerce, Bureau of Economic Analysis.

ance industry and gradually replaced them with data collected from affiliates. In addition, information collected on the investment income of majority-owned affiliates with operations in insurance, collected on its FATS surveys, is combined with data on the domestic insurance industry to estimate the value of investment income earned on technical reserves (i.e., premium supplements). This is done by using data on the domestic insurance industry to calculate the share of total investment income that is income on technical reserves and applying that share to affiliates' investment income to derive an estimate of premium supplements.²⁴⁸

Figure 15.2
Impact of the compilation of services output by United States affiliates of foreign multinational enterprises, 2002



²⁴⁸ The United States Department of Commerce, Bureau of Economic Analysis uses data from a global credit rating agency which focuses on the insurance industry. It breaks out total investment income earned by the domestic insurance industry into categories, including one called "investment gains on funds attributable to insurance transactions", that is, on their technical reserves. The Bureau takes the percentage that this category accounts for in total investment income and multiplies it by the investment income attributable to insurance for the affiliates to derive their premium supplements. The break-out by destination is used to define the destination of their sales of services.

15.66. BEA collects and compiles FATS data for banks. It constructs its estimates for financial intermediaries on the basis of data collected on both the banks' explicit fees and services charges, and on their total interest paid and received, to estimate the value of output by affiliates in banking.

15.67. The impact of the compilation of output/supply of services, as opposed to sales of services by foreign affiliates in the United States (inward FATS), is illustrated in the chart below. Although the impact may differ from one country to another, it is interesting to note that using the more refined variable output to measure the supply of services through mode 3 may substantially change the picture as compared to the use of sales/turnover of services. The example below shows that the preferred measure of output increases by almost one third the estimate for mode 3 supply of services as opposed to data on sales of services.

E.2. Value added

15.68. Value added, in services production, is also a variable of interest for analysing the impact of mode 3 services supply. The 2008 SNA defines the gross value added of an establishment, enterprise, industry or sector as the amount by which the value of the outputs produced exceeds the value of the intermediate inputs consumed. A related concept—net value added—is defined as gross value added less the consumption of fixed capital.²⁴⁹ Gross value added can provide information about the contribution of foreign affiliates to the gross domestic product of a host country, both in the aggregate and in specific industries. Gross value added receives higher priority than net value added and is often easier to compute because it does not require estimation of capital consumption.

²⁴⁹ 2008 SNA, para. 6.74.

15.69. Value added cannot be directly observed from accounting records. Two ways are available to derive value added. First, as gross output (revenue) less its inter-

mediate inputs or consumption (purchased goods and services used in production). The valuation of value added is linked to the gross output. Second, value added can be derived as the costs incurred (except for intermediate inputs) and profits earned in production. Costs generally fall into four categories: compensation of employees, net interest paid, taxes on production and imports and the costs of capital consumed in production. Alternatively, it can be calculated from gross operating surplus by adding personnel costs. The choice of one or the other method of computation is dependent on the availability of data, as well as the method used to compute value added in national business statistics. For inward FATS, value added is often easily derived from information available from regular industrial or enterprise surveys, but for outward FATS, value added often must be derived from various variables collected in FATS (or FDI) surveys.

15.70. The valuation of value added is dependent upon the valuation of output (basic prices or producer prices), while intermediate inputs are always valued at purchaser prices. Alternatively, value added can be valued at factor cost. (For more information, see 2008 SNA, para. 2.65.)

E.3. Trade variables

15.71. International goods and services transactions of foreign affiliates constitute another basic indicator of activity. As previously described, on the exports side, that variable is related to the sales/turnover or output variables. Imports are a part of the purchase of goods and services. MSITS 2010 recommends that the trade variables reflect international trade in goods and services between residents and non-residents, i.e., that they be compiled on a balance-of-payments basis. It should be noted that, for the above definitions to be applicable to both inward and outward FATS, the concept of "residents" must be interpreted in different ways. While for inward FATS, the term "residents" refers to the compiling country in which the foreign affiliate is resident, for outward FATS, it is defined as the host country in which the foreign affiliate is located.

15.72. Ideally, data would need to be compiled for exports and imports for each activity and economy of operation of the affiliate (for outward) or UCI (for inward) and by type of product for goods and services (with a particular focus on services, given the interest of that information for services trade negotiations/analysis). Data would also need to be compiled on the origin or destination of the international trade conducted by the affiliate, with a distinction made between trade with related enterprises and trade with unrelated parties.²⁵⁰ It is a complex data set to build,²⁵¹ but beyond the specific focus on services provided by MSITS 2010, there is a strong interest in such information for the analysis of globalization and, more particularly, on global value chains and trade in value added.

15.73. As outlined in the section on sales/output for measuring mode 3, separating the estimation of total services (separated from total goods) sold by affiliates to entities in the economy of establishment from total services (and total goods) exported outside the country of establishment would provide useful and often for the measurement of the international supply of services. The compilation of such variables could be done if that distinction is possible in the data sources (most likely for the sales/turnover variable), both for inward and outward FATS.

15.74. In the broader context of globalization analysis, more information could be considered for the compilation of these variables by breaking down total goods and total services follows:

- (a) Exports and imports of affiliates with parent enterprise;
- (b) Exports and imports of affiliates with other related enterprises (in third countries, without distinction);

²⁵⁰ The distinction between related and unrelated parties is made according to the definitions used in FDI statistics.

²⁵¹ It is also important to note that exports and imports cannot normally be isolated in standard company accounts.

- (c) Exports and imports of affiliates with unrelated parties in the country of the parent enterprise and third countries (without distinction between third countries).

The compilation of such variables could be done for exports in the same way as described above, that is, if the distinction is possible in the data sources for the sales/turnover variable, both for inward and outward FATS. However, for imports one would need to develop appropriate questions so that the information necessary for the compilation of those variables is available.

15.75. The possibilities for the compilation of the more detailed product-origin/destination of trade breakdown will largely depend on the sources used to obtain the data. Data could be derived from information provided by reporting units in sources used for FATS (see section 15.C), whether business activity surveys (only for inward), FATS or FDI surveys. However, such approaches may require a significant increase in the level of detail requested from reporting units, which is something compilers must consider before pursuing one of those approaches. If relevant, separate questionnaires could be used to collect the details, in particular for larger companies for which affiliates are more likely to conduct international trade.

15.76. However, linking information with balance-of-payments trade in goods (or merchandise) and services data could ensure that those additional detailed statistics can be compiled. This can be implemented for inward FATS.²⁵² When the data are obtained through linkages with primary data sources for BOP transactions, breakdowns by product and origin or destination will often be possible. If that is the case, exports and imports of services (or goods) may be disaggregated, not only by the primary activity of the affiliate according to ICFA rev. 1 but also by product, on a basis compatible with EBOPS 2010.²⁵³ However, to be able to do this, the compiler must be able to distinguish in the BOP data the transactions between related and unrelated parties. For services, this is in line with the text provided in MSITS 2010 paragraph 3.56.

15.77. For inward FATS trade variables, relevant information could be obtained through the linking of trade and business statistics, such as the in the context of the services trade by enterprise characteristics (STEC) project that some European Union countries have been developing in recent years. STEC describes trade flows between countries broken down by such characteristics of traders as type of trader, activity sector, size class or type of ownership.²⁵⁴ The latter variable would be of particular interest for establishing such a link with the FATS trade variables and, thus, producing relevant breakdowns, as described above.²⁵⁵

15.78. Compilers should be mindful of the high burden for reporting and compiling such information when considering the production of data for the trade variables. Consequently, it is advised to approach this in the following stages:

- (a) First, produce data to measure mode 3, by distinguishing for each activity (or services product, if it is available) between sales or output of services in the country of the affiliate from services exported;
- (b) Second, compile trade variables, breaking down the exports and imports data into (i) total goods and total services, (ii) trade with the parent enterprises, other affiliated enterprises and unaffiliated parties and (iii) trade with the country of the parent enterprise and with third countries;
- (c) Third, compile more detailed information by product group and country.

Synergies should be found for the production of detailed data for the trade variables, in particular for inward FATS, such as STEC.

15.79. In the European Union, for outward FATS, two sets of trade variables are recommended for compilation, subject to pilot studies: “exports and imports of

²⁵² If merchandise data instead of goods are used as a source, then compilers need to make necessary adjustments to comply with the recommendations regarding resident/non-resident transactions in goods. If that is not possible, then the differences in concept should be clearly documented (see MSITS 2010, box III.1, or the *FATS Recommendations Manual* for further information. Chapter 5 of HEGI also provides useful information with respect to the measurement of intrafirm trade.

²⁵³ Naturally a similar consideration can also be made for goods/merchandise.

²⁵⁴ Eurostat, *External Trade by Enterprise Characteristics: Results of the Standardization Exercise 2006*, Eurostat Methodologies and Working Papers (Luxembourg, Office for Official Publications of the European Communities, 2007).

²⁵⁵ Preconditions for establishing services trade by enterprise characteristics (STEC) statistics are the availability of business and trade registers in a country. Through linking both, normally at the level of the statistical unit (legal unit) and a common identifier, trade flows can be associated with trader characteristics. For reliable statistics, a high matching rate between records in the linked data sets is required.

goods and services” and “intragroup exports and imports of goods and services”, with intragroup referring to trade between enterprises controlled by the same unit, and the controlling unit itself. The recommendations and definitions provided are in line with those of MSITS 2010 and related guidelines (BD4, HEGI). The European Union *FATS Recommendations Manual* also provides additional clarifications on trade conducted by foreign affiliates: “Exports/imports of goods and services can be performed directly by the foreign affiliate or indirectly by means of other firms, such as wholesalers, that are resident in the same country and act on behalf of the foreign affiliate. In this latter case no property right transaction must occur between resident firms” (box I.3.1).

E.4. Employment

15.80. MSITS 2010 recommends measuring the number of persons on the payroll of foreign affiliates, whether full-time or part-time. The enumeration should specify the period covered (such as an annual average), or, in the absence of strong seasonal or other fluctuations, a point in time, such as the end of the year. The compilation of that variable should generally follow national practices. Although data on a full-time equivalent basis would be preferable, given that such a measure is not widely available, MSITS 2010 recommends the compilation of data on the number of persons employed (i.e., inclusive of employees, working proprietors).²⁵⁶ To serve the information needs for mode 4, a useful extension would be the separate identification of employment of non-residents of the compiling economy working for the affiliate, including intracorporate transferees (i.e., employees transferred between affiliated enterprises).

²⁵⁶ Although not recommended in MSITS 2010, other measures may also be compiled in order to cover important needs, in particular “hours worked” (see the 2008 SNA, para. 19.78), which are relevant in the context of the measurement of productivity.

15.81. Data on employment can be derived from the information collected through FDI or FATS surveys, or from business statistics (for inward). Again, it could be possible to derive the data by linking to other data sources, such as administrative sources, by using common company identifiers. Data should be compiled as a period average, but in the absence of strong seasonal and other fluctuations it may be compiled at a certain point in time (e.g., end of the year). The data should be derived from information that is generally readily available from company accounts.

E.5. Number of enterprises

15.82. The preferred measure is number of enterprises, but data should reflect the number of statistical units, that is, enterprises or establishments, that correspond to the data described for other variables. It is a basic indicator of the prevalence of control by foreigners in the host economy. Only enterprises with a genuine economic activity should be taken into account in these statistics. Firms with no activity, which simply set up an office in a country for the purpose of transferring funds or taking advantage of certain tax breaks, should be excluded.

15.83. Although the data compilation of the number of enterprises variable is considered to be a by-product of FATS data collection and compilation, a number of considerations must be taken into account, such as determining if units have been active during the period under consideration. In addition, the number is likely to be affected, often significantly, by the level of company consolidation and by thresholds for reporting on surveys.²⁵⁷ Given that, for outward FATS, the data are often reported by one unit on behalf of a group of affiliates (e.g., country head office or regional office), it is important to ensure that data are reported and compiled on a non-consolidated basis. Consequently, to avoid any problem with interpretation if data do not reflect the above-mentioned principles, it is important to clearly document any deviation in available metadata. Whatever measure is retained to assist users in interpreting counts

²⁵⁷ Note that HEGI also recommends the compilation of the number of consolidated enterprises (see HEGI para. 267 for more information).

of units (whether enterprises or establishments), compilers are also encouraged to document how the numbers were derived.

15.84. The European Union *FATS Recommendations Manual* provides further indications as to how this item could be compiled. It states that “only active units which had turnover or employment at any time during the reference period should be included. Dormant (temporarily inactive) and inactive units are excluded. This statistic should include all units active during at least a part of the reference period” (box I.19). It also indicates that not only separate legal entities that are dependent on foreign enterprises but also “local units (branches) which do not constitute a separate legal entity and which are dependent on foreign enterprises...” (ibid.) should be included. In other words, if they are considered to be branches (i.e., they meet the branch criterion; see, for example, chapter 14, on construction) then their operations in the country of establishment should be reflected in FATS and they should be counted. But if they are not considered branches, then those operations should not be accounted for in FATS, and its sales will be recorded as imports/exports under the relevant BOP services item. The *Manual* also states that, in the context of outward FATS, the number of enterprises is a characteristic that, in principle, is obtained by counting the units in the target population, although, in practice, there can be collection problems when a resident parent enterprise supplies information on the activity of many affiliates abroad. The respondent may, for example, group affiliates located in the same foreign country as a single enterprise.

E.6. Other FATS variables

15.85. Other FATS variables may, for certain countries, hold equal or even greater importance than some of the priority variables, as described in MSITS 2010. The additional variables provided in MSITS 2010 are the following: assets,²⁵⁸ compensation of employees, net worth, net operating surplus, gross fixed capital formation, taxes on income, research and development expenditures²⁵⁹ and purchases of goods and services. For some of those variables, data are already being compiled by some countries in their business statistics or national accounts, etc. The definitions of those variables, which are provided in MSITS 2010, paragraph 4.65, are drawn from the 2008 SNA, which may be consulted for additional information.

15.86. Data are usually derived directly from collected information, with necessary adjustments to the statistical process. This means that the production of such data necessarily entails an increase in the reporting burden for respondents (except for inward FATS, if data are derived from existing data derived from business statistics). Only one of the additional variables listed in MSITS 2010—purchases of goods and services (intermediate consumption)—can be directly derived from the basic measures recommended for compilation. It can be derived from gross output and gross value added if intermediate consumption cannot be collected directly.²⁶⁰

15.87. The list of additional variables and their definitions will also depend on those used in the compilation of national business statistics and national accounts. In general, the practice is to compile most of those additional items for inward FATS rather than outward, at least in the first stages of development of the framework at the national level. The choice for compiling additional variables will depend on the priorities and feasibilities in a given country. If the data for inward FATS are derived from the source used for structural business statistics, then the list of variables will most likely be driven by what is included in it. Countries could also provide variables that are not listed in MSITS 2010 or in other international guidelines but that are of interest in that country.

²⁵⁸ Often referred to as the “balance sheet total.” OECD was at the time of writing working on the issue of linking (real) economic variables from FATS with financial variables from balance sheets and income accounts.

²⁵⁹ That variable is important as FDI is deemed to be a source of technology transfer. Note that HEGI also suggests “technology payments and receipts.” Related information on research and development definitions, etc., can be found in the *Frascati Manual*.

²⁶⁰ As noted previously, it is also linked to the imports variable.

E.7. Country experience: Viet Nam

15.88. In Viet Nam, data on foreign direct investment enterprises are collected and compiled through an annual enterprises survey (AES), which has been conducted by the General Statistics Office (GSO) since 2003. The AES covers all FDI enterprises in Viet Nam. According to the results of the establishment census of 2012, there are 9,500 FDI enterprises. The separation out of FATS enterprises from the list of FDI enterprises could be presented using the criterion of over 50 per cent foreign ownership.

15.89. The statistical unit of inward FATS statistics in Viet Nam is the *enterprise*. Twelve inward FATS variables can be obtained from the AES data. The FATS variables that are currently collected by the AES include basic variables, such as sales, turnover, output, employment, and additional variables such as assets, net worth, operating surplus, gross fixed capital formation, taxes on income, research and development expenditure and compensation of employees. Beside those variables, more detailed indicators of the main activity of FATS enterprises can also be compiled on the basis of data collected in questionnaires covering the main activity, such as manufacturing, construction, distribution, transportation, financial services, insurance and others. All of the above-mentioned variables can be compiled and are published annually with detailed tables showing breakdowns by country/kind of activity and kind of activity/country.

15.90. Data on exported and imported goods are collected from the customs office by comparing the customs and enterprise survey databases on the basis of the tax code of each enterprise, which is provided by the tax/register office when the enterprises have completed all register schedules. Service exports and imports data of some enterprises are collected through a survey on international trade in services conducted quarterly and annually.

15.91. The classification of enterprises by type of activity was determined in accordance with the Viet Nam Standard Industrial Classification 2007 (VSIC 2007). The data cover all sectors except agriculture and forestry.

F. Attribution of FATS variables

15.92. MSITS 2010 recommends that FATS variables be broken down by activity of affiliates, type of service rendered and partner country. Compilation guidelines for the three types of breakdowns are provided in sections F.1 through F.4.

F.1. Activity breakdowns

15.93. Although the focus in the present *Guide* is on services, in general, compilation should cover all economic activities (i.e., goods and services activities). The breakdown should be made according to the main activity of enterprises using the ISIC rev.4 or an activity classification compatible with it. This basis of presentation allows activities of services enterprises to be viewed within the context of the activities of all enterprises. In general, it is easier to produce a more detailed ISIC rev.4 breakdown for inwards FATS than for outward FATS. Compilers should, at a minimum, produce data for the activities that are of importance for their economy or international trade/investment negotiations. In the context of the information needs of trade in services negotiations, compilers should aim to distinguish and provide more details for services activities and keep in mind the categories suggested in ICFA rev. 1, which is recommended for presenting data alongside resident/non-resident trade in services data (see chapter 20).

15.94. The ICFA rev. 1 categories cover all activities, but provide more detail for services than for goods. Annex II on page 149 of MSITS 2010 offers general guidelines. However, if countries are in a position to provide more detail than is presented

in annex II, that supplementary breakdown should be compatible with ISIC rev.4. A total for services activities should be compiled or estimated to better respond to information needs on the international supply of services. It is important to note that a presentation by activity will show data for variables according to the primary activity of enterprises. Because a given firm will often have secondary activities in industries other than the activity of their primary classification, the value recorded for any given activity must be interpreted as an indication of the total activity of enterprises for which the given activity is the most important, rather than as a precise measure of the value of that activity itself. This needs to be made clear to users (i.e., metadata).

15.95. Compiling data for some activities may sometimes be challenging, in particular if the activities are not covered in the data sources, or given the difficulty of gathering information for particular industries (e.g., financial activities). This is particularly true for inward FATS in that if structural business data are used as a source, then some activities may not be covered, such as agriculture or some personal or social services. In that case, compilers should derive the information from other sources or estimate the variables for those particular sectors. Alternatively, at least as a starting point, compilers may wish to concentrate solely on services activities of importance to their economy.

15.96. The activity breakdown should follow the activity of the “affiliate enterprise”. For inward FATS, the activity of the resident affiliate should be used. Frequently for outward FATS, the activity of the resident investor is incorrectly used by compilers as an approximation for the activity of the affiliate. Assigning an activity code, contrary to a widespread misconception, is not an easy task. For outward FATS, the only way to compile the data is by using information obtained directly from the respondent. In order to compile data on activity breakdowns, compilers are encouraged to find out if affiliates are engaged in production, trade or any other service activity; be able to assign ISIC codes of at least two digits; and obtain a verbal description of the activity. That information should be obtained through the data collection process (see chapter 6). By carefully assessing that information, along with consultation of the Internet and public registers, compilers can derive a meaningful allocation of activity. While this procedure is burdensome at the time the affiliate is initially accounted for, the information typically will not need to be compiled again for a number of years.

F.2. Particular treatment for certain activities

15.97. The specific treatment of wholesale and retail trade, as well as finance and insurance enterprises, was described in section E.1, mainly as they relate to the variables sales/turnover and output. Particular attention should also be paid to other activities relating to enterprises operating ships and other mobile equipment, as well as some leasing arrangements.²⁶¹ Compilers need to pay particular attention to the treatment of construction activities with no subsidiary or branch clearly identified in the country where the construction project is taking place, particularly when some large-scale projects have operations that are not substantial enough for the entity in the host country to qualify as a branch. A consistent treatment with the BOP/trade in services or national accounts statistics should be applied. The criteria for recognizing if activities are substantial are described in chapter 14. If it is shown that a unit meets those criteria are met, the operations of its activities should be recorded in the FATS framework. In that context, compilers may find it difficult to gather the necessary data and may need to turn to alternative data sources or establish new data sources (for example, in cooperation with resident/non-resident trade in services statisticians; see chapter 6 for more information).

15.98. The present *Guide* advises compiling information for all economic activities, with details classified using ISIC rev.4. The activity breakdown should follow the activity of the “affiliate enterprise” for both inward and outward FATS. Given the need

²⁶¹ See also section D.3 on the treatment of special purpose entities in FATS.

for trade in services negotiations, compilers should aim to distinguish and provide more details for services activities, keeping in mind the ICFA rev.1 presentation and to compile a total for services activities.

F.3. Secondary activities and compilation of a breakdown by product for sales/turnover, output and trade variables

15.99. As outlined above, MSITS 2010 recommends that FATS variables be classified by the activity of the affiliate according to ISIC rev.4. Details should be produced having in mind ICFA rev.1 and its more detailed breakdown for services (see above section). Using ICFA rev.1 for presentation purposes allows activities of services enterprises to be viewed within the context of the activities of all enterprises and provides a link for the presentation of services FATS data and resident/non-resident trade in services data. Within the context of the present *Guide*, there is an additional interest in compiling information on services produced as secondary activities of enterprises, i.e., services produced by enterprises primarily engaged in such goods producing activities as agriculture and manufacturing.²⁶² For example, services supplied by enterprises primarily engaged in manufacturing activities may be of particular interest in the context of the supply of manufacturing services on physical inputs owned by others. Besides providing a bridge with the EBOPS 2010 classification primarily used to classify resident/non-resident transactions, ICFA rev.1 provides a framework for displaying services produced as a secondary activity by enterprises classified as goods producers.²⁶³

²⁶² There is also interest more generally in knowing which services activities produce goods and in what proportion.

²⁶³ Establishing a correspondence between the two bases of classification may be useful, in particular for activities that tend to be carried out only by enterprises specialized in the activity and that generally do not engage in significant secondary activities.

15.100. In that context, and as a longer-term goal, MSITS 2010 encourages compilers to work towards disaggregating some of the variables by product, including sales (turnover), output, exports and imports, the type of information that would be of most interest for trade negotiators and analysts. If implemented for services, this should be done using a product classification system compatible with EBOPS 2010. Product-based statistics are more likely to be free of problems of interpretation related to secondary activities and are consistent with the basis upon which GATS commitments are made and with the basis of classification used for trade between residents and non-residents. In addition such a compilation practice is important to achieve because goods-producing industries can be important suppliers of services.

15.101. MSITS 2010 and the present *Guide* recognize that this may be a difficult task, in particular with respect to data collection, as it will necessarily increase substantially the reporting burden for respondents, as well as the work of compilation. MSITS 2010 recognizes this and encourages compilers in a first step to at least achieve for output (or sales) a breakdown between total goods and total services for each activity. Such a solution, while providing more relevant data to users, would incur fewer burdens for respondents and compilers than establishing a more detailed breakdown by product. Although that solution would be much easier to implement, to achieve it compilers must ensure that such a breakdown is feasible or can be derived from the data sources. Some countries have been able to produce such data because the information or estimates on sales of goods and sales of services was gathered through the data sources used to collect FATS. It is also important to note that the investment income element should be separated out from sales of services and goods.

15.102. In structural business surveys, information is often requested on turnover with a breakdown in a number of goods and services product groups. Consequently, if inward FATS are compiled using that source, then a further breakdown of sales (or output) of services can be established or easily estimated. A similar breakdown can be achieved for the trade variables if they are included in the survey.

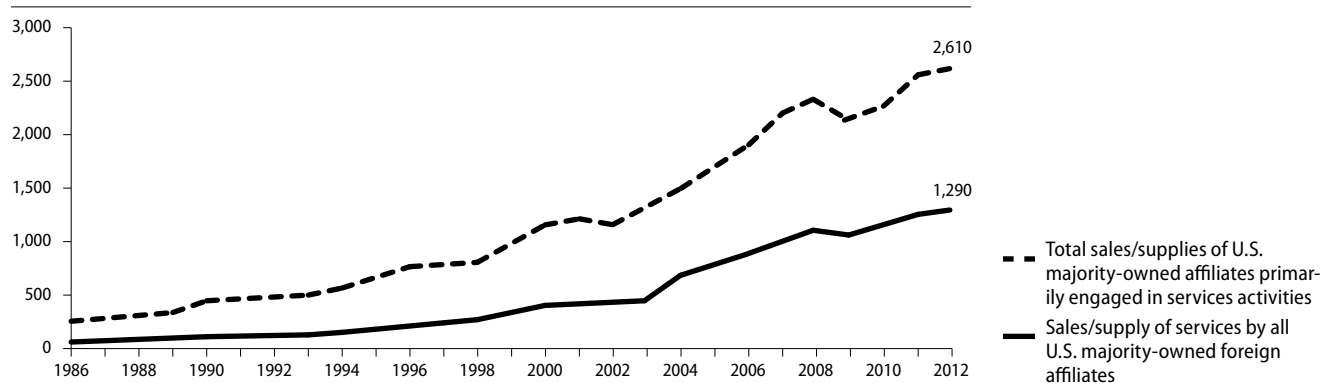
15.103. As described in section E.3, for trade variables, a breakdown by product can be derived from information provided by reporting units in sources used for FATS, whether business activity surveys (only for inward), FATS or FDI surveys. However, linking information with BOP trade in goods or merchandise and services data could ensure the compilation of more detailed statistics. Section E.3 further describes the possibilities offered by such a linking exercise. Data obtained through such work could also help for the first steps in estimating a more detailed breakdown of output or turnover, in particular if enterprises are services export oriented, or if it is assumed that the pattern of services exports by product is similar to that of services sales or output in the host economy.

15.104. It is advised that a breakdown by service product of output and/or sales or turnover be derived, as well as trade variables from data sources (e.g., breakdown in FDI or FATS surveys, or for inward FATS, structural business surveys). Given the difficulty of producing a breakdown by product, for each activity, countries are encouraged to at least compile a breakdown of output or turnover into sales of goods and sales of services (excluding investment income). For trade variables, it is considered good practice to investigate possibilities for linking FATS and resident/non-resident trade in services statistics, in order to develop a breakdown.

Country experience: United States

15.105. The United States Bureau of Economic Analysis (BEA) compiles data on output by industry, with a distinction among goods, services and investment income for each industry. It does so through the collection of such a breakdown of sales in its FATS surveys. As described above, it then makes a number of adjustments for some industries to arrive at the concept of supply (i.e., output) of services. A product type of breakdown, at least distinguishing total services from total goods sales for each industry, is an important achievement for trade analysis and beyond. In particular, enterprises primarily engaged in the production of goods may be important services suppliers. As illustrated in figure 15.3, being able to produce such a data set enables the United States to have a better sense of the actual services supplied to foreign markets, as compared to the total sales (i.e., of goods and services) of foreign affiliates of United States multinational enterprises engaged in services activities. At the total services level, i.e., activities versus products, the approaches show very different results. The main factors behind such differences are that sales of goods are removed for services producing enterprises (the biggest activity contributing to the difference being wholesale and retail trade) and services produced by goods producing enterprises are included. For 2012, the data showed total sales/supplies of firms engaged in services activities to be twice as high as total sales of services/supply products by all firms.

Figure 15.3
United States outward FATS sales/supplies to foreign persons



For total sales/supplies of firms primarily engaged in services activities, beginning in 1999, industry classification was based on the North American Industry Classification System (NAICS) rather than the Standard Industrial Classification (SIC). Since 2009, sales by bank affiliates and by the non-bank affiliates of United States banks have been included in the statistics. For 2009-2012, values for goods and services supplied by majority-owned foreign affiliates in services industries to all foreign countries are used. For 1986-2008, values for total sales by majority-owned foreign affiliates in services industries to all foreign countries are used. Total sales made up of three components: goods supplied, services supplied and investment income. In the five years leading up to 2009, investment income accounted, on average, for 3 per cent of total sales.

For sales/supply of services products, beginning in 1999, sales by foreign affiliates were classified as goods or services on the basis of industry codes derived from NAICS rather than SIC, which resulted in a redefinition of sales of services and a net shift of sales from goods to services (see *Survey Magazine* #81 (November 2001)). Beginning in 2004, services provided by bank affiliates and by the non-bank affiliates of United States banks have been included in the statistics. Also since 2004, the statistics have been presented as “services supplied” (equivalent to services output) rather than “sales of services”. Compared to sales of services, services supplied adds (a) wholesalers’ and retailers’ distributive services, (b) insurers’ premium supplements and (c) banks’ implicitly charged services, subtracting a proxy measure of insurers’ expected losses. For more information, see *Survey* #89 (October 2009).

F.4. UCI and partner country

15.106. Determining the country of the ultimate controlling institutional unit (UCI) is the most important task in FATS compilation work. The UCI is the recommended basis for classification by country for inward FATS, but it is also relevant in some respects for outward FATS. (See MSITS 2010, box IV.2, and chapter 1, section C of the present *Guide*).

15.107. Although many countries have been able to implement that concept, it may be difficult to define control relationships using the criteria as defined in international guidelines. Some countries have used the percentage of equity shares as a first estimation of the percentage of control of the voting power. In that context, compilers should note that large enterprises usually have complicated structures. Small and medium-sized enterprises tend to have simple structures, and the immediate controller is often the ultimate controller. However, when there is indirect control, the UCI may be more difficult to identify.

15.108. **Compiling inward FATS.** For inward FATS, variables for a given affiliate are attributed in their entirety to a single country of control. As descriptors of the operations of affiliates, they should not be factored down by share of ownership of voting power or equity, nor are the values of the variables to be apportioned between the controlling enterprise and any foreign minority owners of voting power.

15.109. Data on the UCI should be directly available as a by-product of FDI statistics.²⁶⁴ Alternatively, information on the UCI can be drawn from FATS or other data sources, or derived from a combination of sources and/or registers. If the UCI cannot be extracted directly from existing data, the decision about the UCI should be based on a step-by-step analysis of control relationships up the ownership chain in the enterprise group. MSITS 2010, BD4 and HEGI suggest some factors that could be used to decide how to define the country of the UCI for specific examples, in particular in the case of a group of affiliated investors (i.e., determining the status of the different

²⁶⁴ BD4 strongly encourages the reallocation of all FDI positions (voting power of 10 per cent or more) to the country of the ultimate controlling parent (UCP) of the direct investor. To the extent that the UCPs of all direct investors in resident enterprises are identified, the UCPs of those direct investors with controlling interests in residents will be available. In order to apply the directional principle, FDI statistics identify whether the resident direct investment enterprise has a foreign or domestic UCP (noting that this parent will be controlled by itself and so will have a resident ultimate parent, if there are no controlling links above it).

investors, e.g., direct relationships versus indirect, government entities, special purpose entities (SPEs), etc.).

15.110. MSITS 2010 concludes that in the absence of any factor that could be used as a basis of attribution, the value of FATS variables may be allocated evenly among the foreign countries of control. However, data so allocated may pose problems of interpretation, and efforts should first be made to determine a basis for allocation to a single country (see MSITS 2010, section H.1, for more information). The Eurostat *FATS Recommendations Manual* provides useful additional considerations on the determination of the UCI. If necessary, it is advisable to check with important partners about how the decision on the UCI has been achieved for bigger players. This can in particular be relevant at the regional level, where a multinational enterprise may have established an affiliate or regional headquarters in one country that controls affiliates in other countries of the region.

15.111. Frequently, the first foreign parent and the ultimate investor are the same. Although for inward FATS the recommendation is to allocate data to the country of the UCI as a first priority, in practice that might be difficult to achieve, in particular in the initial stages of development of a FATS national compilation framework. In practice, many economies initially develop their inward FATS classifying information on the basis of the immediate controlling country, before moving to a classification according to the country of the UCI. The present *Guide* proposes such an approach for compilers who are not able to determine the UCI when they start compiling FATS. In fact, that information on immediate controllers is available by referring to FDI data. If FATS entities are identified through linkages with FDI data or collected directly through FDI surveys, data on the country of immediate foreign parent should be readily available. To facilitate comparisons with those data, MSITS 2010 encourages compilers to make available data classified by the country of the first foreign parent on a supplementary basis.²⁶⁵ However, in light of the relevance of the ultimate-controller basis and the demonstration by a number of countries that compilation on that basis is feasible, the present *Guide* advises the compilation of data on an ultimate controller basis as soon as achievable (i.e., as data sources, linking procedures or compilation procedures permit).²⁶⁶

15.112. For certain countries, it may be of interest to compile operations data beyond the control relationship, e.g., for associates (share of control between 10 and 50 per cent). This may be driven by the fact that in those particular countries, the law does not allow foreign investors to own a majority equity stake either for all activities or for strategic ones for the compiling economy. In such cases, and if of interest to the compiling economy, information could be compiled on operations, but with separate breakdowns for the activities of majority-controlled affiliates (over 50 per cent owned, i.e., FATS) and minority-owned affiliates (e.g., 10 to 50 per cent).²⁶⁷ However, a clear distinction should be made between both data sets so that users are informed of any divergence from international guidelines.

15.113. Compiling outward FATS Outward FATS are statistics on foreign affiliates controlled by residents of the compiling economy and should include all controlled foreign affiliates, regardless of whether the control in the affiliate is held directly or indirectly through a chain of ownership and regardless of whether the direct investor in the compiling economy is the UCI unit or is, instead, an intermediate investor in an ownership chain. The data should be allocated to the country in which the operations of the affiliate take place.²⁶⁸ In accordance with the treatment of foreign-controlled enterprises in the 2008 SNA, the value added in production by the enterprise is attributed in all cases to the economy of location of the enterprise. In other words, it is

²⁶⁵ As a matter of comparison, BD4 encourages that supplemental inward FDI position statistics be compiled on an ultimate investing country (UIC), and the corresponding industry sector.

²⁶⁶ Identification of the UCI can also be used to identify cases of round-tripping in inward FATS statistics. Round-tripping refers to the channelling abroad by direct investors of local funds that are then subsequently returned to the local economy in the form of direct investment.

²⁶⁷ It is important to note that for the latter, this will lead to double counting when comparing with data compiled by other countries.

²⁶⁸ This is in contrast to the guidelines for FDI. According to BD4, if the ownership is through a directly held affiliate located in another country, the variables should be attributed to the country of that affiliate. BD4 included in its research agenda the presentation of FDI positions by the country in which the affiliate is located (ultimate host country). Because of the difficulties in tracking financial flows from the immediate counterparty to the ultimate destination, most countries present only FDI data attributed to the immediate counterparty.

included in the GDP of the economy in which the enterprise is located. In addition, variables should not be apportioned according to the level of control (e.g., 100 per cent of sales should be reported, even if the mother company controls less than 100 per cent of the voting power).

15.114. However, because the activities of an affiliate held through an ownership chain could be recorded in the FATS of both the ultimate and intermediate investors, and in order to facilitate international aggregation without double-counting, compilers are strongly encouraged to identify the aggregate share of FATS variables accounted for by enterprises for which the compiling country is the ultimate controller. Of particular interest will be data on that set of foreign affiliates belonging to ultimate investors resident in the compiling economy. (See section G for more information on UCI and regional aggregations.)

15.115. It is advised that FATS data be attributed geographically, as a first priority, to the economy of the UCI unit for inward FATS and to the economy in which the affiliate's operations are taking place for outward FATS. If control relationships cannot be clearly established, compilers should adopt a step-by-step approach to determine them. For big players, it is good practice to investigate ways to coordinate with compilers in major counterparty countries. The present *Guide* further advises that ownership of 50 per cent or more of equity shares could be used in the compilation process as an approximation to determine control. However, compilers should aim to work on the basis of control relationships. Although the first priority for inward FATS is to allocate variables to the UCI, in the initial stages of FATS compilation, compilers can consider producing data according to the country of the immediate controller if this information is readily available from FDI data. In fact, MSITS 2010 proposes such an approach for compilers that are not able to determine the UCI when they first start compiling FATS. Outward FATS should be compiled for all affiliates controlled by enterprises resident in the compiling economy. For reporting to regional and international organizations, outward FATS data should also be compiled for the subset of affiliates of UCIs of the compiler's economy (i.e., controlling units in the compiling economy that are not themselves controlled from abroad).

15.116. **European Union.** Identifying the UCI plays a crucial role, as all data for foreign affiliates under direct or indirect control should be attributed to the country of the UCI. If the information on the UCI is not available from the existing data, the European statistics on FATS follow a general rule, which says that the identification of the UCI should be based on a step-by-step analysis of control relationships up the ownership chain in the enterprise group. Once the top enterprise of the group is identified, its decision-making ability must be examined.

15.117. An important source for identifying affiliates and allocating them to the UCI should be the new EuroGroups Register (EGR). The EGR should cover, step-by-step, all multinational enterprise groups operating in the European Union. This will help to correctly identify the country code of the UCI to which the enterprises belong. With a full and well-developed EGR, no double-counting or gaps will exist and the same data sets from different compilers will be linked.

G. Regional aggregation

15.118. Section G is mainly for compilers of regional and international organizations, but it also provides more insight as to the reason that outward FATS data are also needed for a UCI concept (i.e., for outward FATS, only data where the parent entity is not itself controlled from abroad), as opposed to a national concept (where all outward

FATS are considered, whether or not the mother company is a UCI). Indeed, in that context data will be compared from one country to another, and in certain cases it will be necessary to compute regional or world aggregates. If all countries apply international guidelines in the same way, in principle, and if UCIs are detected in a consistent way, inward FATS data compiled by countries will be free of duplication. That will not be the case for outward FATS, as the main recommendation is to compile data on foreign affiliates of all controlling entities established in the compiling economy, whether UCIs or units that are themselves controlled from abroad. However, following international recommendations, compilers should also compile information focusing on affiliates of UCIs of the compiling economy. That information should be used by regional or international organizations when constructing aggregates for outward FATS.

15.119. In producing such aggregates, it is important for common rules for collecting and compiling FATS to be adopted by the countries participating in the group (i.e., beyond the internationally agreed definitions). An important aspect to consider when producing such aggregates is the possibility of distinguishing intraregional FATS from FATS with the rest of the world. To do this, it is necessary for countries to compile information according to agreed intra- and extraregional definitions and/or have the necessary partner country detail. For outward FATS, it is important to use data compiled by countries referring only to the affiliates of UCIs of the compiling economy (i.e., foreign affiliates of resident units not themselves controlled by non-residents). A set of guidelines should be established on the basis of international recommendations and the level of detail provided. Finally, it is necessary to ensure that the confidentiality of information is still ensured when computing regional aggregates (see the description of the European Union experience).

European Union experience

15.120. The legal framework for the provision of FATS in the European Economic Area (EEA) is regulation No. 716/2007 of 20 June 2007. In addition, Eurostat publishes the *FATS Recommendations Manual*, which provides a common methodological framework for definitions and concepts for national compilers in order to produce a harmonized set of FATS data across the Member States. Having a comparable set of FATS data is a precondition for compiling meaningful, reliable and high-quality European aggregates.

15.121. Inward FATS and outward FATS data are collected from the member states of the European Union and the European Free Trade Association (EFTA) countries on an annual basis. Data collection has been mandatory since 2007, the reference year. One of the most important concepts when looking at the European statistics is that FATS should be compiled according to the UCI concept. The UCI is the institutional unit (enterprise, branch) proceeding up a foreign affiliate's chain of control that is not controlled by another institutional unit (enterprise, branch).

Chapter 16

Compilation of additional indicators on the international supply of services

16.1. Chapter 16 focused on the compilation of additional indicators on the international supply of services, in particular data on the number of persons/trips relevant to modes 2 and 4 and the use of data on services production, prices, employment or sectoral performance indicators. Also, linking trade and business registers offers the potential for the compilation of new types of data. Section A introduces the general purpose of the chapter and Section B provides a summary of good practices with respect to additional indicators on the international supply of services. Section C contains an overview of the compilation of variables on the movements of natural persons under modes 4 and 2 of the supply of services. Section D describes the linking of business and trade registers. Finally, section E lists possible existing additional indicators and the level of detail necessary for a full analysis of services sectors in the context of the international supply of services.

A. Introduction

16.2. While most of the present *Guide* provides good practices for obtaining the value of the international supply of services (i.e., the value of trade in services or sales/output of services of affiliates), trade negotiators and analysts need additional information on the market performance of individual service sectors, such as foreign direct investment flows and stocks, research and development expenditure in affiliates and income flows relating to foreign affiliates active in services sectors. In the same way as there is interest in the monetary and non-monetary measures of merchandise trade, non-monetary information drawn from various quantitative indicators is also important for assessing trade commitments and for conducting further in-depth analysis on the international supply of services (e.g., number of modes 2 and 4 persons, number of foreign affiliates established abroad in the context of mode 3, etc.).

16.3. The present chapter aims at presenting such additional data items, many of which are already defined within other statistical frameworks and may be extracted without additional cost if the level of detail needed is readily available (i.e., the frameworks for FATS, FDI statistics and sectoral statistics, e.g., tourism and education). Such additional data items will be further detailed in section E. Linking trade and business registers is also a new line of work that compilers should be aware of, given the potential that such an exercise offers for compiling new sets of data of interest to policymakers with little additional effort or cost (section D).

16.4. However, meeting user needs requires the development of new data compilation systems, or the extension of existing ones. For example, in the case of mode 2, information on the number of persons/trips (section C.2) travelling abroad and consuming services, whether for personal or business reasons, is in high demand. Such extension is even more valid for a variable of greater interest to negotiators and ana-

lysts: the number of persons moving to provide services under arrangements covered by mode 4 (section C.1).

16.5. Knowing how many people are providing services abroad (flows and stocks and the number of associated trips) is very important for analysis of both GATS and international mobility. First, as stated above, as for merchandise trade, non-monetary (quantitative) statistics may usefully complement value data about the mode 4 supply of services. Second, given the interest that mode 4 generates among officials and research institutions involved in the international supply of services and/or migration issues, quantitative data provide a useful gauge of the relative importance of mode 4 movements of persons within wider economic international mobility. That is why the present chapter focuses particularly on mode 4 number of persons and trips. The chapter identifies sources that could be used and elaborates how relevant statistics could be produced. In the context of mode 4, a subset of the population of business travellers will be of particular interest, but other categories of internationally mobile individuals will also be relevant.

B. Summary of good practices

16.6. The identification of mode 4 movements and stocks in existing sources is a new area of work. The present *Guide* suggests dealing with that issue in stages. For incoming and outgoing mode 4 movements, compilers should take into account the needs of users (in particular for categories of primary interest) and the various possibilities and drawbacks of each data source.

16.7. As a starting point, it is suggested to compile rough estimates of the size of mode 4 movements in terms of the number of natural persons or, if easier, to collect data on the number of trips. This could be done if appropriate sources are identified, grossed up or estimated using an appropriate data model. However, the objective is to have more pertinent and detailed data on the number of persons. Breakdowns by purpose, type of service supplied, country of origin or destination should be compiled for inbound and outbound flows and stocks. To enhance the usefulness of the compiled data, they should be produced, in the long run, with a breakdown by length of stay and occupation/skills of individuals (e.g., using the International Standard Classification of Occupations (ISCO) 2008 or the International Standard Classification of Education (ISCED) 2011).

16.8. Compilers should strive to obtain, as a first priority, information for the mode 4 categories of persons that are of most interest to their economies (generally, contractual service suppliers, whether employees or self-employed, or intracorporate transferees), whether incoming or outgoing. This could be done by analysing information needs. A longer-term goal would be to obtain data for all mode 4 categories and all service sectors, both for incoming and outgoing persons/trips, thereby enabling overall international comparisons.

16.9. The compilation of mode 2 data on inbound and outbound flows of persons should be given more priority than the compilation of data on stocks, except if the latter is deemed necessary for specific services sectors or categories of persons (for example, education/students or health/medical patients). Data should be broken down by purpose of movement, type of service consumed (using EBOPS 2010) and destination/origin of persons or trips. Although of lower priority in the context of MSITS 2010, a breakdown according to length of stay could be compiled.

16.10. For modes 4 and 2 quantitative indicators, it is good practice to concentrate on obtaining annual statistics first, as they should be sufficient to serve most

analytical and monitoring needs. If, in future, compilers identify the need for more frequent statistics, their compilation could be envisaged but possibly at a less detailed level.

16.11. Given the policy relevance of such information, compilers are encouraged to analyse the national possibilities for compiling trade in services data by enterprise characteristics by linking trade in services data with information drawn from the SBR. Although foreseen as a longer term objective, compilers should keep in mind the need for additional indicators in relation to services trade analysis and negotiations. Such indicators should be identified in collaboration with users, but some suggested indicators, to serve as a starting point, are listed in section D. Given that this information is linked with the needs of other statistical frameworks, the present *Guide* strongly advises that trade in services compilers cooperate with compilers in charge of data collection and compilation in the respective statistics domains.

C. Mode 2 and mode 4 movements and stays

16.12. The supply of services involving movements of physical persons is defined in GATS as follows: (a) movements and temporary physical stay abroad of consumers of services (mode 2) and (b) movements and temporary physical stay abroad of persons to supply services (mode 4).²⁶⁹ Mode 2 is generally well understood, as it refers to any potential consumer travelling or temporarily staying abroad for any purpose (e.g., leisure, studies, health, business or employment) and consuming services while abroad. Mode 4 movements and stays are concepts more difficult to grasp. As described in box 1.1, mode 4 can, in general, be further described as covering foreign natural persons who enter the host economy to directly fulfil service contracts (contractual service suppliers, either self-employed or employees of a foreign service supplier);²⁷⁰ work in a foreign affiliate that delivers services (intracorporate transfer or directly recruited by the affiliate);²⁷¹ or negotiate services contracts or the establishment of a services-related commercial presence, without actually carrying out service transactions).

16.13. The availability of data on the number of natural persons moving (flows) between countries to consume (mode 2) or to supply (mode 4) services and on foreign natural persons present at a certain point in time (stocks) is highly important for trade policymaking and monitoring and for the analysis of the global supply of services, as well as for broader tourism and migration policy.²⁷² Data on the movement of natural persons should include detailed information on the characteristics and activities of such persons. This could also be useful for estimating the value of services consumed or supplied by them when value data cannot be obtained from other sources.

16.14. Taking into account the information needs, an indicative list of the variables covering movements (and stays) of natural persons under modes 2 and 4 is provided in the subsections B.1 and B.2. The prioritization of the variables is also discussed. It is recommended that compilers consider the list and incorporate it into their data collection and compilation programmes, taking into account their specific needs and circumstances. In that context, the present *Guide* strongly encourages compilers to coordinate with the entities in charge of the other (and broader) statistical frameworks used to collect and compile such data (e.g., tourism, migration or employment statistics).

16.15. Compilation of the number of persons/trips does not necessarily always demand sophisticated compilation methods,²⁷³ but it does require the availability of a rather focused and efficient data collection mechanism. Due to the entanglement of the collection and compilation of the number of mode 2 and mode 4 movements and stays, the present chapter mainly presents the types of breakdowns required and com-

²⁶⁹ Further information on definitions and recommendations on mode 2 and mode 4 can be found in chapter 1 of the present *Guide* as well as in chapters II and V of MSITS 2010.

²⁷⁰ In general the transactions would be measured as trade in services (mode 4) in the BOP services account (see chap. 14, sect. C).

²⁷¹ The supply of the service to the client is through mode 3, and the transactions would be recorded by FATS as services output of foreign affiliates (see chap. 15).

²⁷² See also MSITS 2010, chap. V, section A.

²⁷³ Either data would need to be grossed up to be representative of the whole population, or, alternatively, data could be used in a data model to be grossed up.

plements chapter 11 by presenting potential sources of information. The collection of data on the number of persons moving abroad (or trips) and/or on the characteristics of trips is dealt with in the context of surveys of businesses (chapter 6) and of persons and households (chapter 7) and administrative sources (chapter 9).

16.16. It should be noted that information on the number of persons travelling during a given period of time is difficult to collect, as many sources rather provide information on the number of trips (or on fractions thereof).²⁷⁴ That means that the same person may be counted more than once in a reference period. In other words, one will not be observing the number of persons, but rather the number of trips/movements or number of permits. However, while in certain cases, it may be possible to identify individual persons and link them to trips/movements or permits, such identification will most likely not be feasible in the majority of data sources. For mode 2 that issue may not necessarily be important, as statistics based on trips/movements are consistent with the information needed, but for mode 4 it may be important, as the primary interest may be in the number of persons, with the number of movements and/or permits being of secondary relevance. However, if data on trips are of good quality, such data can be used to estimate the number of persons travelling under the two modes.

²⁷⁴ For example, border surveys capture information about a particular individual on a given trip. Since a person can make several trips during the same reference period, the number of trips and the number of persons travelling are usually not the same.

16.17. The following quality issues need to be considered in the context of the compilation of data on the number of persons and or movements/trips in relation to modes 2 and 4: Do the primary observations cover the whole population of interest or the most important subgroups? Can we observe the characteristics of the relevant statistical units? Do we observe (obtain good approximations of) the characteristics of interest using particular data sets? Are the observations reliable and the resulting statistics sufficiently accurate for both levels and changes/differences? Do we obtain the statistics with the required frequency and timeliness?

16.18. Building stronger institutional arrangements is, therefore, a precondition for success in compiling quantitative indicators on modes 2 and 4 movements and stays. No single source can provide statistics on all those categories, and the direction of movement (e.g., incoming/outgoing) increases the difficulty for data producers. Thus, it will often be necessary to combine statistics on the basis of different sources and data collection methods. This is an additional argument for encouraging different institutions to work together. The development of clear guidance for administrative forms and statistical questionnaires will be very important given that the subject is often difficult to understand. It should be noted, however, that the challenge is to make respondents understand what information is requested. This does not necessarily mean that the statistical concepts must be fully explained, as the relevant statistics may be derived through the application of algorithms to the responses to questions that are easy to understand and concern information that respondents can easily recall or obtain from records readily available to them.

16.19. Flows and stock data must be compiled for modes 2 and 4 quantitative indicators. Compilation of flow data requires attention to such issues as differences in coverage of data sources, methodology for making necessary adjustments, grossing up, etc., of gathered information so that the resulting statistics are a fair representation of the target population and are of sufficient quality. Stock data are connected with flow data, as they result from the accumulation of flows of previous periods and are changed by the inflows and outflows in the period under consideration. However, compiling a base or benchmark figure for the stock at a given time may be difficult, in particular given the high mobility of persons concerned. For stocks related to modes 2 or 4, presence in the compiling economy, the arrival of inbound persons or trips, would add to the inward stock, whereas those departing would subtract from the

inward stock. For stocks related to modes 2 or 4, presence abroad, returning outbound persons or trips, would subtract from the outward stock, whereas those departing would add to the outward stock. Compilers need to ensure that such calculations are made at a specific and regular point in time within the period under consideration (e.g., beginning, middle or end of the period).

C.1. Movements and stays of persons related to mode 4

16.20. As described in chapter 11, the potential data sources for mode 4 movements are enterprise surveys (chapter 6), administrative sources (chapter 9), household and labour force surveys, population censuses and border/passenger surveys (chapter 7). There are no dedicated, comprehensive data sources for mode 4 movements and stays, which means that compilers can use one of the sources listed above, depending on the type/category of inward or outward stocks of mode 4 for which information is to be compiled. This could be established based on identified needs and potential sources. Examples include the following:

- (a) Trade in services surveys would probably be the best source for collecting data on contractual services suppliers alongside the data on the value of the contracts;
- (b) FATS data sources could be useful on intrafirm movements²⁷⁵ or direct recruitments by foreign affiliates;
- (c) Other enterprise surveys, covering specific services sectors, such as temporary employment agencies, could also be specially tailored to capture information of interest on mode 4;
- (d) Border/passenger surveys should be considered for obtaining characteristics of those travelling for business, work or employment purposes, combined with counts of border crossings;
- (e) Household/labour force surveys could help to obtain information for outgoing mode 4 persons, in particular the self-employed, and, if relevant, such information could be combined with counts of outgoing persons/trips;
- (f) Business registers (see chapter 5) might contain information needed to identify potential mode 4 self-employed services suppliers;
- (g) Administrative sources (migration records, registers) might be used, in particular in receiving countries, and could offer useful records on counts of persons or trips, for example. Work permits or documents issued in the context of social security coordination and employment services could also be considered. In other words, there may already be relevant administrative information on the short-term movements of workers. However, compilers need to ensure that, in administrative sources, the categories that could be of interest for mode 4 are defined in such a way as to be close enough to the coverage (and, if possible, breakdowns) recommended in MSITS 2010 and the present *Guide*. If well-defined and used appropriately, entry/departure cards could be used to make a first selection of border survey respondents that could potentially be of interest in the context of mode 4. Those respondents could then be surveyed to obtain more refined information;
- (h) Similar considerations could be put forward for other sources. Finally, partner country data may provide useful information, given that it may be difficult or even impossible to collect details on the characteristics of incoming persons/trips through surveys of enterprises or households, or through administrative records for outgoing persons. In the same way, population

²⁷⁵ Whether the employer-employee relationship remains with the sending firm, i.e., corresponding to the rendering of services by the sending firm to the receiving one; or the employer-employee relationship is with the receiving firm.

sources tend to reflect outbound mobility better than inbound, which contrasts with migration data in which emigration is much harder to capture than immigration. As a consequence, partner country information could turn out to be essential and be used and compared through a clearinghouse for such data statistics. That implies, however, that the data collection and quality of the compiling country depend on partners' willingness and capacity to collect and provide high-quality data. As such, collection normally involves coordination and cost and, in the case of trade negotiations, certain interests, a central brokering institution may be important. Compilers need to be cautious in using partner country data, as definitions and national laws and regulations, etc. may differ. Refer to chapters 5, 6, 7, 9 and 10 for a more in-depth description of the respective data sources.

All the sources identified above offer some potential for collecting data. However, it is important to identify those in charge of the respective data collection mechanisms and to coordinate with them to see if it is possible and not too burdensome to identify, collect and compile data on the mode 4 categories of interest to the economy (both inward and outward) and their breakdowns. A comparison of data sources by purpose of mode 4 movement/stay and direction of movement is provided in chapter 11. Alternatively, compilers are advised to explore the possibility of combining obtained information and developing an appropriate model to derive the data and breakdowns of interest (see chapter 17).

16.21. For compiling data on mode 4 movements and stays, two groups of persons should be distinguished: those who will not be in an employer-employee relationship in the country in which they are temporarily present and those who will be in an employer-employee relationship in the country in which they are temporarily present (this refers solely to intracorporate transferees and those directly recruited by foreign affiliates). The present *Guide* advises the following statistical treatment of the two groups:

Persons who will not be in an employer-employee relationship in the country in which they are temporarily present the mode 4

The variables are flows and stocks and should be broken down as follows:

Outbound

- (a) **Flows:** the number of natural persons of the compiling country who departed to other countries to render services or negotiate a contract or the establishment of a commercial presence, as well as the number of their trips;
- (b) **Stocks:** the number of natural persons of the compiling country who were present in other countries at a certain point in time in the reference period (e.g., beginning, middle or end of the period) to render services or negotiate a contract or the establishment of a commercial presence.

Inbound

- (a) **Flows:** the number of natural persons of other countries who entered the compiling country to render services or negotiate a contract or establishment of commercial presence, as well as the number of their trips;
- (b) **Stocks:** the number of natural persons of other countries who were present at a certain point in time in the reference period (e.g., beginning, middle or end of the period) in the compiling country to provide services or negotiate a contract or the establishment of a commercial presence.

The information on the number of inbound/outbound flows (persons and trips) and stocks (persons) must be broken down by:

- (a) Purpose of mode 4 movement/stay abroad (outbound) or in the compiling economy (inbound), with at least a separate identification of the four main categories of mode 4 movement: service contract either by self-employed person or employee, intrafirm trade or not, or sales/commercial presence negotiation;
- (b) Service category;
- (c) Country of destination (outbound) or origin (inbound);
- (d) Duration (length of stay);
- (e) Skills/occupation of persons.

Persons who will be in an employer-employee relationship in the country in which they are temporarily present

The variables to be collected are the same as for the first group, except that the breakdown by purpose of stay should distinguish those relating to movements between affiliated companies (intrafirm transfer) from those that refer to direct recruitment by a foreign affiliate in the country of temporary stay. The status of employment for both categories is being an employee of the foreign affiliate. In addition, for the service category, since the employment of such persons is not necessarily directly related to the supply of the service by the affiliate to clients, compiling data broken down by type of service activity of the affiliate/employer (using ISIC rev.4 /ICFA rev.1) is recommended.

The present *Guide* advises that the compilation of data on stocks be given the same priority as the compilation of flow data, in view of their great importance for GATS mode 4 analysis.

16.22. Compilers should strive to obtain information for the mode 4 category of most interest to their economy (generally contractual service suppliers, whether employees or self-employed, or intrafirm transferees), whether incoming or outgoing. Identifying categories of interest could be done by conducting an analysis of the potential size of the population on the basis of the types of agreements signed by a country (e.g., free movement of persons); the estimated value of mode 4 trade, if certain visas that are issued are strongly related to trade in services; which services sectors are assumed to be a mode 4 comparative advantage of the economy (and conversely, how big could mode 4 imports be). The different circumstances in each country determine locally specific forms of the international supply of services through the presence of natural persons. A methodological approach to the production of statistics on mode 4 persons should take into account not only market specifics, but also incoming persons/trips and national regulations and policies on immigration and labour and on foreign investment and the international supply of services through the presence of natural persons, as well as the effectiveness of such regulations and policies. For instance, if foreign investment in a service industry is strictly controlled, then intrafirm transferees cannot be considered for estimation, or if low-skilled workers cannot get work permits, the estimation of the number of mode 4 persons could be concentrated in higher skilled occupations. Therefore, a step-by-step approach should be adopted. In the early stages, each economy could establish a required statistical capacity for compilation on mode 4 movements and stays, depending on their economy's circumstances, identifying simplifying features to determine key categories of data and major authorities with which to cooperate. Compilation should be based on

facts and respond to the recommendations of MSITS 2010. A longer-term goal would be to obtain data for all mode 4 categories and all service sectors, both for incoming and outgoing persons/trips, thereby enabling overall international comparisons.

16.23. With respect to periodicity, the compilation of detailed data on an annual basis should serve most information needs. However, given the strong link of such information with trade/labour mobility policy, it could be of interest to also envisage the compilation of some information for shorter periods, for instance, on a quarterly basis, at least for main aggregates.

16.24. As indicated previously, depending on the source used, the compilation of data on trips is significantly less resource intensive and provides a satisfactory information basis for policy purposes and the estimation of missing value data. Therefore, as a general rule, the present *Guide* advises compilers to concentrate first on the compilation of data on inbound and outbound trips and to use those data for the compilation of data on persons, as necessary.

16.25. For the country of destination or origin, the primary focus should be on the country of the supplier and that of the consumer of the service. In the case of receiving countries (for which mode 4 data will be of primary interest, given the direct relationship with commitments made), priority should be given to identifying the country of origin of the supplier, in particular for contractual service suppliers/employees, where that can be more difficult to establish, as it can differ from the country of the individual(s). When the source data does not enable this, the country of origin of the person could be used as a reasonably good indication of the country of origin of mode 4 trade in services.

16.26. The identification of purposes of business-, work- or employment-related movements using internationally agreed definitions ensures the compilation of comparable data needed for trade and other purposes. Adopting such an approach can also facilitate the estimation of some value data for resident/non-resident trade in services transactions. Compilers are advised, as a starting point, to use the list of purposes of the trip or migration provided in table V.3 of MSITS 2010, which is based on the classification of purposes of tourism trips in IRTS 2008 and on the migrant and non-migrant categories provided in *Recommendations on Statistics of International Migration* (RSIM) revision 1.²⁷⁶ The RSIM list contains two main groups: the first one refers to the tourism visits/trips and the second to all the other RSIM rev.1 categories. Within tourism visits/trips, two main purposes are identified: (a) personal and (b) business and professional. The first group is broken down into eight items (none is of interest in the context of mode 4), while the second is not subdivided. In view of the information needs related to mode 4, it is advised that compilers subdivide the latter group as set out in MSITS 2010, table V.3:

- (a) Contractual service suppliers, self-employed;²⁷⁷
- (b) Contractual service suppliers, employees of a juridical person (including intrafirm trade in services, which is equivalent to intracorporate transfers in which the employer-employee relationship remains with the sending entity);
- (c) Services sellers and persons responsible for setting up a commercial presence.

Within the RSIM categories of migrant work/employment-based settlement (i.e., where the employer-employee relationship is in the country of destination of the person), a separate identification of intracorporate transferees or those directly recruited by services-producing foreign affiliates would complement the mode 4 information needs.

16.27. Compilers should take into account the MSITS 2010 recommendation that, notwithstanding the difficulties involved, they should break down relevant sta-

²⁷⁶ See IRTS 2008, paras. 3.15-3.21; MSITS 2010, para. 5.26, fifth bullet point; and RSIM rev.1, chap. 4.

²⁷⁷ This category is to be compiled for mode 4 purposes if there is no employer-employee relationship in the host economy (see MSITS 2010, box V.2).

tistics between permanent and non-permanent stays according to their national definition of residence, regardless of whether stays may be substantially longer than the one-year guideline generally suggested by statistical systems. In that connection, it should be recalled that in tourism statistics, the duration of trips is measured in terms of the number of overnight stays, and will include only those not exceeding one year. In the case of mode 4 where the employer-employee relationship is in the country of temporary stay, one should turn to migration statistics. Migration statistics refer only to short-term (3 to 12 months) and long-term (more than 12 months) stays. There are no recommendations in either framework on groupings as identified in MSITS 2010. MSITS 2010 recommends,²⁷⁸ as a long-term goal, that mode 4 stays be broken down according to the following time frames:

- (a) Stays of less than three months;
- (b) Stays of between three months and less than one year;
- (c) Stays of between one and three years;
- (d) Stays of between three and five years;
- (e) Stays of more than five years.

When it comes to the length of stay, the information needs triggered by GATS for the variable number of persons or for the number of trips go beyond those used as guidelines in international statistical standards. Consequently, compilers should adapt that classification to their national needs and statistical systems (and laws) including the needs of national tourism statistics and migration statistics, as well as other types of statistics.

16.28. The detailed multipurpose international classification of services is provided in CPC, ver.2, while more aggregated services categories, adopted for use in statistics on service transactions between residents and non-residents, are contained in EBOPS. Compilers should select the services classification for use in the context of movements of natural persons/trips under mode 4, depending on their needs and circumstances, but are advised to do so on a basis compatible with EBOPS 2010 to facilitate the analysis of that information, as well as link, if possible and relevant, with the compilation of some BOP services items and FATS. If a product classification cannot be used, then the field of activity of the service supplier could be used (i.e., using ISIC rev.4 or ICFA rev.1).

16.29. Although not completely consistent with GATS definitions, such an integrated approach with tourism and/or migration statistical definitions will strengthen the institutional arrangements in data collection and compilation and will ensure a more efficient use of limited statistical resources, while providing information that can be used as reliable indicators for mode 4. Another potential benefit of cooperation or coordination could be to ensure consistency between enterprise and household/labour force surveys that have work conditions/policy as common subject matter, and could, therefore, be combined to obtain data on mode 4.²⁷⁹

16.30. The breakdown by skills/occupations is entirely optional. However, it is advised that countries follow the International Standard Classification of Occupations (ISCO-08) and/or the International Standard Classification of Education (ISCED) 2011 if such data are compiled.

Country experience: China: compilation of mode 4 number of persons

16.31. China was developing the methodology to estimate the number of mode 4 persons for many years. The work was focused on two areas: overseas contracted projects and overseas labour service cooperation. The former refers to overseas con-

²⁷⁸ MSITS 2010, para. 5.26, fifth bullet point.

²⁷⁹ A similar approach to the work of European Foundation for the Improvement of Living and Working Conditions (Eurofound) could be established for mode 4 information purposes. In its work, Eurofound aims to provide information on the quality of living and working conditions in Europe. In order to realize that goal, it combines three surveys, each targeting a different population, to obtain specific information. The European Working Conditions Survey questions workers to gain insight on the quality of work and employment. The European Company Survey targets managers and employee representatives in companies to gather information on workplace practices. The European Quality of Life Survey interviews European citizens to obtain a perspective on living conditions and perceptions of quality of life. Despite those differences, in terms of target population, Eurofound aims to harmonize survey methodology whenever possible, to ensure that lessons learned in one survey are implemented in the others (see www.eurofound.europa.eu/surveys/methodology/index.htm).

struction projects carried out by Chinese firms and their foreign affiliates. It includes persons working on projects where the establishment of a branch or affiliate is not necessary (either for short-term projects or those that do meet the criteria for the establishment of a branch), i.e., referring to contractual services suppliers in the construction sector (most of the income refers to such projects). It also covers employees sent by the mother (construction) company to work in affiliates or branches abroad (intracorporate transferees). The overseas labour service cooperation refers to contractual service suppliers. They are employed by the China Labor Service Cooperation firms that offer services to overseas firms and organization (i.e., clients abroad) on the basis of on service contracts. Data on outflow and stock of mode 4 persons by type of contract is almost completely covered by the direct data collection of China. Self-employed contractual service suppliers are not covered, nor are intracorporate transferees in other sectors.

16.32. According to the Regulation of Overseas Contracted Projects and Regulation of Overseas Labour Service Cooperation of China, in order to be able to sign contracts, qualified enterprises should apply for approval for the right to trade services through the presence of natural persons. The relevant authority is not only responsible for applications of enterprises or services suppliers, but also participates in the collection and aggregation of data on outflow and stock of mode 4 persons in the category of contractual services. Two statistical programs have been jointly established by the Ministry of Commerce and the National Bureau of Statistics. According to those programmes, relevant enterprises are obligated to report required information, such as the type of service project, outflow and stock of persons, occupation or overseas work, length of stay, revenue and country of destination. Administrative sectors at all levels collect data and check it. The national authority is responsible for the aggregation and annual publication of the data in the *China Statistical Yearbook* and the Chinese statistics of trade in services, as shown in table 16.1. Data are also broken down into eight sections of the Industrial Classification of the National Economy of China (agriculture, forestry, animal husbandry and fishing; manufacturing; construction; transport; computer services and software; accommodation and restaurants; scientific research, education, culture, sanitation and sports; and others.

Table 16.1

Outflow and stock of mode 4 Chinese persons in 2012 (contractual services) (units: persons)

Variable Country (region)	Total		Contractual Projects		Labour Contracts	
	Outflow	Stock	Outflow	Stock	Outflow	Stock
Total	511,745	850,181	233,365	344,618	278,380	505,563
Angola	23,525	43,604	17,445	31,905	6,080	11,699
Russia	15,354	18,822	4,502	4,088	10,852	14,734

Note: Stock indicates the total number of persons sent overseas by the end of the year.

C.2. Movements and stays of persons related to mode 2

16.33. The potential sources for quantitative data on mode 2 movements and stays are, in most cases, closely related to the tourism/travel data collection and compilation mechanism. Household surveys, including labour force surveys, can capture information on individuals who have travelled abroad (outbound flows). Border or passenger surveys could be used to gather information on persons who have travelled abroad (outbound flows) as well as those who have travelled to the compiling country (inbound flows). Those will mainly provide information on the characteristics of the travel/trips, while border counts (or counts in ports of entry-departure) will provide

figures on the number of entries or departures. As described in the previous section, data from that source could also be used to satisfy some mode 4 information needs. Chapter 7 further describes data collection through surveys of households and persons. Administrative sources could be used in that context, although it may be difficult to clearly identify the categories of interest (see chapter 9). Enterprise surveys could also be used to obtain mode 2 demand-side statistics (if employers are asked to report on the travel abroad of their employees), but most likely they will be used to generate supply-side data (surveys targeting accommodation services, tourism attractions or such specific services sectors as health or education establishments). Other sources may also be of interest, depending on the situation of countries. A data model could be used to combine information from multiple sources to obtain mode 2 statistics with relevant breakdowns (see chapter 17). A comparison of data sources by purpose of mode 2 movement/stay is provided in chapter 11.

16.34. Mode 2 quantitative data should be compiled for inbound and outbound flows and stocks as follows:

Outbound

- (a) **Flows:** the number of natural persons of the compiling country who departed to other countries to consume services, as well as the number of their trips;
- (b) **Stocks:** the number of natural persons of the compiling country who were present in other countries at a certain point in time in the reference period (e.g., beginning, middle or end of the period).

Inbound

- (a) **Flows:** the number of natural persons of other countries who arrived in the compiling country to consume services, as well as the number of their trips;
- (b) **Stocks:** the number of natural persons of other countries who were present in the compiling country at a certain point in time in the reference period (e.g., beginning, middle or end of the period).

The information on the number of inbound/outbound flows (persons and trips) and stocks (persons) must be broken down by:

- (a) Country of destination (outbound) or origin (inbound);
- (b) Purpose of stay abroad (outbound) or in the compiling country (inbound);
- (c) Types of (services) products consumed;
- (d) Duration (length of stay).

In the majority of cases, mode 2 stock information will be of minor interest to users/policymakers. It is, therefore, good practice for compilers to identify with users the relevant categories of persons/purposes for which stays will most probably be of a more long-lasting nature and, consequently, stock data of more interest, for example, in the case of students.

16.35. Compilers should select the services classification for use in the context of movements of natural persons under mode 2, depending on their needs and circumstances, but are advised to do so on a basis compatible with EBOPS 2010 (in particular, the travel breakdown by product consumed) to facilitate the analysis of that information as well as link, if possible and relevant, with the compilation of some BOP services items and FATS. In view of the information needs related to mode 2 and tourism, it is also advised that countries build their breakdowns in a way that is useful for tourism statistics. Such an integrated approach will strengthen the institutional arrangements in data collection and compilation and ensure a more efficient use of limited statistical resources.

16.36. For the purposes of stay abroad or in the compiling country, compilers are advised, as a starting point, to make use of the classification of purposes of tourism trip provided in IRTS 2008. That classification contains two main groups of purposes: (a) personal and (b) business and professional. IRTS 2008 suggests a breakdown of the first group into holidays, leisure and recreation; visiting friends and relatives; education and training; health and medical care; religion/pilgrimages; shopping; transit; and other. The second group is not subdivided.²⁸⁰ Note that, from the perspective of the present *Guide*, it may also be useful to gather information on purposes other than tourism-related (e.g., education purposes for more than one year, or those who are temporarily abroad for employment purposes).

²⁸⁰ See ITRS 2008, chap. 3, sect. B.1 for more information.

16.37. Compilation of data on an annual basis should serve most information needs. However, it may also be of interest to obtain some information for shorter periods, for instance, on a quarterly basis, at least for some main aggregates. That would, in principle, also be linked to the needs of other statistical domains (e.g., tourism).

16.38. Table 16.2 shows an example for presenting data on mode 2 number of persons, mainly relating to tourism purposes. It is drawn from the UNWTO Compendium of Tourism Statistics. An extension that would serve the needs identified in MSITS 2010 would gather information on purposes other than tourism-related (e.g., education purposes for more than one year, or those who are temporarily abroad for employment purposes).

Table 16.2
Sample presentation of data on mode 2 number of persons, mainly for tourism purposes

Basic data and indicators		Units	2012
1. Inbound tourism			
Data			
Arrivals			
1.1	Total	Thousands	xxx
1.2	Overnight visitors (tourists)	Thousands	xxx
1.3	Same-day visitors (excursionists)	Thousands	xxx
1.4	of which, cruise passengers	Thousands	xxx
Arrivals by region			
1.5	Total	Thousands	xxx
1.6	Africa	Thousands	xxx
1.7	Americas	Thousands	xxx
1.8	East Asia and the Pacific	Thousands	xxx
1.9	Europe	Thousands	xxx
1.10	Middle East	Thousands	xxx
1.11	South Asia	Thousands	xxx
1.12	Other not classified	Thousands	xxx
1.13	of which, nationals residing abroad	Thousands	xxx
Arrivals by main purpose			
1.14	Total	Thousands	xxx
1.15	Personal	Thousands	xxx
1.16	holidays, leisure and recreation	Thousands	xxx
1.17	other personal purposes	Thousands	xxx
1.18	Business and professional	Thousands	xxx

Basic data and indicators		Units	2012
Arrivals by mode of transport			
1.19	Total	Thousands	xxx
1.20	Air	Thousands	xxx
1.21	Water	Thousands	xxx
1.22	Land	Thousands	xxx
1.23	railway	Thousands	xxx
1.24	road	Thousands	xxx
1.25	other	Thousands	xxx
Arrivals by form of organization of the trip			
1.26	Total	Thousands	xxx
1.27	Package tour	Thousands	xxx
1.28	Other forms	Thousands	xxx
Accommodation			
Total			
1.29	Guests	Thousands	xxx
1.30	Overnights	Thousands	xxx
Hotels and similar establishments			
1.31	Guests	Thousands	xxx
1.32	Overnights	Thousands	xxx
Expenditure			
1.33	Total	US\$ millions	xxx
1.34	Travel	US\$ millions	xxx
1.35	Passenger transport	US\$ millions	xxx
Indicators			
1.39	Average size of travel parties	Persons	xxx
	Average length of stay	Days	
1.40	Total	Days	xxx
1.41	For all commercial accommodation services	Nights	xxx
1.42	of which, "hotels and similar establishments"	Nights	xxx
1.43	For non-commercial accommodation services	Days	xxx
1.44	Average expenditure per day	US\$ millions	xxx
3. Outbound tourism			
Data			
Departures			
3.1	Total	Thousands	xxx
3.2	Overnight visitors (tourists)	Thousands	xxx
3.3	Same-day visitors (excursionists)	Thousands	xxx
Expenditure			
3.4	Total	US\$ millions	xxx
3.5	Travel	US\$ millions	xxx
3.6	Passenger transport	US\$ millions	xxx
Indicators			
3.10	Average size of travel party	Persons	xxx
3.11	Average length of stay	Days	xxx

D. Linking services trade data with the business register

16.39. Today, many compilers have started projects to link merchandise trade statistics to the business register at the microlevel in order to produce so-called Trade by Enterprise Characteristics (TEC) indicators (as published, for example, by Eurostat and OECD).²⁸¹ Those data indicate which firms, categorized by such variables as industry, size class, foreign ownership or geographical (subnational) region, are actually engaged in international trade. That information is considered very relevant for policy, as it shows the importance, for example, of SMEs or foreign-owned firms in total trade, and provides insight into which industries use what kind of imported products, which is vital for the analysis of global value chains.²⁸²

16.40. Similar data-linking activities can be conducted in the area of trade in services and are called Services Trade by Enterprise Characteristics (STEC). Those data are compiled by combining the information from enterprise or establishment trade in services surveys (generic or specialized) with the business register that contains information on industry classification, size class and other relevant stratifying variables. A well-maintained SBR (see chap. 5) is essential for such a data-linking exercise. Microdata linking is greatly facilitated when the trade in services surveys are sampled directly from that register and use the same statistical unit. Similarly, it is recommended to identify the full population of firms engaged in trade in services, for example, via a multiannual census or via VAT registers, in order to facilitate the grossing up of the data.

16.41. It should be noted that given the diverse nature of trade in services data sources, the total value of trade in services cannot be fully attributed to individual enterprises. Compilers should not see this as a weakness, but rather as a consequence of the fact that some services categories, notably travel, are collected through methods that render linking with the business register conceptually impossible.

16.42. It is good practice for compilers to carefully consider confidentiality issues when disseminating STEC data, as a more detailed breakdown of the services trade by industry and size class may make it easy to identify individual firms. In such instances, it is preferable to publish a set of tables that break down the services trade according to only one enterprise characteristic (e.g., either industry or size class), rather than a more detailed table that contains many cells with confidential information.

16.43. Further, as described in chapter 5, SBRs could prove useful in the compilation of additional data to support the analysis of services industries and the enhancement of comparability and consistency across collections, such as the particular example of potential mode 4 self-employed service suppliers indicated in Chapter 5, sections C.1 through C.3.

E. Other indicators of interest for the global analysis of service industries

16.44. Other indicators of interest for the global analysis of service industries are listed in MSITS 2010, paragraphs 5.83 to 5.86 and 5.111 to 5.112. The present chapter has already dealt in detail with the compilation of variables related to persons crossing borders and staying temporarily abroad in the context of mode 2 or 4. Beyond the FATS variables directly relevant to the international supply of services (i.e., turnover/sales or output and employment, in particular intracorporate), chapter 15 also extensively describes the compilation of other variables and their breakdowns. Among those variables, the number of enterprises and assets of foreign affiliates are of direct interest for commitments that could be made in trade or investment negotiations.

²⁸¹ See for Eurostat: http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/International_trade_by_enterprise_characteristics; and for OECD: www.oecd.org/std/its/trade-by-enterprise-characteristics.htm.

²⁸² See, e.g., the OECD-WTO trade in value-added (TiVA) initiative (www.oecd.org/industry/ind/measuringtradeinvalue-addedanoecd-wtojointinitiative.htm).

16.45. For the other indicators, MSITS 2010 does not suggest new recommendations for compilation, but rather indicates which statistics could be compiled and with which (additional and reasonable) breakdowns in order to be useful for trade in services policymakers and analysts. It builds upon existing data already compiled by many countries and collected by many regional and international agencies. The set of other indicators detailed in the following list is in no way exhaustive. Rather, it contains the indicators that will most likely be of interest to the majority of users:

- (a) Foreign direct investment statistics:
 - i. Financial transactions, income and positions;
 - ii. By destination and origin of investment (immediate and ultimate);
 - iii. By type of service activity (if possible, with a total for services);
- (b) National accounts statistics and SBS by industry:
 - i. Value added, output, employment and capital formation;
 - ii. By type of service activity (if possible, with a total for services);
- (c) Employment statistics by type of service activity (if possible, with a total for services);
- (d) Sectoral statistics:
 - i. Tourism (beyond the number of inbound and outbound visitors, discussed above):
 - a. Number of establishments, hotels and similar establishments, food and beverage serving activities, travel agencies and other reservation services activities;
 - b. Number of rooms, number of beds (including occupancy);
 - c. Number of employees by tourism industry.
 - ii. Research and development: gross domestic expenditure on research and development (total, financed by business enterprise, by Government, by higher education);
 - iii. Audiovisual services:
 - a. Number of Internet radio stations, radio channels and television channels;
 - b. Number of indoor cinemas, including multiplexes;
 - c. Number of distribution companies, including foreign controlled, and number of film exhibitors, including foreign controlled;
 - d. Number of national feature films produced (100 per cent nationally produced and internationally coproduced);
 - e. Gross box office receipts of feature films exhibited, including foreign feature films;
 - f. Number of admissions to feature films;
 - g. Number of feature films exhibited, both national and foreign;
 - iv. Postal and courier services:
 - a. Number of permanent post offices, including those staffed by administration officials;
 - b. Income for letter post, parcels and logistics services and postal financial services;
 - c. Number of letter-post items, ordinary parcels, including domestic service and international service-dispatch;
 - v. Construction:

- a. Number of contractors, including foreign controlled;
- b. Construction of new buildings (of which dwellings, non-residential and residential);
- c. Cement production;
- vi. Finance and insurance:
 - a. Domestic credit provided by the banking sector;
 - b. Insurance density;
 - c. Insurance penetration;
 - d. Interest rate spread;
 - e. Market capitalization;
- vii. Telecommunications: number of fixed (wired) broadband Internet subscriptions, Internet users, secure Internet servers, telephone subscriptions and mobile-cellular telephone subscriptions;
- viii. Transport: air, sea, road and rail, etc.:
 - a. Fleet (by country of ownership, country of registration, etc.);
 - b. Network;
 - c. Freight transport, national and international;
 - d. Passenger transport, national and international;
 - e. Container port traffic;
- ix. Education services:
 - a. Number of students (primary, secondary and tertiary education);
 - b. Outbound and inbound mobile students (students from a given country studying abroad);
 - c. Public and private current expenditure on education (primary, secondary and tertiary education);
- x. Environmental services:
 - a. CO₂ emissions, NO_x emissions;
 - b. Population connected to wastewater collection system;
 - c. Population served by municipal waste collection;
 - d. Hazardous waste generation;
 - e. Organic water pollutant (BOD) emissions
 - f. Other greenhouse gas emissions, HFC, PFC and SF₆;
 - g. Water pollution;
- xi. Health related and social services:
 - a. Number of hospital beds;
 - b. Number of physicians, dentistry personnel, nurses and midwives;
 - c. Life expectancy at birth;
 - d. Health expenditure, public and private;
 - e. Out-of-pocket health expenditure.

16.46. The sources and recommendations on the above-mentioned statistics are available from the relevant international manuals and guidelines. Some of those publications are included in the list of references in box 16.1. To respond to information needs, compilers are strongly encouraged to discuss with users what type of information would be necessary, as well as to ask those in charge of the collection and compilation of those statistics to identify what would be used or could be envisaged

for compilation (those in charge of collection could cover diverse units of the statistical office as well as various government agencies).

16.47. In addition to indicators that describe the performance of services industries, indicators to judge services flows on an inflation-adjusted base would be useful. However, export and import price indices for services are not easy to compile. While the Voorburg Group on Service Statistics focuses on the measurement of producer price indices, the *International Monetary Fund's Export and Import Price Index Manual: Theory and Practice*²⁸³ offers guidance for measuring prices of internationally traded services.

16.48. Services for which prices can be compiled using existing data collection systems fall into the domain of transport. Among price-related time series, the United States Bureau of Labour Statistics (BLS), for example, compiles air freight, air passenger and ocean liner freight rates. On travel and tourism, BLS derives price information from a subset of the consumer price index (CPI) for lodging, food, beverages, etc. from foreign visitors by country of residence. However, beyond transport and travel, price information on internationally traded services is scarce and further research is needed to develop the information.²⁸⁴

²⁸³ Available from www.imf.org/external/np/sta/xipim/pdf/xipim.pdf.

²⁸⁴ International Labour Organization and others, *Export and Import Price Index Manual, Theory and Practice* (Washington, D.C., IMF, 2009), p. 282.

Box 16.1

References for other indicators of interest for the global analysis of service industries

- *International Recommendations for Tourism Statistics 2008*, United Nations World Tourism Organization (UNWTO)
- *Manual on Statistics of International Trade in Services 2010*, chapter 5.
- 2008 SNA
- BPM6
- BD4
- *System of Health Accounts*, Organization for Economic Cooperation and Development (OECD)
- *Framework for cultural statistics*, United Nations Educational, Scientific and Cultural Organization (UNESCO) Institute of Statistics (UIS)
- *Measuring cultural participation*, UNESCO UIS
- ISCED 2011, UNESCO UIS
- ISCO 2008, International Labour Organization (ILO)
- *Frascati Manual: Proposed Standard Practice for Surveys on Research and Experimental Development*, OECD
- WTO Integrated-Trade Intelligence Portal, <http://i-tip.wto.org/services>, statistics module
- *Export and Import Price Index Manual: Theory and Practice*, International Monetary Fund (IMF)
- Conventional signs and abbreviations, from *OECD Quarterly International Trade Statistics, Volume 2014 issue 2*, Eurostat, http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/International_trade_by_enterprise_characteristics)
- Trade by Enterprise Characteristics (TEC) database, OECD, <http://www.oecd.org/std/its/trade-by-enterprise-characteristics.htm>

Chapter 17

Estimation and modelling of missing data and forecasting or back-casting

17.1. Chapter 17 describes the use of models and estimates to complement the observed data required for the compilation of statistics on the international supply of services, which are frequently needed because (a) part of the required information cannot be collected or can be gathered only at an unsustainable cost, and/or (b) the available sources cannot provide the required coverage, detail, frequency and/or timeliness foreseen by the international standards and/or (c) the various sources to be combined in the collection system are partially overlapping. The chapter contains the following sections: a summary of good practices (section A); imputation for filling data gaps and for data editing purposes (section B); forecasting, back-casting and revising time series (section C); allocating to individual EBOPS items and trading partners (section D); and model-based estimates (section E).

A. Summary of good practices

17.2. In order to properly carry out imputations needed for filling data gaps and for data editing purposes, it is good practice for compilers to first check and load data from primary and secondary sources, followed by integration, processing and analysis of data. If the compiler believes that editing of the source data might be needed, the source data provider should be contacted to edit or adjust data if deemed necessary.

17.3. For dealing with unreported or aggregated transactions due to thresholds applied by ITRS, different approaches could be used, such as collecting information on small-value transactions from periodic sample surveys or from an analysis of small transactions before the thresholds were raised. If a threshold is established, it is good practice for transactions below the threshold level to be reported in an aggregated amount and classified using the appropriate code. Alternatively, statistical estimations can be applied and updated periodically with actual data.

17.4. When data are not available on a sufficiently timely basis, the compiler may extrapolate certain series from earlier periods or interpolate new data points within a range of known data points. The choice of extrapolation or interpolation method should be based on the characteristics of the past series and the range of information available at the time of compilation. If other more frequent indicators provide evidence of seasonality in the series, then the data models and interpolation techniques should take those into account.

17.5. For back-casting, in the absence of relevant indirect measures, compilers may consider using a constant percentage change between the start and end points, if no better approximation is feasible. It is good practice for such relationships to be analysed to verify that they hold over time in order for the compiler to determine the appropriate back-cast time period. Again, if other more frequent indicators provide evidence of seasonality in the series, then the back-casting techniques should take that into account.

17.6. Model-based estimates can be used for various statistics on the international supply of services. For instance, for estimating travel services, a model could be constructed using primarily the number of visitors and other short-term individuals travelling (partially available from tourism statistics or transportation operators) and estimates of per capita expenditure obtained from occasional surveys of persons who travel. Additionally, for estimating the value of mode 4 and the number of persons moving under mode 4, model-based estimates could be developed using existing statistics on the international supply of services, travel information (including model-based estimates of the number of travellers), as well as existing data from, for example, tourism, migration or employment statistics. In that context, it is advised that compilers analyse available metadata, familiarize themselves with the methodologies behind data from other statistical frameworks, cooperate closely and exchange the relevant microdata with the other statistical domains and institutions involved.

17.7. Compilers should strive to systematically allocate all services transactions to the relevant individual EBOPS services categories, at the most detailed level possible, as well as to appropriate trading partners. If diverse transactions are bundled into a single payment or receipt, the compiler should estimate the relevant share of services transactions and allocate estimates to items/partners as relevant.

B. Imputation for filling data gaps and for data editing purposes

17.8. Data gaps may arise in the preliminary stages of compilation for various reasons, including non-responses from establishment surveys, a lack of timely reporting or missing entries in secondary data sources. Compilers should consider taking the following steps to identify data gaps, missing replies and suspect outliers, and then impute data:

- (a) The first step is to check and load data from primary and secondary sources. The data should be standardized to fixed formats in advance (produced in separate processes). When loading data, checks on codes, the completeness of necessary fields and value ranges should be run automatically. For primary source data, or directly reported data only incorrect records should not be loaded. For secondary data sources, or data that are not submitted directly by the reporter (including administrative sources), the complete file should not be loaded until reviewed and fully corrected;
- (b) The second step in imputing data gaps and missing replies is the integration and processing of all data. After the data files have been checked, corrected and loaded, the data should be tabulated and processed. Data that are missing or otherwise not reported by survey respondents can be imputed using statistical procedures such as the mean value reported by respondents with similar characteristics or the average change for such variables from the prior period. Imputation procedures are especially important for universe (benchmark) surveys that are designed to provide results for the entire population and that form the basis of future annual or quarterly surveys. In some cases, missing values, if not provided by respondents during regular follow-up procedures, can be obtained from financial statements and commercial databases;
- (c) The third step is to check the data, which involves data analysis. As part of the analysis, significant increases and decreases in time series, e.g., of imports or exports, also as a share of net exports, of a particular service or

with a particular country (or group of countries), are examined. The analysis should be done step-by-step, using a top-down approach, meaning starting from total services with the partner to more detailed levels of imports, exports and net figures. The aim of macroediting is to focus on suspicious values that influence publication totals. It also leads to gains in efficiency. Analysis is also done to trace a dubious enterprise or source that may need to be edited and possibly adjusted. A similar approach can be used for other statistics on the international supply of services;

- (d) The fourth step is the editing of primary and secondary sources. After having traced an enterprise or other source with dubious data, the unit or source should be assessed by the editing team and contacted by phone or e-mail to edit or adjust the data, if deemed necessary. That will be done depending on the issue identified and the result of the investigation. Various methods can be used to adjust or edit, for example using an average of previous periods or growth rates for available data, etc.

17.9. Another issue related to filling data gaps is the application of a threshold for reporting/collecting data. In many ITRS, thresholds are established for reporting transactions to prevent undue reporting burdens and processing costs, which could result in the absence of a considerable number of transactions, especially small-value service transactions.

17.10. Different approaches to dealing with transactions falling below the threshold could be applied, such as carrying out a small, ad hoc sample survey or using such other sources as credit card data. Also, estimation can be carried out through an analysis of small transactions that occurred before the threshold was raised, or through empirical research.

17.11. For example, as described in the country experiences of chapter 8, research conducted in Japan suggests that the frequency of transactions increases exponentially as the value of transaction decreases and that, statistically, a Pareto distribution fits the data well.²⁸⁵ Compared to using information on transactions from before a threshold increase, that approach to estimating below-threshold transactions offers the advantage that the estimations can be updated periodically with recent data. Further, statisticians are able to choose another statistical approach if the implemented method does not fit the data well.

²⁸⁵ Japan will employ statistical methods starting with the implementation of BPM6 (see chap. 8, paras. 8.25-8.29 of the present *Compiler's Guide*) for the full description of Japan's country experience with its ITRS.

Country experience: Netherlands

17.12. Imputation for filling data gaps at Statistics Netherlands is conducted according to the four-step process described above. After checking and loading primary and secondary response data, imputations are made for non-responses. For non-responses from large enterprises (LEs), small and medium-sized enterprises (SMEs) and special purpose entities (SPEs), imputations are done on the basis of the average of the last four quarters of responses. For LE, if there is no response for Q-1, Q-4 receives a higher weighted average. For SMEs, if there is no response for the last four quarters, no imputation is made. For travel, imputation is based on Q-4 data. Other sources are imputed entirely on the basis of Q-1. To gross up (e.g., for SME data), each stratum is weighed, based on the number of enterprises in the population and the number of responding enterprises or imputed responses. Source data are at a different level of detail in terms of services and/or countries involved in the international transaction. The LE source contains the most detailed data. Travel is also detailed, and all other sources are less detailed. All the data of those sources are "converted" to the most detailed levels on basis of the corresponding LE data (the mean of the last three years).

After ensuring that all data are fully detailed, tabulation takes place by aggregating or summing up those components to more condensed groups of services or countries.

17.13. The Netherlands checks its data according to a top-down approach. At Statistics Netherlands, that analysis is carried out with Macroview, an interactive tool for top-down analysis of statistical data. Major built-in analysis scans within Macroview include: (a) quick scan (all services and aggregates, in graphical form); (b) external deliveries scan (selected services and underlying enterprises); and (c) complete scan (all services and aggregates and all country (groups), all sources, all underlying enterprises and weighing factors).

17.14. The editing of primary and secondary sources is submitted to the editing team with specific assignment information. If the assessment concerns an LE or SME enterprise, the enterprise is contacted by phone or e-mail. If needed, the data of the enterprise is edited or adjusted and loaded again. If the assessment concerns another source, the source data provider is contacted and, if needed, a new source file is made and loaded again.

C. Forecasting, back-casting and revising time series

17.15. Not all sources supply data on a timely basis. For sources that do not, the compiler may have to extrapolate certain series. Compilers are advised to consult the *BPM6 Compilation Guide*, which explains a number of interpolation, extrapolation and forecasting techniques that range from the very simple, such as using the value from the previous period or same change as in the previous two periods, to more complex techniques that draw information from models, taking into account the seasonality in subannual series.²⁸⁶ Such techniques can be applied to various types of statistics.

17.16. Similarly, historical statistics on the international supply of services are also important (e.g., for analysis purposes). Compilers are often asked to provide long time series, especially when new guidelines or data sources or a new compilation methodology is introduced. Since it is often difficult to collect source data on the new basis for a long historical period, suitable overlap periods and the stability of relationships over time need to be analysed to decide how far back in time the data can be revised. To generate series for earlier periods, techniques similar to those used for forecasting can be used, for example, by a constant (percentage) change, possibly accounting for seasonality.

17.17. Back-casting is also very important for providing long time series for new classifications on the basis on EBOPS 2010. A first step could be to use the EBOPS 2010–EBOPS 2002 correspondence table,²⁸⁷ taking into account that some new EBOPS 2010 classifications are not directly related to those based on EBOPS 2002 (such as manufacturing services). It may also be difficult to relate the two classifications if only main services aggregates are compiled, although some new recommended breakdowns can be derived from data for earlier periods on the basis of relationships between old and new classifications in a recent overlap period.

Country experience: Australia

17.18. The Australian Bureau of Statistics (ABS) maintains long time series for national and international accounts. A large proportion of those series are maintained in original, seasonally adjusted and trend variations. The introduction of changes to compilation methods and treatments can result in shifts to the levels of component and total series. If the shift in level is sufficient to distort the seasonally

²⁸⁶ See for example the *BPM6 Compilation Guide*, para. 8.29 and 8.30.

²⁸⁷ Available from http://www.imf.org/external/pubs/ft/bop/2014/pdf/BPM6_A1F.pdf.

adjusted time series, ABS revises the historical series to make the time series as continuous as possible.

17.19. In some cases, there is not sufficient detail available to adjust the historical series directly. In such cases, ABS estimates the shift in level of the series by comparing estimates at one point in time for both the current and new basis (although comparison for additional periods is desirable).

17.20. Ideally, any change in the level of a series would be measured over a sufficient time period to enable seasonal patterns to be observed. This is possible for some modelled estimates, but for estimates based on surveys, the cost of producing two estimates for one or more time periods is expensive, both in terms of processing costs and provider burden. In such cases, alternative methods may be needed.

17.21. To ensure the consistent treatment of time series, the ABS has established a standard approach to measuring shifts in the level of series. The size of the level shift induced by a methodological or measurement change is assessed using regression analysis techniques on ratios between the current published estimates and actual or simulated estimates produced by the revised methodology. In cases in which the level shift is found to be significant in the seasonally adjusted series, the historical series is back-casted to make the time series as continuous as possible while maintaining, as far as possible, the integrity of the period-to-period seasonally adjusted movements, taking into account real-world changes. For a small number of lower-level series, it may not be possible to create a valid time series and such series are marked “not available” for periods prior to the start of data collection.

17.22. Where it is not possible or necessary to maintain a long time series, an approach of “bridging” the current published estimates and the estimates produced by the revised methodology is used. Bridging means that estimates on both the current and new basis are produced for one point in time and both sets of estimates are released along with analysis to help users understand the differences between the series. The technique is particularly relevant for series where modelling beyond a certain time may not be appropriate.

D. Allocating to individual EBOPS items and trading partners

17.23. Compilers should make every possible effort to allocate collected data on services transactions to the appropriate individual EBOPS items. Throughout the data collection and compilation process, compilers should, as much as possible, avoid using existing or catch-all services categories (e.g., “other business services”, “other business services n.i.e.”, “services not allocated”,²⁸⁸ “undefined”) or catch-all partner categories (e.g., “not allocated”, “undefined”) to assign services transactions for which the precise identification of one EBOPS 2010/partner category is not readily clear. Indeed, assigning unidentified services transactions to EBOPS categories such as “other business services n.i.e.” (or one of its parents, if that level of disaggregation is not available, e.g., “other business services”)²⁸⁹ will artificially inflate, sometimes in very large proportions, the value for that specific EBOPS category and its parent categories (e.g., “technical, trade-related and other business services” and “other business services”). Such a practice decreases the analytical usefulness and reliability of those statistics, and also increases bilateral asymmetries because unidentified services will be classified in different ways by different reporting countries.

17.24. Consequently, compilers should strive to systematically allocate all services transactions to the relevant individual EBOPS services categories, as well as appropriate trading partners. To the extent possible, that allocation should be done

²⁸⁸ The Eurostat *Balance of Payments Vademecum* (update October 2013 edition), defines “services not allocated” as follows: “This item was created due to the fact that some Member States are unable to allocate certain amounts to specific services. This results in a discrepancy between the sum of individual services and the total services item. If a Member State encounters this problem, please record such residual item under item 982, “services not allocated”. Only services whose origin cannot be determined should be included under this label.”

²⁸⁹ As defined in MSITS 2010, para. 3.252 and the EBOPS 2010-Central Product Classification (CPC2, version 2), available from correspondence table 10. http://unstats.un.org/unsd/tradeserv/tfsits/msits2010/ebops2cpc_detailed.htm.

at the most detailed level. If diverse transactions are bundled into a single payment or receipt, the compiler should, to the extent possible, estimate the relevant shares of services transactions and allocate estimations to items/partners, as relevant. It is advised to use the most appropriate modelling and statistical techniques, on the basis of the information available to compilers. Such practices should be clearly documented in the metadata to improve users' understanding with respect to the interpretation and quality of the data.

17.25. It is reiterated that compilers should make every effort to allocate all services transactions to individual EBOPS 2010 services categories; however, if there is no possible solution in a certain case, compilers should use a category labelled "not allocated", which will be shown at the same level as the main services items (i.e., not included within any of the services items) or main partners.²⁹⁰ The corresponding values should be included at the total services level only if such a category corresponds to the classification shown, or at the total world level, if it relates to the partner breakdown shown. Metadata should clearly document when total services or total partners include "not allocated" elements (see chapter 18).

17.26. Compilers should also establish rules to make allocations across the correct geographical partners if transactions are recorded under "services not allocated." One possible method of performing such an allocation is to consider the shares of geographical distribution evident in total world trade in services. It should be noted that the allocations by nature of transaction and by partner country are independent, e.g., it is sometimes the case that transactions cannot be allocated to individual services items, but can be allocated to trading partners.

E. Model-based estimates

17.27. When source data are not timely or otherwise adequate, compilers may also choose to create a data model to estimate statistics, or a portion of them, on the international supply of services.²⁹¹ The data model elements should be based on the compiler's judgment of the specific information available. Some data models can be relatively simple. For example, they may be based on proven relationships between different data sources and variables. An additional straightforward approach for monthly or quarterly estimates of items with strong seasonal fluctuations is to look at relationships of relevant data series from the current period (quarter or month) from each of the preceding predetermined number of years. When quarterly results become available, monthly estimates would then be reconciled so that the three months equal the corresponding quarter. Models can also be more complex, based on mathematical and econometric approaches, including exponential smoothing, linear and logistic regression, polynomial interpolation (or cubic splines) and multilevel models, to account for hierarchical relationships among variables.

17.28. For estimating travel services, a model could be constructed using primarily the number of visitors and other individuals travelling short-term (partially available from tourism statistics or transportation operators) and estimates of per capita expenditure. However, it should be noted that such data are not always accurate, as the transport operator may not always collect information on the residence of the customer. Furthermore, when collected, the information may relate to the nationality of the customer and not the residence. Estimates of per capita expenditure could be obtained from occasional surveys of persons who travel. If necessary, separate data models can be designed to measure education- and/or medical-related travel on the basis of information from relevant institutions or special surveys (e.g., a survey of students).²⁹² However, in order to enable the use of tourism statistics, the differences in

²⁹⁰ It is important to note that the role of EBOPS 2010 items labelled as "other" or "not included elsewhere (n.i.e.)" is not to include transactions for which the compiler cannot determine to which EBOPS item they belong to, but rather corresponds to a residual list of services which are not identified as belonging to specific EBOPS items. In other words, these "other" or "n.i.e." items are actually defined, and correspond to a specific list of CPC version 2 products (see EBOPS 2010-CPC version 2 correspondence table available from <http://unstats.un.org/unsd/tradeserv/TFSITS/msits2010/ebops2cpc.htm>).

²⁹¹ See *BPM6 Compilation Guide*, paras. 8.17 and 8.25.

²⁹² *Ibid.*, para. 12.75.

terms of the coverage between BOP definitions, on the one hand, and tourism statistics as used in IRTS 2008 (as well as in Tourism Satellite Account: Recommended Methodological Framework 2008), on the other, need to be understood²⁹³ (see also chapter 14 of the present *Guide*).

17.29. For estimating the value of mode 4 and the number of persons moving under mode 4, model-based estimates could be developed using existing statistics on the international supply of services and travel information, as well as existing data from tourism, migration and employment statistics, etc. All that information could be used for building an estimation of mode 4. (More information on combining different data sources is provided in chapter 13.) Model-based estimates are a cost-efficient way to use existing data to compile modes of supply data.

17.30. For such an approach to be efficient, compilers need to analyse existing metadata, familiarize themselves with the methodologies from other statistical frameworks, cooperate closely and exchange the relevant microdata with the other statistical domains and institutions involved. Some adjustments to the data or data collection tools will probably be needed, in particular to obtain the relevant breakdowns and to clearly distinguish the population of interest. For example, identifying or estimating the population qualifying as visitors or travelling for short-term employment, including appropriate breakdowns, would be necessary as inputs for data models for estimating travel or the number of mode 2 persons/trips. For mode 4, that would entail distinguishing, within the group of travelling persons, those who are employed, those who have an employer-employee relationship in their country of origin (mode 4) and those who have that relationship in the host economy.²⁹⁴

17.31. For example, tourism data sources could be used for collecting further information on the characteristics of mode 4, while some adjustments on different concepts and terminology in both statistical domains would almost certainly be necessary. Subsequently, an estimation of the number of mode 4 persons and of the value of mode 4 trade could be derived by grossing up the figures on the basis of a research-based model.

17.32. A similar approach could be adopted for other types of sources, such as labour force surveys, household surveys or even business surveys. Adding options in the questions asked to respondents could serve to identify mode 4 persons in such data sources.

Country experience: Austria: a model for estimating monthly balance of payments data

17.33. In Austria, Oesterreichische Nationalbank (OeNB) is responsible for compiling and disseminating statistics on the international supply of services, including the BOP. In cooperation with Statistics Austria, OeNB collects data on trade in services through surveys that are conducted quarterly. In contrast to financial transactions, OeNB found that it was not feasible to employ monthly surveys on real economic transactions due to cost-benefit considerations, as data are not available on a monthly basis for most respondents. Accordingly, and due to the lack of user need for monthly data, national figures on trade in services are published on a quarterly basis only. At the same time, OeNB has to fulfil monthly reporting requirements according to European Union regulations.²⁹⁵ To that end, OeNB has introduced a estimation model to derive monthly BOP data from quarterly reports.

17.34. The model produces total figures, both credits and debits, for goods, services, compensation of employees and current transfers. In addition to global figures, a regional breakdown is available for intra- and extra-European Union trade, as well as

²⁹³ *Ibid.*, para. 12.76.

²⁹⁴ Actually, defining services contracts versus employment relationships is something that would better serve the compilation of tourism statistics as well as migration statistics.

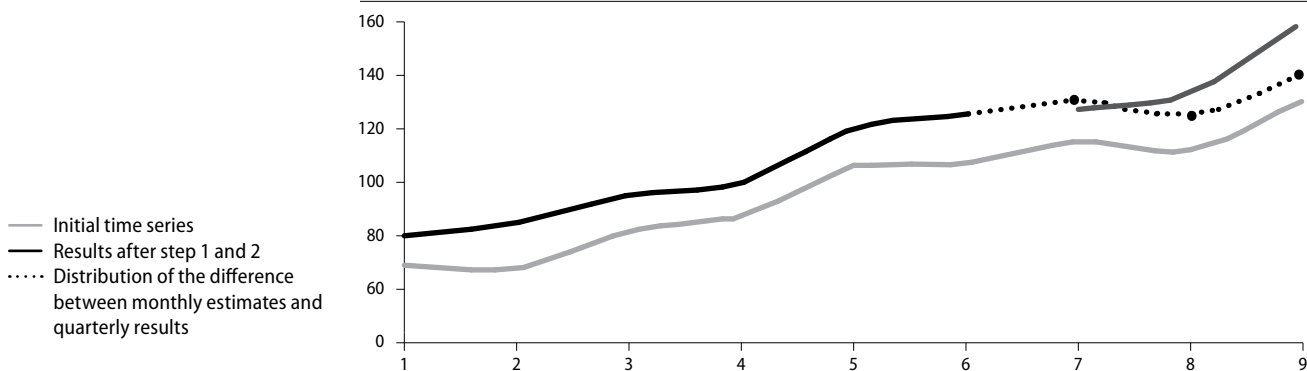
²⁹⁵ European Commission regulation No. 555/2012 amending regulation No. 184/2005 of the European Parliament and of the Council of the European Union on Community statistics concerning balance of payments, international trade in services and foreign direct investment, as regards the update of data requirements and definitions (*Official Journal of the European Union*, L 166, 27 July 2012); and guideline of the European Central Bank of 9 December 2011 on the statistical reporting requirements of the European Central Bank in the field of external statistics (ECB/2011/23).

trade with the intra- and extra-euro area. When assessing the model described below, it must be kept in mind that the results are not intended to be published as such; rather, they enter into European Union and euro area aggregates.

17.35. In principle, reports must be sent to the European Central Bank and Eurostat around the tenth day of the second month following the reporting period. Therefore, estimation is based on quarterly time series that are updated according to revision standards as well as exogenous variables, if available. After quarterly figures have become available, monthly data are reconciled with the quarterly results.

17.36. For calculating monthly figures, the original quarterly time series is first seasonally adjusted by calculating the smoothing component, the seasonal component and the irregular components. Three different methods of smoothing are employed: moving average, basic exponential smoothing and exponential smoothing according to the Holt-Winters Forecasting Method (HOLT). After the original time series has thus been prepared, three different estimation models are employed: linear regression, quadratic regression and cubic regression. A period of 12, 18 or 24 months is used for forecasting. Therefore, 27 different modelling techniques are, in principle, available. For each item, monthly results are estimated for 24 test periods according to the different models, and the quality of the results is quantified by comparing them with the actual figures by calculating relative absolute and relative quadratic differences.

Figure 17.1
Example of the monthly estimates distribution of Austria



17.37. For services exports, an estimation model employing exponential smoothing according to HOLT is used, and quadratic regression over a period of 12 months has proven to be most suitable.²⁹⁶ The regression also incorporates overnight stays of foreign guests in Austria as an independent variable. Still, incoming travel makes up approximately one third of the services exports of Austria. Therefore, the development of overnight stays is an influencing variable of the development of overall services exports.

²⁹⁶ For a description of this method see www.ons.gov.uk/ons/search/index.html?newquery=Holt-Winters+Forecasting+Method+.

17.38. For services imports, a model with basic exponential smoothing and linear regression over a period of 18 months has proven to be the most effective.

17.39. After global values are estimated, they must be divided into intra-European Union, extra-European Union, intra-euro area and extra-euro area exports and imports. For estimating the current month of trade in services, the regional division is considered according to the respective quarter in each of the two preceding years. In contrast to linear regression, that method is employed for items for which strong seasonal fluctuations are observed, which is the case for trade in services.

17.40. When quarterly results become available, monthly estimates are reconciled so that the three months equal the corresponding quarter. The adjustment

is based on the cubic splines method, by which the monthly data are first seasonally adjusted and smoothed, and the actual quarterly results are adjusted for smoothing components. Then a multiple regression model with the cubic spline function is applied, serving as the basis for the monthly results to be estimated again. As a third step, the difference between the actual quarterly result and the quarterly result based on the cubic spline function is determined and distributed between the monthly estimates. That process is again accomplished by applying the regression coefficients of the cubic spline function. As a last step, the monthly estimates must be adjusted for the seasonal and smoothing components that were determined at the beginning.

Country experience: India: estimation of non-response in the survey on exports of information technology and information technology-enabled services

17.41. In the annual survey of exports of information technology and information technology-enabled services, conducted in India by the Reserve Bank, non-responses occur with a number of small as well as medium-sized companies. The exports figures of the non-responding units are estimated using a well-defined methodology described below:

- (a) Using the observed proportions of “nil” and “closed” units, first the number of companies reporting no export of software products, i.e., “nil exports” and “closed”, out of the non-responding companies are estimated. They are then removed from the universe of non-reporting companies to obtain the number of operating non-reporting companies;
- (b) Since no information is available on the business activities of the non-reporting companies, they are classified into four groups, namely, information technology services, software product development, business process outsourcing (BPO) services and engineering services, on the basis of the observed proportions corresponding to those four categories derived from the responding units;
- (c) As most of the small companies do not have on-site operations and an overwhelming number of non-responding units are small companies, only off-site software exports of those companies are estimated. For that purpose, the off-site exports reported by the respondent companies are used;
- (d) The distribution of off-site exports of the responding companies for the above-mentioned four groups are observed to be highly positively skewed and, hence, instead of the mean, the median of the distributions is used to estimate software exports for each group. The estimated software exports for i^{th} group of non-respondent companies are computed using the following formula:

$$\text{Median}(\text{export}) \text{ of } i^{\text{th}} \text{ group} \times \left[\frac{\text{no. of reported companies in } i^{\text{th}} \text{ group}}{\text{total no. of reported companies in } i^{\text{th}} \text{ group}} \right] \\ \times \text{no. of non-responding operating companies}$$

- (e) The total number of software exports of India is then derived by adding the reported software exports of responding companies and the estimated software exports of non-responding companies in each of the four groups.

Country experience: United Kingdom: experience with modelling outward FATS

17.42. Since reference year 2009, the United Kingdom has been obligated to provide Eurostat data on the majority shareholdings outside the European Union held by United Kingdom UCIs. That regulation requires the United Kingdom to produce outward FATS on an annual basis, reporting on the economic activity, turnover, number of persons employed and country of residence of subsidiaries in which a United Kingdom UCI is a majority shareholder. In order to compile those statistics, the United Kingdom adopted a model-based approach using data from survey returns in conjunction with auxiliary information from the EuroGroups Register (EGR) and the national business register.

17.43. The United Kingdom outward FATS survey collects data from 200 enterprise groups whose UCI is resident in the United Kingdom. Data items include employment, turnover and the number of foreign affiliates. Those variables are consolidated by country and industry for each parent company. By matching the returned information with the corresponding company data held on the EGR and national business register, a model is developed. That model is then applied to the remainder of the unsampled population.

17.44. The process involves estimating affiliate employment (logistic regression and multilevel model) and calibration:

- (a) **Logistic regression.** An initial logistic regression is used owing to the prevalence of zero returns that affect the fit of the model. Sample returns are recoded to a binary variable to indicate if the employment is zero or non-zero. That model then calculates the probability that the survey response is non-zero;
- (b) **Multilevel model.** Once a model is developed to estimate if a record is non-zero, a multilevel model is used to estimate a value for the employment of an affiliate. The explanatory variables that are used in the model have a hierarchical relationship and the model attempts to account for that. For both models, the coefficients are estimated using the sample returns and are then used to predict the estimates when applied to the unsampled population;
- (c) **Calibration.** The final stage involves calibrating estimates to the employment of global groups outside the United Kingdom. Information on global employment is available from the EGR, while information on the groups' United Kingdom employment is available from the national business register. Model estimates are then calibrated to the calculated employment outside the United Kingdom.

17.45. The estimates produced for United Kingdom outward FATS are currently branded as experimental statistics by the Office for National Statistics, as they are new official statistics undergoing evaluation.

Part IV

Cross-cutting topics

Part IV contains four chapters that provide guidance on metadata (chapter 18), quality management (chapter 19), data and metadata dissemination (chapter 20) and the uses of information and communication technology (chapter 21).

Chapter 18

Metadata

18.1. Chapter 18 describes the concept and structure of metadata (or data that define and describe other data and processes)²⁹⁷ for use within the statistical framework for describing the international supply of services, as well as good metadata compilation practices. It underscores that metadata are relevant for the correct understanding of the content, coverage and limitations of the data, and should guide users on their correct interpretation. The chapter contains the following sections: a summary of good practices (section A); an overview of the basic concepts, definitions and role of the Statistical Data and Metadata Exchange (SDMX) (section B); an indicative list of metadata items (section C); metadata standards of international and regional organizations (section D); and country practices (section E).

²⁹⁷ See International Organization for Standardization (ISO) and International Electrotechnical Commission (IEC), ISO/IEC FDIS 11179-1 “Information technology—Metadata registries—Part1: Framework”, March 2004. Available from <https://www.iso.org/obp/ui/#iso:std:iso-iec:11179:-1:ed-2:v1:en>.

A. Summary of good practices

18.2. The present *Guide* recognizes that metadata (*a*) play a crucial role in the statistical production process, as they enable and facilitate sharing, querying, understanding and using data over the different stages of their collection, compilation and dissemination, and at their various levels of aggregation and (*b*) are indispensable for assessment of the quality of data, as their availability and wide dissemination constitute a basis for the correct interpretation of publicly available statistics and their effective use.

18.3. It is advised that compilers take into account that statistical metadata cover the following items:²⁹⁸ statistical description, unit of reference, reference period, institutional mandate, confidentiality, release policy, frequency of dissemination, dissemination format, accessibility of documentation, quality management, relevance, data accuracy and reliability, timeliness, comparability, coherence, cost and response burden, data revision and statistical processing.

²⁹⁸ *Guidelines on Integrated Economic Statistics*, para. 5.91.

18.4. The use of standard terminology for metadata across the various statistical domains and use of the SDMX information model is also advised, as they will facilitate further integration of statistics, the standardized sharing of data and the international comparability of data.

18.5. It is further advised that compilers design their metadata systems in the most efficient way so that metadata items can be conveniently retrieved from the relevant databases, used in the generation of the intermediate and final data sets or in the production of other metadata, and updated and synchronized. In that context, compilers are encouraged to design and use a warehousing system for data and metadata to integrate the dissemination of data and metadata with the collection and processing components of the statistical production process.

18.6. With regard to compiling metadata, compilers are encouraged to follow standardized metadata concepts, make use of the metadata developed in related statistical domains and already being applied in their national statistical system, define layers of metadata, establish metadata registries, incorporate structural metadata items

into the data processing as early as possible, establish clear links between data and metadata and compile reference metadata.

18.7. In the case of countries with less developed statistical systems, it is good practice to begin by setting up an exhaustive, consistent and detailed repository (possibly in the form of a metadata registry) with both structural and reference metadata, adopting, as much as possible, metadata concepts that are standardized across all statistical domains, both nationally and internationally. The present *Guide* strongly advises that the next immediate priority be to grant equal, easy, extensive and timely access to metadata to all user groups, including the general public.

18.8. The structural metadata items promoted by the present *Guide* are those defined within the framework of the Balance of Payments Data Structure Definition (BOP-DSD) defined by the *Manual on Statistics of International Trade in Services* (MSITS 2010) and the present *Guide* for FATS and for additional indicators on the international supply of services. Metadata items should cover both monetary and non-monetary (quantitative) data items whose compilation is encouraged by the present *Guide*.

18.9. The metadata standards of international organizations should be carefully considered by compilers, both to improve their metadata collection and compilation and ensure better compliance with their international and regional data and metadata reporting obligations.

18.10. It is good practice for any deviations from international standards, as well as the use of estimations and modelling to compile certain data series, to be clearly documented in metadata.

B. Metadata: basic concepts and definitions and the role of the Statistical Data and Metadata Exchange

18.11. **Definition of metadata.** Metadata are data that define and describe other data and processes.²⁹⁹ Data become metadata when they are used to describe other data.³⁰⁰

18.12. **Scope of statistical metadata.** Statistical metadata, according to the Statistical Commission of the United Nations, describe various elements of the statistical processes, including collection, processing and production of statistical data, and indicate the data sources and tools that are instrumental in statistical production, such as statistical standards and classifications, business registers and frames, statistical methods, procedures and software. Section C provides an indicative list of structural and reference metadata items relevant in the context of statistics on the international supply of services.

18.13. **Institutional arrangements for metadata compilation.** To reduce the burden associated with projects on metadata for statistics compiled within the framework for describing the international supply of services, it is good practice for compilers to cooperate closely with the specific units within the national statistical system responsible for ensuring that metadata is produced, and for the metadata to adhere to a standard format and be properly maintained and updated.

18.14. The Statistical Commission recommends the use of standard terminology for metadata across the various statistical domains to facilitate the international comparison of data.³⁰¹ The Commission is also increasingly encouraging countries to treat metadata compilation and dissemination as integral parts of the statistical process in any statistical domain, and promotes the standardization of the compilation and dissemination of metadata.³⁰²

18.15. **The way forward: metadata warehousing.** Statistical agencies have traditionally developed separate databases for each statistical output. While that practice

²⁹⁹ See International Organization for Standardization (ISO) and International Electrotechnical Commission (IEC), ISO/IEC FDIS 11179-1 "Information technology—Metadata registries—Part1: Framework", March 2004. Available from <https://www.iso.org/obp/ui/#iso:std:iso-iec:11179:-1:ed-2:v1:en>.

³⁰⁰ See *SDMX Content-Oriented Guidelines* (2009) for details.

³⁰¹ *Guidelines on Integrated Economic Statistics*, p. 40.

³⁰² The important role in this respect was played by the ECE publication *Terminology on Statistical Metadata*, Conference of European Statisticians Statistical Standards and Studies, No. 53, (United Nations publication, Sales No. E.00.II.E.21).

may simplify development processes, it can hinder the successful integration of statistics, especially if there is no effort to standardize variable definitions, labels and formats. Use of a centralized data warehousing system for data and metadata can make creating, maintaining and accessing metadata more efficient and can contribute to the integration of economic statistics. The process is being facilitated as better information and communications technology tools become available.³⁰³

18.16. With well-designed data warehouses, the dissemination of data and metadata becomes integrated with the collection and processing components of the statistical production process. A data warehouse should establish a simple and efficient process for accessing data to provide the following:

- (a) Comprehensive metadata to facilitate understanding and analysis;
- (b) Consistent and coherent long-term time series;
- (c) Reliable information about the availability of data;
- (d) Information about the availability of updated versions of published series;
- (e) Contact details for the people who can provide more information about a statistical output.

18.17. The implementation of a more comprehensive metadata system is an important prerequisite for developing an integrated questionnaire in the statistical system. The metadata will eventually provide the necessary coherence among the various estimates and data collection tools involved in the production of statistical information. For sophisticated users, metadata are not only relevant for concepts related to units, variables and classifications, they are also relevant for the quality of data.

Role of the Statistical Data and Metadata Exchange

18.18. The SDMX project was developed by an international consortium³⁰⁴ for use in data and metadata management. The SDMX information model is applicable for much of the information stored and processed within statistical organizations and its use by such organizations is promoted by the Guidelines on Integrated Economic Statistics of the United Nations.³⁰⁵

18.19. The use of the standardized information management model is very important for compilers of statistics on the international supply of services, as various agencies participate in data collection and compilation at different stages of the statistical production process, and the establishment of a standardized data sharing among them results in additional efficiency.

18.20. The development of global DSD, which define the structure for the exchange of data (see section C), by the SDMX consortium and international organizations, enables the broader adoption of the SDMX standard for data collection, exchange and dissemination.

³⁰³ See chapter 21 for more information on the use of information and communications technology (ICT) in the statistical process.

³⁰⁴ Bank for International Settlements, Monetary and Economic Development, *Guidelines for Reporting the BIS International Banking Statistics* (2013), para. 5.123.

³⁰⁵ *Ibid.*

Box 18.1

Statistical Data and Metadata Exchange

1. The Statistical Data and Metadata Exchange (SDMX) is an international cooperative initiative aimed at developing standards and employing more efficient processes for the exchange and sharing of statistical data and metadata among international organizations and their member countries.
2. The rationale of SDMX is the standardization of statistical data and metadata access and exchange. With the ever increasing ease of use of the Internet, the electronic

exchange and sharing of data are becoming easier, more frequent and important. This heightens the need for the development of a set of common standards for the exchange and sharing of statistical data and metadata, and for making processes more efficient. As statistical data exchange takes place continuously, the gains to be realized from adopting common standards are considerable, for both data providers and users.

3. The objective is to establish a set of commonly recognized standards, adhered to by all players, making it possible not only to have easy access to statistical data, wherever those data may be, but also to metadata that make the statistics more meaningful and usable. The standards are envisaged to help national organizations fulfil their responsibilities towards users and partners, including international organizations, more efficiently. Among other things, they are seen as facilitating the use of Internet-accessible databases that enable the retrieval of data as soon as they are released. Several quality dimensions can also be improved through the use of SDMX standards, such as timeliness, accessibility, interpretability, coherence and cost effectiveness.

C. Indicative lists of metadata items

18.21. The present section contains the indicative lists of structural and reference metadata items that countries are encouraged to compile as part of their statistics production within the framework for describing the international supply of services. (The issues specifically related to the dissemination of metadata are discussed in chapter 20.) The list of structural metadata provided below stems from the BOP-DSD. The reference metadata are based on the recommendations of MSITS 2010.

18.22. In the context of SDMX, the term *structural metadata* refers to identifiers and descriptors of data, such as concepts and attributes of variables, which are essential for discovering, organizing, retrieving and processing statistical data sets. They can be thought of as the “labels” that need to be associated with each data item in order for it to have any meaning. *Reference metadata* are of a more general nature and may refer to specific statistical data, to entire data collections or even to the institution that provides the data.

C.1. Structural metadata: Balance of Payments-Data Structure Definition

18.23. Structural metadata contain the list of concepts and attributes of variables necessary to codify the reporting requirements of four international agencies, the European Central Bank (ECB), Eurostat, the International Monetary Fund (IMF) and the Organization for Economic Cooperation and Development (OECD),³⁰⁶ for data collection exercises of external sector statistics, including international trade in services.³⁰⁷ The Balance of Payments-Data Structure Definition (BOP-DSD) structure is based on the methodology defined in the IMF *Balance of Payments and International Investment Position Manual*, 6th edition (BPM6), MSITS 2010, and the *OECD Benchmark Definition of Foreign Direct Investment*, 4th edition (BD4). In order to code trade in services data, the Extended Balance of Payments Services Classification (EBOPS), including the complementary groupings, is included in the “international account item” dimension of the DSD.

18.24. The BOP-DSD, presented on the SDMX website,³⁰⁸ includes 16 concepts and 13 attributes (see box 18.2). Concepts are used to uniquely identify a time series and, when joined together, provide the series code or “time series keys,” which are the unique identifiers for a time series. When defining a time series key using SDMX, a valid code must be assigned to each concept of the DSD. Attributes are used to further describe the data.

³⁰⁶ At the time of writing, there is not yet a data structure definition (DSD) available neither for FATS nor for non-monetary indicators of modes of supply. A FATS DSD would include specific dimensions such as FATS characteristics, e.g., number of enterprises, number of persons employed, etc. and resident economic activity vs. non-resident economic activity. Items specific to non-monetary indicators on modes of services supply would include direction of trips: inbound, outbound; and country of origin or destination.

³⁰⁷ The four agencies are the European Central Bank, Eurostat, IMF and OECD.

³⁰⁸ See http://sdmx.org/?page_id=1747.

18.25. When coding detailed trade in services by partner country statistics, a number of BOP-DSD concepts are fixed, e.g., the reference and counterpart sectors are defined as the total economy (S1) when the data refer to total trade between related and unrelated parties.³⁰⁹ However, trade in services between related parties can also be coded by using code S1A “affiliates”, in the counterpart sector dimension, whereas S1B should be used for unaffiliated parties.

18.26. Other concepts of the DSD are not fixed, such as the “counterpart area”, which is used to identify the territory of the non-resident entity of individual time series. The country code list in the counterpart area follows the International Organization for Standardization (ISO) classification and is a “cross-domain” code list. The codes used for various regional groupings were harmonized across international agencies that use the BOP-DSD, wherever possible.

³⁰⁹ In order to eliminate the possibility of having multiple ways of coding the EBOPS 2010 complementary grouping “total services transactions between related entities”, that item is not coded in the international accounts dimension of the DSD, but is coded in the annual international trade in services dataflow as follows (example on the credit side): A.N.#.%S1.S1A.T.C.S._Z._Z._Z.\$._T._X.N.

Box 18.2

List of concepts and attributes in the Balance of Payments-Data Structure Definitions

The second column provides information on the coding that should be used in the context of an annual trade in service data submission.

Frequency	The code for the annual periodicity is “A”.
Adjustment indicator	The code for no adjustment is “N”.
Reference country or area	For a reference country, an ISO 3166 code should be used.
Counterpart area	For the partner country, an ISO 3166 code should be used.
Reference sector	The code for total economy, which is used for ITS, in all cases is “S1”.
Counterpart sector	Code “S1” for total economy, “S1A” for related enterprises, “S1B” for unrelated enterprises (see reference para. 18.38).
Flows and stocks indicators	The code for transactions, is used in all cases for TIS, is “T”.
Accounting entries	Credit “C”, debit “D” or net “N”.
International accounts item	“S” for total services, “SC” for transportation, etc.
Functional category	Identifies functional categories applicable to financial accounts. It is not applicable for trade in services. Code: “Z”.
Instrument and assets classification	Identifies the type of financial instrument reported in the external sector time series. It is not applicable for trade in services. Code: “_Z”.
Maturity	Identifies the types of maturity of the financial instrument of the external sector statistics time series. It is not applicable for trade in services. Code: “_Z”
Unit of measure	Refers to a currency unit.
Currency of denomination	Identifies the currency of denomination of the financial instrument. For ITS, a constant “_T” is applied.
Valuation	Identifies the method of valuation for selected transactions and positions data. For ITS, this is coded “un-specified_X”.
Compilation methodology	Distinguishes between time series compiled according to the methodology applied to national statistics in opposition to similar time series that follow the specific methodology applied for economic or currency union statistics. For ITS, it is coded as national “N”.

The BOP-DSD also uses the following 13 attributes:

- | | |
|--|-----------------------------|
| 1. Time format | 8. Unit multiplier |
| 2. Observation status | 9. Decimals |
| 3. Confidentiality status | 10. Time period collection |
| 4. Pre-break value | 11. Reference period detail |
| 5. Comments to the observation value | 12. Compiling organization |
| 6. Detailed description (title complement) | 13. Underlying compilation |
| 7. Short title | |

C.2. Example of a trade in services time series key, coded according to the Balance of Payments-Data Structure Definition

18.27. The times series key (A.N.US.FR.S1.S1.T.C.SC._Z._Z._Z.USD._T._X.N) provides an example of codification for a trade in services series. That times series key stands for a series in annual frequency, "A", with no adjustment indicator, "N". The reference country is the United States, "US", the counterpart area is France, "FR", the reference sector is the total economy, "S1" and the counterpart sector is the total economy, "S1". The flows and stocks indicator dimension indicates a transaction, "T", the accounting entry dimension indicates that this is a credit entry, "C", the international accounts item specifies that the series relate to transport services, "SC", the functional category is not applicable, "Z", the instrument and assets classification is not applicable, "Z", and the maturity is not applicable, "Z". The unit of measure is the United States dollar, "USD", and the currency of denomination is set to "all currencies of denomination", _T. The valuation is unspecified, _X, and the compilation methodology is National, "N".

18.28. As noted above, attributes are used to qualify observations further, that is, they provide information on the "confidentiality" status or the "compiling organization". Attributes do not contribute to the identification of a time series, as that is already done by using the dimensions.

C.3. Reference metadata

18.29. The following items are typically part of the reference metadata associated with statistics on the international supply of services:

- (a) *Legal framework and institutional arrangements*: references to relevant laws and regulations, the role of all institutions involved in compilation and the description of the coordination of the dissemination of statistics and data-sharing agreements among those institutions, either distinctly or as part of broader statistics (e.g., BOP and other external sectors statistics);
- (b) *Underlying concepts and definitions*: definition of residence, non-residence, residence of units, as applicable, definition of statistical value, scope of statistics on the international supply of services and their relationship to national accounts and international merchandise trade statistics, distinction from other international transactions and classification under relevant services item according to BPM6 and EBOPS 2010 and any deviations from international standards, if any, the ultimate controlling institutional unit (UCI) concept, the definition of a foreign affiliate, the definition of direct or indirect control and definitions of statistical and reporting units, etc.;
- (c) *Description of core data sources*: ITRS, enterprise/establishment surveys, surveys of households or persons, administrative records, statistical models, partner country data or a combination of sources, including specific notes on services categories or activities for which particular data collection arrangements or a combination of sources are employed and comments on limitations of source data in terms of coverage, frequency, level of detail, reliability and availability, etc.;
- (d) *Description of data collection, data compilation methods and data-processing procedures*, including the frequency of data collection, the description of specific procedures used for data collection, validation, editing and aggregation, etc., adjustments made to source data, such as imputations, misclassification, adjustments for non-response or under-coverage, adjustments to

standard data processing procedures, such as coding, tabulation errors, etc. and indications of departures from international standards, if any;

- (e) *Estimation methods*, such as descriptions of methods for estimating non-reported transactions or transactions falling below customs and/or ITRS thresholds (e.g., cost, insurance and freight (CIF)-free on board (FOB) adjustments for the transportation item);
- (f) *Dissemination policy*, including release and revision schedules, an indication of the presentation format of data, the level of disaggregation and eventual commentaries accompanying the data, etc.;
- (g) *Additional explanations and footnotes concerning the data as required*: explanatory notes on revisions, breaks in series, definitions of confidentiality flags, etc.;
- (h) *Quality reporting*, including the publication of regular quality reports that use the quality dimensions in the Template for a Generic National Quality Assurance Framework (NQAF)³¹⁰ and include definitions of such quality dimensions as timeliness, accessibility and comparability;
- (i) *Confidentiality*, including descriptions of confidentiality rules and indications of how much data is affected by such rules.³¹¹

18.30. Compilation of metadata. Metadata are compiled at all stages of the statistics production process. The present *Guide* encourages countries to use the following good practices, as applicable, in metadata compilation:

- (a) *Use standardized metadata concepts.* In the same way as any data item, metadata items must also be clearly defined. Even though each statistical domain, including statistics of international trade in services, has its specific metadata items, it is good practice to use applicable standardized concepts that are relevant across statistical domains (e.g., by adopting cross-domain concepts from the SDMX framework or the OECD Glossary of Statistical Terms). The aim should be to promote the harmonization of statistical information and their related high-level metadata across various institutions and statistical domains, even if some specific metadata concepts are not applicable or are organized differently in different domains or institutions;
- (b) *When developing metadata for statistics compiled within the framework for describing the international supply of services, use the metadata developed in the related statistical domains and used in your country.* Statistics of international trade in services is a relatively new statistical domain in many countries. However, it is very likely that the metadata policy is already in place in related statistical domains. Compilers are advised to carefully review and use such metadata;
- (c) *Define layers of metadata.* It is good practice to compile metadata in layers of incremental detail and provide clear links between high-level and specific metadata concepts. Such a layered structure of metadata will allow data users and analysts to access necessary metadata items and to minimize the risk of misinterpretation of data content when, for example, compiling data from various data sources. It will also ensure the clear presentation of metadata to diverse groups of users;
- (d) *Establish metadata registries.* A metadata registry is a central repository (usually a database itself) with information that allows for the linking of the detailed definitions (semantics) with the codes (representations) of the metadata items used to describe a particular statistical data set. It is good practice for compilers to put special emphasis on the development, mainte-

³¹⁰ See <https://unstats.un.org/unsd/dnss/QualityNQAF/nqaf.aspx>; and see chapter 19 for more information on the national quality assurance framework (NQAF) and quality reporting and management in general.

³¹¹ See chapter 20 for more information on statistical confidentiality.

³¹² The Euro-SDMX registry includes harmonized structural metadata, the DSDs designed for the statistical domains and metadata structure definitions, e.g., Euro-SDMX Metadata Structure (ESMS) and other related information.

nance and dissemination of metadata registries to improve the harmonization, standardization, use, reuse and exchange of their metadata;³¹²

- (e) Confidentiality and access to metadata during the compilation process. As metadata for statistics on the international supply of services might be compiled by various units of the same agency or by units located in different organizations, there might be cases in which metadata describes data that is subject to confidentiality rules. It is good practice, in that context, for confidentiality rules to be set up in a such way that they will allow compilers to obtain non-confidential data aggregates with the same metadata content;
- (f) Incorporate structural metadata items into the data processing as early as possible (e.g., as parts of the records structure). That step will facilitate data processing, including the identification of viable options for data aggregation and subsequent presentation. It is advisable for structural metadata to be made an integral part of the database containing statistics compiled within the framework for describing the international supply of services in such a way that it can be extracted together with any data item and used in data processing to obtain meaningful combined data sets;
- (g) Establish clear links between data and metadata. As metadata are generated and processed during every step of the data compilation process, there is a strong requirement to ensure that the appropriate metadata retain their links with data. In that connection, it is good practice to implement metadata-driven management in the various stages of the statistical production process;³¹³
- (h) Compilation of reference metadata. Reference metadata can be presented as a detailed explanatory note describing the scope, coverage, and quality of a data set and can be made available electronically alongside the database or in special publications.

³¹³ There are several information model specifications that can contribute to achieving that goal (most notably SDMX and the Data Documentation Initiative (DDI), which are designed to perform different functions, but can be used together in the same system, or complement each other in the compilation and exchange of data and metadata.

18.31. Priorities in metadata management Although, ideally, the management of metadata would take into account all the recommendations highlighted thus far, countries with less developed systems for statistics on the international supply of services should begin by setting up an exhaustive, consistent and detailed repository (possibly in the form of a metadata registry) with both structural and reference metadata, adopting as much as possible standardized cross-domain metadata concepts, both nationally and internationally. The next immediate priority should be granting to the general public easy, extensive and timely access to metadata. In subsequent phases, the system could be improved by the gradual incorporation of more advanced features, such as a layered presentation of metadata and active links between data and metadata.

D. Metadata standards of international and regional organizations

18.32. The international availability of appropriate metadata is of great interest to all organizations with global or regional responsibilities. Those organizations have made efforts to standardize their requirements for the scope and structure of the data and metadata that they would like to obtain from countries. Those requirements should be carefully studied by countries, both to improve their metadata collection and compilation, as well as to ensure better compliance with their international and regional data and metadata reporting obligations.

D.1. Special Data Dissemination Standard and General Data Dissemination System metadata of the International Monetary Fund

18.33. The Special Data Dissemination Standard (SDDS) and the General Data Dissemination System (GDDS) are part of the IMF data standards initiative aimed at enhancing member countries' data transparency and promoting the development of sound statistical systems. A dedicated electronic bulletin board on the IMF website³¹⁴ posts information that SDDS countries provide to IMF on their dissemination practices, and offers direct links to the economic and financial data that countries disseminate under the SDDS, as well as information that GDDS countries make available to IMF on their statistical practices

³¹⁴ <http://dsbb.imf.org>.

18.34. For both standards, metadata are organized by country and topic. The SDDS metadata are available in two presentations, the current SDDS format and the Data Quality Assessment Framework (DQAF) format, while the GDDS uses the DQAF format alone. Revisions to metadata made regularly and are available on the IMF website. Metadata aspects related to statistics compiled within the framework for describing the international supply of services are embedded in the various quality dimensions of the BOP framework.

D.2. The Statistical Data and Metadata Exchange content-oriented guidelines on metadata of Eurostat

18.35. On the basis of SDMX information, model DSDs can be created for data on the international supply of services (including FATS).³¹⁵ The SDMX content-oriented guidelines have been used to define reference metadata for the European Statistical System (ESS).³¹⁶ Table 18.1 lists the main components of the ESS reference metadata. The present *Guide* advises compilers of statistics on the international supply of services of other regions to take the European Union recommendations into account, as applicable, when setting up the conceptual structure of their own reference metadata for such statistics.

³¹⁵ Available from <http://ec.europa.eu/eurostat/data/metadata/metadata-structure>.

³¹⁶ See also the Commission of the European Communities recommendation 2009/498/EC of 23 June 2009 on reference metadata for the European Statistical System (*Official Journal of the European Union*, L 168,30.6.2009).

D.3. Ensuring the consistency of metadata and data reported to international organizations

18.36. Reporting of trade in services data and metadata to all international organizations should be consistent. This can be achieved by ensuring that the total services and main items are transmitted with identical values to all international organizations, even if a “not allocated” category is used in a compiling country. As mentioned in chapter 17 (section E), compilers should make every effort to allocate all services transactions to the relevant individual EBOPS services categories and to appropriate trading partners, and should avoid, as much as possible, the use of catch-all services categories (e.g., “other business services”, “other business services n.i.e.”, “services not allocated” or “undefined”) or catch-all partner categories. To conduct such allocations, compilers could use information from partner economies. If that information is not available or reliable, then it is advised to use the most appropriate modelling and statistical techniques, on the basis of the information available to compilers. (See chapter 17 for more information on the estimation and modelling of missing data.) Such practices should be clearly documented in the metadata.

Table 18.1
Main components of the European Statistical System reference metadata

Concept Name	Descriptions
1. Contact	Individual or organizational contact points for the data or metadata, including information on how to reach the contact points
2. Metadata update	The date on which the metadata element was inserted or modified in the database
3. Statistical presentation	Data description, classifications used, concepts and definitions etc.
4. Unit of measure	The unit in which the data values are measured
5. Reference period	The period of time or point in time to which the measured observation is intended to refer
6. Institutional mandate	Set of rules or other formal set of instructions assigning responsibility, as well as the authority to an organization for the collection, processing and dissemination of statistics
7. Confidentiality	A property of data indicating the extent to which their unauthorized disclosure could be prejudicial or harmful to the interest of the source or other relevant parties
8. Release policy	Rules for disseminating statistical data to interested parties
9. Frequency of dissemination	The time interval at which the statistics are disseminated over a given time period
10. Dissemination format	Media by which statistical data and metadata are disseminated
11. Accessibility of documentation	
12. Quality management	Systems and frameworks in place within an organization to manage the quality of statistical products and processes, as well as quality assurance and quality assessment
13. Relevance	The degree to which statistical information meet current and potential needs of the users
14. Accuracy and reliability	Accuracy: closeness of computations or estimates to the exact or true values that the statistics were intended to measure
15. Timeliness and punctuality	
16. Comparability	Measurement of the impact of differences in applied statistical concepts, measurement tools and procedures where statistics are compared between geographical areas or over time
17. Coherence	Adequacy of statistics to be reliably combined in different ways and for various uses.
18. Cost and burden	Cost associated with the collection and production of a statistical product and burden on respondents
19. Data revision	Any change in the value of a statistic released to the public
20. Statistical processing	Source data, frequency of data collection, data validation, data compilation and adjustments
21. Comment	Supplementary descriptive text that can be attached to data or metadata

18.37. If there is no acceptable way to allocate all services, compilers should use a category to be labelled “not allocated”, which will be shown at the same level as the main services items (i.e., not included within any of the services items) or main partners. The corresponding values should be included at the total services level only if such a category corresponds to the classification shown, or at the total world level if it relates to the partner breakdown shown.

18.38. A “services not allocated” item is included in the BOP-DSD because it is part of the reporting requirements of ECB and Eurostat for the quarterly Balance of Payments (QBOP) and of the requirements by Eurostat, OECD and the Statistical Division for annual international trade in services data.³¹⁷ However, such a category is not included in the QBOP data reporting requirement of IMF. Consequently, for countries that use the category “services not allocated”, the individual services items will not add up to the total services in their report to IMF. In that case, the compiler should indicate in the metadata provided to the agencies that total services do not correspond to the sum of the main services items owing to the presence of some transactions that are impossible to allocate across services. Table 18.2 presents an example of data reporting in such a case.

³¹⁷ By detailed partner countries for the former and by detailed EBOPS 2010 for the latter.

Table 18.2

Example of reporting trade in services data to international organizations for cases in which the “services not allocated” category is (or is not) part of the data collection

Credit side	Submission of data to international organizations following EBOPS 2010 (“services not allocated” is part of data collection)	Submission of data to international organizations following BPM6 (“services not allocated” is not part of data collection)
Total services	130	130
Manufacturing services on physical inputs owned by others	10	10
Maintenance and repair services n.i.e.	10	10
Transport	10	10
Travel	10	10
Construction	10	10
Insurance and pension services	10	10
Financial services	10	10
Charges for the use of intellectual property n.i.e	10	10
Telecommunications, computer and information services	10	10
Other business services	10	10
Personal, cultural and recreational services	10	10
Government goods and services n.i.e.	10	10
Services not allocated	10	(Metadata need to explain the difference between total services and sum of subcomponents)

E. Country experience: Italy

18.39. Bank of Italy adopts an integrated approach to the broad range of its statistical programmes. The approach of the Bank to the management of metadata is based on two pillars: (a) an *information model*, capable of fully describing the data, the processing steps and the elaboration algorithms and (b) a *software platform*, which supports the entire statistical production chain.

18.40. Bank of Italy has designed a proprietary model called “Matrix,”³¹⁸ based on mathematical and statistical theory, to support all phases of the statistics production process (data definition, collection, compilation and dissemination) and all the data of interest (micro/aggregated, registers, questionnaires, etc.). A fundamental infrastructural component of the Bank’s system, representing a core part of the actual implementation of the Matrix model, is the central *statistical dictionary*, a repository describing the entire content of the statistical data warehouse, in terms of *structural metadata* (e.g., concepts, classifications, data structures and processing rules) and *reference metadata* (e.g., methodological notes).

18.41. The Matrix model was also designed to take into account major international standards, so that, for example, the Matrix data and metadata can be easily transformed into SDMX and other metadata formats. Another essential feature of the Matrix model is that it enables a metadata-driven system by employing a recently introduced software platform for statistical processing called Infostat.³¹⁹ Consistent with the underlying holistic approach, Infostat supports the statistical production chain end-to-end, by providing the following services:

- (a) Identity and access management (e.g., user registration, authentication, user profiling);
- (b) Metadata definition;

³¹⁸ Vincenzo Del Vecchio, Fabio Di Giovanni and Stefano Pambianco, “The ‘Matrix’ Model: unified model for statistical data representation and processing” (Banca d’Italia, 2007). Available from <https://www.bancaditalia.it/statistiche/raccolta-dati/sistema-informativo-statistico/modellazione/matrixmod.pdf>.

³¹⁹ Fabio Di Giovanni, Daniele Piazza, “Processing and managing statistical data: a National Central Bank experience”, paper presented at the “International Statistical Conference”, Prague, 14-15 September 2009. Available from http://www.academia.edu/6455962/Processing_and_managing_statistical_data_a_National_Central_Bank_experience.

- (c) Online data entry and data upload;
- (d) Support for secure data transmission, storing and versioning;
- (e) Validation and handling of reporters' feedback;
- (f) Calculations;
- (g) Data and metadata import, export and exchange;
- (h) Event subscription and notification;
- (i) User environment for metadata prototyping and data production;
- (j) Reporting and publishing;
- (k) Information search;
- (l) Inquiry and download of data and metadata;
- (m) End-to-end monitoring of business processes.

18.42. An important advantage of the approach detailed above is that most of the changes in the statistical processes (e.g., the establishment of a new survey, the production of new sets of statistics, the release of a new publication, etc.) can be implemented in a timely manner by metadata administrators, avoiding the need for complex software maintenance. In fact, due to an advanced user interface, metadata administration is rather user-friendly, allowing users who are not information technology specialists to accomplish it directly, without the intervention of technical staff.

18.43. The system can handle both qualitative and quantitative indicators, micro- and macrodata, questionnaires, registers and unstructured data (documents), thus allowing broad integration. Infostat also adopts the Matrix model language, called EXL (expression language), to define expressions used in data validation and in data processing phases for calculations. EXL expressions are intuitive, as they are quite similar to spreadsheet formulas, and the language is conceived to be extensible, in order to support the great variety and variability of statistical requirements.

Chapter 19

Quality management and quality reporting

19.1. Chapter 19 provides a summary of good practices in quality management and quality reporting (section A); an overview of basic concepts and definitions used in quality management (section B); a description of quality assurance frameworks (section C); good practices in quality measurement and reporting (section D); and country practices (section E). The quality management issues pertinent to managing statistical systems and institutional environments were covered in chapters 1 through 3. The dissemination of information on quality management and statistical output is further dealt with in chapter 20.

A. Summary of good practices

19.2. Proper quality management and high-quality reporting on data compiled in such a wide domain as statistics on the international supply of services are especially important. Therefore, it is good practice for compilers responsible for statistics on services transactions between residents and non-residents, FATS and additional indicators on the international supply of services to maintain high, clearly defined and measurable quality standards, and to regularly disseminate information on their implementation in order to gain the trust and confidence of their users and data suppliers and to aid users in better understanding and appropriately analysing the disseminated statistics. This will ultimately raise the visibility and reputation of the compiling agencies. The implementation of quality standards should include the application of a formalized system that documents the structure, responsibilities and procedures put in place for satisfying users, while continuing to improve the data production and dissemination process.

19.3. Compilers are advised to develop their own quality assessment frameworks on the basis of the NQAF, which is endorsed by the Statistical Commission, and the quality assessment frameworks developed by international, supranational and regional organizations. They should consider that the template for an NQAF is intended to be voluntary, and not meant to be prescriptive or viewed as a replacement for other quality frameworks already adopted or in use by a country's national statistical office. In that context, examples of common quality dimensions or components include relevance, accuracy, reliability, timeliness, punctuality, accessibility, clarity, interpretability, coherence, comparability, credibility, integrity, methodological soundness and serviceability.

19.4. To ensure the quality of statistics on the international supply of services, compilers are advised to use sound statistical methodologies based on the internationally agreed recommendations contained in MSITS 2010, while proactively managing the respondent burden. It is good practice for countries develop a standard for quality reports that include quantitative and qualitative indicators covering the full range of statistical processes (i.e., data collection, processing and dissemination) and their outputs on the basis of the quality dimensions listed in the present chapter and that

are issued regularly (e.g., at least every five years or when significant methodological changes occur). For monitoring the quality of the processes and the effectiveness of quality-improvement actions, reviews should be conducted more frequently.

19.5. Compilers are encouraged to facilitate continuous quality improvement. In particular, when adopting new methods, compilers should assess the impact on the statistical series of adopting the new methodology and subject the proposed methodology to peer review.

B. Quality management: an overview of basic concepts

19.6. Managing the quality of official statistics is vitally important to compilers' success in maintaining the trust and confidence of their users and data reporters. Regular dissemination of information on the implementation of rigorous and clearly defined quality standards will also help users better understand and appropriately analyse the statistics and will ultimately raise the visibility and reputation of the compiling agency.

19.7. While there are several general definitions of quality, one of the most commonly used and succinct is "fitness for use" or "fitness for purpose."³²⁰

19.8. The development of the NQAF and the guidelines that accompany the Template was undertaken by the Expert Group on NQAF in response to a request by the Statistical Commission at its forty-first session in 2010. The NQAF Template is intended to be used as a tool to provide the general structure within which countries their own or further enhance existing ones. Other international organizations have also developed data quality systems. Examples include the IMF DQAF,³²¹ which is used to assess the quality of countries' macroeconomic statistics and as a standard presentation of metadata within SDDS and the GDDS. Eurostat has developed a quality assurance framework (see box 19.1) that contains a total of eight quality criteria for which reporting is defined in the ESS Handbook for Quality Reports,³²² while the "Quality framework and guidelines for OECD statistical activities"³²³ explicitly focuses the quality of the data used, produced and disseminated by OECD.

³²⁰ Statistical agencies have arrived at a consensus that the concept of quality of statistical information is multidimensional and that there is no one single measure of data quality. Several statistical organizations have developed lists of quality dimensions, which, for international organizations, are being harmonized under the leadership of the Committee for the Coordination of Statistical Activities. A description of the activities of the Committee in this respect is available from <http://unstats.un.org/unsd/acsub-public/data-quality.htm>.

³²¹ See <http://dsbb.imf.org/pages/dqrs/DQAF.aspx>.

³²² See <http://ec.europa.eu/eurostat/documents/3859598/6651706/KS-GQ-15-003-EN-N.pdf/18dd4bf0-8de6-4f3f-9adb-fab92db1a568>.

³²³ See <http://www.oecd.org/std/qualityframeworkforoecdstatisticalactivities.htm>.

Box 19.1

Quality assurance in the European Statistical System

1. In the European Statistical System (ESS), the quality of statistics is managed in the framework of the European Statistics (ES) Code of Practice, which sets the standards for developing, producing and disseminating European statistics.
2. In accordance with the 15 principles of the ES Code of Practice and the provisions of regulation No. 223/2009 on European statistics, quality is approached along three lines:
 - a) Quality or characteristics of the institutional environment (six principles)
 - 1) *Professional independence;*
 - 2) *Mandate for data collection;*
 - 3) *Adequacy of resources;*
 - 4) *Commitment to quality;*
 - 5) *Statistical confidentiality;*
 - 6) *Impartiality and objectivity;*
 - b) Quality of the statistical processes (four principles):
 - 7) *Sound methodology;*
 - 8) *Appropriate statistical procedures;*

- 9) *Non-excessive burden on respondents;*
- 10) *Cost effectiveness;*
- c) Quality of the statistical output (5 principles):
 - 11) *Relevance;*
 - 12) *Accuracy and reliability;*
 - 13) *Timeliness and punctuality;*
 - 14) *Coherence and comparability;*
 - 15) *Accessibility and clarity.*

Each of the 15 principles of the ES Code of Practice (first level of quality assurance) contains specific indicators that show how compliance with the principle can be demonstrated (second level of quality assurance). Compliance with the ES Code of Practice is regularly monitored through the ESS-wide exercise of peer reviews, which start with a national self-assessment questionnaire. Improvement actions identified in the peer review exercise are then monitored and reported upon on an annual basis.

3. To provide a third level of quality assurance, the ESS Quality Assurance Framework (QAF) was developed in 2011-2012. Similarly to other existing quality assurance frameworks, such as the NQAF, the ESS QAF provides methods and tools for implementation at the institutional and process level for each of the indicators of the ES Code of Practice, as well as links to relevant reference documentation. Therefore, it provides clear guidance to compliance assessors.

19.9. To ensure conformity in the use and interpretation of the quality dimensions by compilers of all data sets within the statistical framework statistics recommended by MSITS 2010 for measuring the international supply of services, all definitions in the present chapter are taken from the NQAF glossary, which was endorsed by the Statistical Commission as part of the NQAF guidelines.³²⁴

19.10. The NQAF lists the following examples of common quality dimensions or components: relevance, accuracy, reliability, timeliness, punctuality, accessibility, clarity, interpretability, coherence, comparability, credibility, integrity, methodological soundness and serviceability. The dimensions of quality are overlapping and interrelated and, therefore, the adequate management of each of them is essential if information is to be fit for use. SDMX defines 11 quality dimensions: relevance, accuracy, timeliness, punctuality, accessibility, clarity/interpretability, comparability, coherence, integrity, credibility and methodological soundness.³²⁵

19.11. First of all, compiled statistics should be *relevant*, meaning that they should meet current and potential users' needs. The compiling agency's challenge is to weigh and balance the conflicting needs of current and potential users to produce statistics that satisfy the most important needs within given resource constraints. For a breakdown by mode of supply, such statistics should be produced for services items that are important for the compiling economy and should preferably be developed in cooperation with the users of such data (such as the ministries of trade, the economy or foreign affairs). The relevant services could be identified through direct dialogue with the major users or, for the case of data broken down by mode of supply, by examining the sector's relative share of total exports/imports of services.

19.12. *Accuracy*, or the closeness of computations or estimates to the true values that the statistics were intended to measure, should also be ensured by compilers. Accuracy is usually characterized in terms of error in statistical estimates and is often decomposed into bias (systematic error) and variance (random error) components. The assessment of accuracy can contain either numerical measures of accuracy or quali-

³²⁴ Available from <http://unstats.un.org/unsd/dnss/QualityNQAF/nqaf.aspx>.

³²⁵ See SDMX, *Content-Oriented Guidelines*, annex 4, p. 109. Available from http://sdmx.org/wp-content/uploads/2009/01/04_sdmx_cog_annex_4_mcv_2009.pdf.

tative assessment indicators. It may also be described in terms of the major sources of error that potentially cause inaccuracy (e.g., coverage, sampling, non-response or response error).

19.13. Statistics compiled within the framework for describing the international supply of services should also adhere to standards of *timeliness*, measured as the length of time between data availability and the event or phenomenon they describe. Timeliness is a crucial element of data quality, as it increases the statistical information's relevance and its ability to be used effectively by policymakers. For statistics on trade in services, the data should preferably be produced at least on an annual basis. It is good practice for selected (e.g., aggregated) data series covering services transactions between residents and non-residents, FATS or additional indicators on the international supply of services to be produced and disseminated more frequently, depending on country's needs and resources. The release date of data should also be punctual, in that it follows the target date announced in the official release calendar. Timeliness typically involves a trade-off between accuracy and cost.

19.14. *Accessibility and clarity* should also be ensured. Statistics on the international supply of services should be presented in a clear and understandable form, and disseminated through a suitable and convenient medium, with supporting metadata and guidance.

19.15. Furthermore, statistics on the international supply of services should be *comparable* across geographical areas (i.e., statistics should measure the same phenomenon for different geographical areas); over time (statistics should provide two or more instances of data on the same phenomenon measured at different points in time); and across domains (statistics should include the results from multiple surveys that target similar characteristics in different statistical domains). For data broken down by mode of supply, if a country is focusing on a particular type of service, a description in terms of the Central Product Classification (CPC) of the service would be useful. Moreover, internal coherence (or consistency) and coherence across domains should be ensured, as statistics are often obtained from different sources or based on different approaches, classifications and methodological standards. Metadata must convey information that will help any interested party to evaluate the comparability of the data, which is often the result of a multitude of factors.

19.16. Compiling agencies should also ensure integrity, or the values and related practices that maintain confidence, in the eyes of users, in the agency that produces statistics and, ultimately, in the statistical product. One important aspect of integrity is the ability of users to trust in the objectivity of statistics. Integrity means that professionalism should guide policies and practices and that those policies and practices are supported by ethical standards and transparency. Integrity is closely linked with credibility, or the confidence that users place in statistical products based simply on their image of the statistical authority (i.e., the brand image).

19.17. Compiling agencies should also ensure that *sound methodologies* are used to compile statistics that comply with the relevant international standards, including the professional standards enshrined in the Fundamental Principles of Official Statistics.

19.18. At the same time, *cost effectiveness* should also be ensured. For the compilation of statistics on the international supply of services broken down by mode, the mechanical allocation of EBOPS 2010 to modes of supply presents a strong advantage, as that method is relatively inexpensive because it is based on existing data and knowledge of the compiler. Finally, existing *data transmission mechanisms* and information technology tools should be used to the extent possible.

19.19. **Quality management and its components.** Quality management is defined in SDMX as systems and frameworks in place within an organization to manage the quality of statistical products and processes. Quality management refers to the application of a formalized system that documents the structure, responsibilities and procedures put in place for satisfying users, while continuing to improve the data production and dissemination process. It also includes how well the resources meet the requirement. The concept can be broken down into “assurance”, “assessment” and “documentation”:

- (a) *Quality assurance* refers to all the planned and systematic activities implemented that can be demonstrated to provide confidence that the processes will fulfil the requirements for the statistical output. That includes the design of programmes for quality management, the description of the planning process, the scheduling of work, the frequency of plan updates and other organizational arrangements that support and maintain planning function;
- (b) *Quality assessment* contains the overall assessment of data quality, based on standard quality criteria. That may include the result of a scoring or grading process for quality. Scoring may be quantitative or qualitative;
- (c) *Quality documentation* contains documentation on methods and standards for assessing data quality on the basis of standard quality criteria.

C. Focusing on quality assurance

19.20. Quality assurance is a critical part of producing statistics; it ensures that the methods have been correctly applied and that the statistics are robust and fit for their purposes. Given the complexity surrounding the compilation of statistics within the framework for describing the international supply of services, it is particularly important for organizations produce, document, implement, monitor and maintain a quality assurance strategy, as well as policy and quality assurance procedures, for regular publications, new outputs and changes to outputs, as well as for statistical outputs derived from surveys, administrative sources and other secondary sources.

19.21. Quality assurance should be built in at each step of the statistical process, and should inform the following actions:

- (a) Selecting methods;
- (b) Identifying issues related to the quality outcomes of the chosen methods;
- (c) Carefully checking the outcomes of the application of the methods;
- (d) Ensuring that a sufficient range of stakeholders is engaged in the quality assurance process.

19.22. Compilers should adopt quality assurance procedures, including the considering whether a statistical product meets the requirements of users, and ensuring the coherence of the procedures with those of other statistical products. The quality assurance policy should include such aspects as control, improvement processes, quality measures, documentation and awareness-raising. It is good practice for the quality assurance procedures to specify clear ownership and accountability for the statistics and related products.

19.23. Appropriate validation to minimize the risk of errors should also be incorporated into the quality assurance procedures, including the following actions:

- (a) Building in validation into the production processes wherever possible;
- (b) Conducting internal validation checks, for example, by comparing with previously produced outputs from the same source, or conducting validation checks by more than one person in case of a large degree of manual intervention;

- (c) Conducting external validation checks, such as “sense-checking” against other relevant sources.

19.24. For all regular statistical outputs, a programme of periodic reviews should be planned and undertaken, covering quality, methodologies and processes. More information on national quality assurance can be found in international guidelines, such as the “Guidelines for the Template for a Generic National Quality Assurance Framework”, available on the website of the Statistical Division.³²⁶ At its forty-third session, in 2012, the Statistical Commission fully endorsed the template and encouraged countries to use it. The template is provided in box 19.2.

³²⁶ Available from <http://unstats.un.org/unsd/dnss/QualityNQAF/nqaf.aspx>.

Box 19.2

Template for a Generic National Quality Assurance Framework

1. Quality context
 - 1a. Circumstances and key issues driving the need for quality management
 - 1b. Benefits and challenges.
 - 1c. Relationship to other statistical agency policies, strategies and frameworks and evolution over time.
2. Quality concepts and frameworks
 - 2a. Concepts and terminology.
 - 2b. Mapping to existing frameworks.
3. Quality assurance guidelines
 - 3a. Managing the statistical system
 - [NQAF 1] Coordinating the national statistical system;
 - [NQAF 2] Managing relationships with data users and data providers
 - [NQAF 3] Managing statistical standards;
 - 3b. Managing the institutional environment:
 - [NQAF 4] Assuring professional independence;
 - [NQAF 5] Assuring impartiality and objectivity;
 - [NQAF 6] Assuring transparency;
 - [NQAF 7] Assuring statistical confidentiality and security;
 - [NQAF 8] Assuring the quality commitment;
 - [NQAF 9] Assuring adequacy of resources;
 - 3c. Managing statistical processes
 - [NQAF 10] Assuring methodological soundness;
 - [NQAF 11] Assuring cost-effectiveness;
 - [NQAF 12] Assuring soundness of implementation;
 - [NQAF 13] Managing the respondent burden;
 - 3d. Managing statistical outputs:
 - [NQAF 14] Assuring relevance;
 - [NQAF 15] Assuring accuracy and reliability;
 - [NQAF 16] Assuring timeliness and punctual;
 - [NQAF 16] Assuring timeliness and punctuality;
 - [NQAF 17] Assuring accessibility and clarity;

[NQAF 18] Assuring coherence and comparability;

[NQAF 19] Managing metadata

4. Quality assessment and reporting
 - 4a. Measuring product and process quality: use of quality indicators, quality targets and process variables and descriptions
 - 4b. Communicating about quality: quality reports.
 - 4c. Obtaining feedback from users.
 - 4d. Conducting assessments; labelling and certification.
 - 4e. Assuring continuous quality improvement
5. Quality and other management frameworks
 - 5a. Performance management
 - 5b. Resource management.
 - 5c. Ethical standards.
 - 5d. Continuous improvement
 - 5e. Governance

19.25. Within the NQAF, four components of quality assurance are particularly relevant for statistics on the international supply of services:

- (a) **Assuring methodological soundness.** This requires the use of the statistical methodologies based on internationally agreed recommendations contained in MSITS 2010 and good practices described in the present *Guide*;
- (b) **Assuring cost-effectiveness.** Cost-effectiveness is assured by the implementation of standardized solutions that increase effectiveness and efficiency, documentation of the cost of data production at each stage of the statistical process and carrying out the cost-benefit analyses to determine the appropriate trade-offs, in terms of data quality;
- (c) **Assuring soundness of implementation.** This is achieved by carrying out such activities as selecting staff; conducting training programmes that emphasize the importance of statistics fit for the purpose; building into the production process data quality checkpoints and, as appropriate, sign-offs to be completed before proceeding to subsequent stages in the statistical life cycle; documenting procedures for the design, development, implementation and evaluation of the statistical compilations; and consulting with stakeholders, especially users and potential respondents, at all appropriate stages of the statistical life cycle;
- (d) **Managing the respondent burden.** The respondent burden is managed by raising awareness that the requirement to collect information (user needs) should be balanced against production costs and the burden placed on respondents (supplier costs). Compilers of statistics on the international supply of services should be proactive in managing the respondent burden, ensure that there are mechanisms in place to assess the necessity of undertaking new statistical surveys, and take care to reduce or distribute response burden. It is important for compilers to inform respondents about (a) the purpose of the survey (including the expected uses and users of the statistics to be produced from the survey), (b) the authority under which the surveys are taken, (c) the collection registration details, (d) the mandatory or voluntary nature of the survey, (e) confidentiality protection and (f) the record linkage plans and the identity of the parties to any agreements to share the

information provided by those respondents. Mechanisms to maintain good relationships with individual providers of data and to proactively manage the response burden are essential for improving quality.

19.26. Concerning outputs produced within the statistical framework for describing the international supply of services, the NQAF lists six groups of activities that should be carried out in the following manner:

- (a) **Assuring relevance in the context of the varying needs of users.** Relevance can be assured by consulting users about the content of the statistical work programme, prioritizing among different users' needs in the work programme, establishing an advisory council to assist in setting overall statistical priorities, conducting periodic reviews of the continuing relevance and cost-effectiveness of individual statistical programmes/domains, ensuring a good understanding of the interdependencies among individual statistical programmes/domains and coordinating, harmonizing and providing full coverage of statistical information produced by the national statistical system;
- (b) **Assuring the accuracy and reliability of outputs.** Assessing and validating source data, intermediate results and final outputs, using proper statistical techniques, comparing the obtained data with other existing sources of information in order to ensure their validity, clearly identifying preliminary and revised data and providing explanations about timing and the reasons for and the nature of revisions;
- (c) **Assuring timeliness and punctuality.** Establishing a clear release policy (taking into account the need for different dissemination formats and the frequency of data), considering trade-offs between various quality dimensions, clearly identifying preliminary data so that users are provided with appropriate information for assessing their quality;
- (d) **Assuring accessibility and clarity.** Releasing statistical results with readily accessible and up-to-date metadata covering concepts used and deviations, scope, classifications, the basis of recording, data sources, compilation methods and statistical techniques, etc., to allow for a better understanding of the data;
- (e) **Assuring coherence and comparability.** Establishing well-defined relationships among statistics on resident/non-resident transactions in services, FATS and additional indicators on the international supply of services is very important; also, the relationships between statistics on the international supply of services and other economic statistics should be well articulated. Compilers should ensure the application of efficient and documented procedures for combining data from various sources; provide clear identification and explanations of breaks in series; and provide provision of methods for ensuring necessary data reconciliation;
- (f) **Managing metadata.** This includes the provision of information covering the underlying concepts, variables and classifications used, the methodology of data collection and processing and indications of the quality of the statistical information to enable the user to understand all of the attributes of the statistics on the international supply of services, including their limitations, for informed decision-making.

19.27. In the context of point (e), on assuring coherence and comparability, a number of compiling agencies have created a unit in charge of ensuring the coherence of data collection quality and the coordination of work across economic statistics concerning data on large multinational enterprises. The unit is often referred to as the "large and complex enterprise unit" and may have different tasks assigned to it.

In many countries, a relatively small number of multinational enterprises account for a major part of total services production and trade. For that reason, they are generally included in most surveys that are carried out in the area of economic statistics, and are, consequently, covered in the work of the large and complex enterprise unit. Several statistical offices have also realized that a more proactive dialogue with important respondents can improve the large enterprises' understanding of the statistical data requirements. This is why in countries in which a small number of multinational enterprises account for a large part of the national production, there are also likely to be important services traders. Compilers are therefore encouraged to identify whether there is a need to consider such a unit, and if it already exists, to approach it in to identify how to collect and compile data in a coherent way.³²⁷

Evaluating the validity of reported data

19.28. It is important for due attention to be paid to evaluating the validity of reported data. Techniques for that evaluation include comparing reported values for the current period to those for prior periods in order to ensure consistency, calculating ratios of key items, such as sales per employee or value added to sales, to ensure reasonable results and establishing ranges and tolerances to identify outliers for review by survey staff. Automated checks can be included in an electronic questionnaire or in the survey processing system to detect unusual or large changes in the data, internal inconsistencies or invalid responses.³²⁸ The questions about the validity of reported data can be subsequently resolved through consultation with respondents and by other means (e.g., use of relevant financial statements, regulatory filings and other surveys). It is also good practice to dedicate staff to evaluating data reported by specific respondents. Establishing a relationship between the compiler and the reporter can lead to improved reporting.

19.29. Validated responses provided by respondents at the individual company (micro) level must be aggregated to higher (macro) levels for further review and evaluation and, ultimately, public release. For universe (benchmark) surveys, validated microdata (including estimated values for non-respondents) can simply be summed over all units. For sample surveys or other non-benchmark surveys, aggregation of microdata will depend primarily on how the sample was selected and the associated sample weighting factors used to develop universe estimates. For a probability sample with weights, individual values are multiplied by the weighting factor, and the weighted values are summed. For cut-off surveys or other surveys not based on probability samples, growth factors can be used to extrapolate the aggregate value forward from the most recent benchmark year, using values from a matched sample for adjacent years. That method assumes that the growth rates for the firms in the matched sample are representative of growth for firms that were excluded from the sample because they fall below the sample cut-off threshold.

Country experience: Ireland

19.30. The Central Statistics Office of Ireland (CSO) is the national office responsible for compiling and publishing official BOP and related statistics and for implementing the related quality assurance activities.

19.31. The surveys of manufacturing and non-financial services enterprises undertaken by CSO are designed to meet international conceptual and geographical requirements. Coverage is on a sample selection basis, those surveyed being selected on the basis of statistical register information concerning transactions with non-residents. Two types of grossing up take place in the compilation of the results. For the enterprises that report annually, an estimate is made for non-response. That estimate

³²⁷ More information can be found in the ECE "Guide to measuring global production" (chapter 6).

³²⁸ See chapter 21 for more information on the use of information and communications technology.

can vary from the last value carried forward to more complex trending/forecasting based on similar enterprises, in terms of size and type, and current market conditions. For non-coverage, a separate grossing up exercise takes place for both services and profits. Using other data sources available, such as the annual services inquiry and the census of industrial production, the enterprises and data are matched and compared and an imputation is made for non-coverage on the basis of a ratio derived by comparing the size of the overall data to the size of the unmatched data. That exercise also serves as a useful quality indicator for comparing data collected via different channels.

19.32. The survey information collected for all types of enterprises covers transactions with non-residents concerning purchases and sales of services; income flows; and transfers, as well as acquisitions and disposals of foreign assets or liabilities. In order to facilitate compilation of the wider national accounts statistics, the surveys also collect data on transactions of reporting enterprises with residents of Ireland. This allows for a wide range of edit and plausibility checks, e.g., profits earned relative to costs and sales and dividends paid relative to earnings.

19.33. The type of quarterly survey form issued to a company depends upon the type of company. The survey for manufacturing and non-financial services companies requests data on all resident and non-resident sales/purchases of services (including royalties, copyrights and licences, etc.), assets and liabilities (flows, stocks and reconciliation items) and related income transactions from companies incorporated in Ireland and Irish branches of foreign companies. Sectoral and geographic details are also required.

19.34. A qualified accountant is employed to provide advice on data queries from respondents and on the various plausibility and edit checks in place. The accountant also examines and compares the data reported on the BOP forms against the annual statutory accounts, where available. The accountant accompanies the responsible staff when they visit respondents. The major enterprises are visited at least once every two years, while smaller enterprises are visited less frequently. Enterprises are assessed on an ongoing basis for their suitability for quarterly and annual reporting.

19.35. Received data are loaded into the CSO relational database where they undergo various automated consistency and plausibility checks. Further manual checking routines are carried out by statistical staff. Depending on the materiality of the identified queries, the CSO makes contact with the enterprise concerned to obtain corrections and clarifications. Once the data are verified and any further processing has been completed, the data from all surveys are assembled and the combined data subjected to further scrutiny and checking, at both the macro and micro levels. If problems are detected at that stage, the case is referred back to the data collection division, which can contact the company, if necessary, to resolve the issue. Apart from the general checking routines performed by BOP compilers, additional checking is done by a separate data consistency unit within the national accounts division. That unit carries out checks on the consistency of monthly, quarterly and annual data returned by individual large manufacturing and non-financial services companies to various CSO divisions, including the BOP division. Approximately 70 large companies or groups of companies are reviewed.

19.36. The work of the consistency unit has been extended to rationalize data collection for the 50 largest companies/groups referred to above. The large cases unit (LCU) was set up in 2010 to coordinate the surveys issued to those enterprises. An important step was to examine the various CSO data requests and to ensure that any particular item of data was only requested once from the respondent. A combined survey form for those enterprise was designed that would collect not only BOP data but also production, turnover, services, stocks and profits. The LCU is the central point

of contact for those enterprise and works closely with both the enterprises and the various production divisions in the CSO to ensure the quality and consistency of data, while at the same time minimizing the burden on the respondent.

D. Quality measurement and reporting

19.37. Quality management implies that countries undertake steps to measure quality and report the results of such measurements to all participants of the statistical process and general public. In that connection, the present *Guide* advises that countries develop a standard for regular quality reports that cover the full range of statistical processes and their outputs, including the publication of statistics on resident/non-resident transactions in services and FATS and additional indicators on the international supply of services, as applicable. Such reports can be either producer-oriented, with the aim of identifying strengths and weaknesses in the statistical process and leading to or containing the definition of quality improvement actions, or user-oriented, with the aim of keeping users informed about the methodology of statistical process and the quality of statistical output.

19.38. Quality reports should be prepared at least every five years or more frequently if significant methodological changes or changes in the data sources occur. For monitoring the quality of the processes and the effectiveness of quality-improvement actions, reviews should be conducted more frequently. It is good practice for countries to base their quality reports on a set of quantitative and qualitative indicators, as well as on a checklist covering data collection, processing and dissemination, in order to assess the strengths and weaknesses in the statistical process and to identify possible quality-improvement actions.

19.39. Countries are advised to develop their own quality assessment frameworks on the basis of NQAF and the quality assessment frameworks developed by international, supranational and regional organizations.

19.40. **Quality measures.** Quality measures directly reflect a particular aspect of quality. For example, the time lag from the end of the reference period to the release of particular data set is a direct quality measure. However, in practice, quality measures can be difficult or costly to calculate. Instead, quality indicators can be used in the quality assessment.

19.41. **Quality indicators.** Quality indicators are summarized quantitative or qualitative evidences about the quality of the data. They are generally defined with respect to some reference point and can assist in making different types of comparisons. When countries define the quality indicators for their statistics on the international supply of services, they are encouraged to ensure that the indicators satisfy the following criteria: (a) they cover all dimensions of quality as defined in section B above, (b) they are based on the consistent application of a sound methodology and (c) they are easy to interpret both for internal and external users.

19.42. It is good practice for countries to maintain a balance between different dimensions of quality and the number of indicators. The objective of quality measurement is to have a limited set (minimum number) of indicators that can be used to measure and to follow over time the quality of statistics compiled within the framework for describing the international supply of services and to ensure that users are provided with a useful summary of overall quality, while not overburdening respondents with demands for unrealistic amounts of quality metadata.

Table 19.1

Suggested indicators for measuring the quality of data compiled within the statistical framework for describing the international supply of services

(The quality dimensions of “clarity/interpretability” and “credibility” are not included in the table below as there are no identifiable quality measures or indicators for them.)

Quality dimension	Quality measure and indicator
Relevance	<p>(a) Gaps between key user interests and compiled trade in services statistics in terms of concepts, coverage and detail.</p> <p>(b) Results of users' satisfaction surveys and meetings with user groups. The relevance aspect of quality could also be measured in terms of the availability of the data to the final users. Data availability is measured through completeness and confidentiality.</p> <p>In general, data availability can be calculated as the number of reported data cells divided by the total number of data cells required in accordance with the adopted data compilation methodology.³²⁹</p> <p>Measures of confidentiality can be developed by taking into account the share of values of the data cells containing confidential data in the total value of all data cells.</p>
Accuracy	<p>(a) Differences between two successive releases of the same data set;</p> <p>(b) Application of reporting thresholds.</p> <p>(c) Under-coverage (percentage of non-reporting due to thresholds, percentage of non-reporting due to non-response).</p> <p>(d) Characteristics and frequency of revisions (e.g., as percentage of total value). Mean absolute percentage error (MAPE) may be used for characterizing the size of revisions. MAPE shows the average percentage difference between initial and final estimates (between 0 and infinity, inclusive); the higher the value, the higher the average size of revisions. When the result equals zero, there are no differences between the first and final estimates.</p> <p>MAPE is defined as follows:</p> $\text{MAPE} = \left| \frac{X_f^t - X_i^t}{X_i^t} \right| \times 100$ <p>Where:</p> <p>X_i^t = the initial estimate for characteristic X in reference year t.</p> <p>X_f^t = the last available estimate for the same characteristic in reference year t.</p> <p>(e) Use of data validation techniques and their impact.</p> <p>In the case of sample surveys-based estimates, the accuracy can be measured using the following indicators.</p> <p>(f) Sampling errors.</p> <p>The sampling error must be calculated on the basis of the specific survey design adopted.</p> <p>(g) Non-sampling errors:</p> <ol style="list-style-type: none"> i) Unit response rate; ii) Item response rate. <p>Total measurement error (sampling errors plus non-sampling errors) can be expressed in terms of a coefficient of variation (CV), as follows:</p> $\text{CV} = \sqrt{\frac{\text{estimate of the sampling variance}}{\text{estimated value}}}$ <p>A thorough description of the sample design is needed, containing all information that is likely to affect accuracy and providing background information for the assessment and interpretation of sampling errors.</p> <p>(h) Number and average size of revisions of particular data sets.</p>
Timeliness	Time lag between the end of the reference period and the date of the first release (or the release of final results) of data

³²⁹ For example, such an approach is adopted by Eurostat (see European Commission regulation No. 555/2012 annex 1, table 3); <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:166:0022:0066:EN:PDF>. Also see *Balance of Payments Vademecum*, chap. 5.

Quality dimension	Quality measure and indicator
Punctuality	Punctuality can be calculated as the actual date of data delivery minus the scheduled date of publication/transmission. It shows how many calendar days the release of data was behind (positive value) or ahead (negative value) of the deadline (e.g., as published in an advance release calendar).
Accessibility	(a) Number and types of means used for dissemination of statistics. (b) Degree to which all detailed data sets are made available to users, as a percentage of the total number of data sets produced (c) Degree to which detailed metadata are disseminated.
Comparability	Differences that can be observed when statistics related to the same domain are compared between geographical areas or over time. This component of quality can be described by measuring asymmetries. For example, the absolute and relative values of asymmetries, calculated using partner country data, could be at different levels of detail of service categories. Relative asymmetries could be calculated giving equal weight to the data sets of the reporter and to the mirror data. Persistent asymmetries are identified in case the top asymmetries for country A (for a given service category and flow) are generated by the same partner country B for more than one year.
Coherence	(a) Use of common concepts, classifications, data sources and methods; (b) Availability of appropriate bridging tables. This component of quality can be described by measuring the internal consistency (with respect to the application of integrity rules, coherence between the quarterly and annual data and the size of errors and omissions), and external consistency (e.g., coherence between statistics on trade in services between residents and non-residents and similar statistics belonging to different statistical frameworks). <i>Consistency with integrity rules.</i> The integrity rules should include a set of equations that must be respected in the data sets. For example, the sum of the components should be equal to the aggregates.
Integrity	(a) Statistics are produced on an impartial basis; (b) Choices of sources and statistical techniques, as well as decisions about dissemination, are based solely on statistical considerations; (c) The appropriate statistical entity is entitled to comment on the erroneous interpretation and misuse of statistics; (d) The terms and conditions under which statistics are collected, processed and disseminated are available to the public; (e) Internal governmental access to statistics prior to their release, if practiced in the country, is publicly announced; (f) Products of statistical agencies/units are clearly identified as such; (g) Advance notice is given of major changes in methodology, source data and statistical techniques; (h) Guidelines for staff behaviour are in place and are well known to the staff.
Methodological soundness	The number of instances of divergence and the degree of divergence from the relevant international statistical standards in concepts and measurement procedures used in the collection and compilation of trade in services statistics (preferably in terms of the amount of data affected).

19.43. **Suggested quality measures and indicators.** Table 19.1 presents a possible set of indicators and measures that countries might wish to consider for measuring the quality of statistics on the international supply of services. The table has been compiled on the basis of the quality measures and indicators recommended by various international organizations including IMF, OECD and Eurostat. Such measures and indicators provide users with a clear and up-to-date overview of the overall quality of those statistics.

19.44. One recognized good practice in relation to continuous quality improvement is process measurement. A process is a series of actions or steps towards achieving a particular end; process quality is an assessment of how well each step meets

defined criteria; and process variables are factors that can vary with each repetition of the process. It is good practice for producers of official statistics to define and produce a selection of process quality measures to provide an indication of the overall quality of processes and facilitate continuous quality improvement.

19.45. For official statistics produced from surveys, examples of process quality measures are the percentage of ineligible sampling units found in the sample, the proportion of proxy interviews by survey, travel time for interviewers and scanning/keying error rates.

19.46. When dealing with statistics produced from administrative sources, process quality measures may be the number of queries from the statistical producer to the administrative data supplier, and the percentage of data items changed during quality assurance.

19.47. When adopting new or improved methods, quality assurance procedures should be used. They should include assessing the impact on the statistical series of adopting the new methodology and subjecting the proposed methodology to peer review. Various mechanisms exist to gain input from experts into the suitability of new or improved methods. The setting up of specific peer review groups and collaboration with users, academics and subject matter experts, for example industrialists or demographers, can also be considered or simply peer review from a statistical colleague.³³⁰

19.48. The quality criteria as described in the present chapter also apply to statistics on the international supply of services by mode.

³³⁰ United Kingdom, Government Statistical Service, *National Statistician's Guidance, Quality, Methods and Harmonization* (2009). Available from www.statisticsauthority.gov.uk/national-statistician/ns-reports--reviews-and-guidance/national-statistician-s-guidance.

E. Country experiences

Country experience: Spain: automatic editing on statistics by modes of supply

19.49. In order to better control the quality of data on modes of supply in international trade in services, the Spanish Statistical Office (INE) has developed a software tool for recording and fieldwork treatment to facilitate the automatic editing of mode data in the questionnaire. The software tool ensures that the editing rules defined by the statistical expert are applied exhaustively and automatically in all questionnaires used. The questionnaires are either automatically downloaded into the tool (in the case of web-based questionnaires) or data are entered manually, in the case of hard-copy questionnaires.³³¹

19.50. The editing rules in the tool are classified into two types: "strong" or "fatal" edits and "weak" edits. Fatal edits imply that the questionnaire is not validated and INE staff must contact the respondent to resolve it. Weak edits allow questionnaire recording to continue, as well as, subsequent validation processes, but an explanation must be included in the "observations" field.

19.51. Four editing rules are applicable to the mode of supply section in the survey:

- (a) A *fatal edit* is implemented when a mode has been associated with a non-service item (INE informs respondents that only services items may have a mode of supply associated to them);
- (b) A *weak edit* is implemented when a mode 3 association is wrongly made to a service (i.e., the supply through mode 3 is not possible, by definition, in international transactions data covered in a BOP trade in services survey; such data can rarely be associated to mode 3, except for construction (see MSITS 2010, chapter V, for more information));

³³¹ According to the policy of the Spanish Statistical Office, respondents can choose whether to answer questionnaires in hard copy or via the web (although computer-assisted web interviewing (CAWI) is strongly recommended).

- (c) A *weak edit* is implemented when a mode 2 association is wrongly made to services that, theoretically, cannot be supplied by that mode, according to the guidance provided in MSITS 2010 (note that travel is not covered by the survey; see MSITS 2010 for the non-travel services that can be supplied by mode 2, e.g., manufacturing, maintenance and repair);
- (d) A *fatal edit* is implemented so as to admit only mode 1 for supplying the EBOPS 2002 service item of merchanting.

Country experience: Luxembourg: quality management for compilation of financial services

19.52. Luxembourg is a small, very open economy anchored in foreign trade, thereby generating significant international transactions and capital flows. Financial services (mainly investment fund management and international private banking) are one of the mainstays of the national economy. International trade in financial services, as reported by Luxembourg in its balance of payments, is very significant. The Banque centrale du Luxembourg (BcL) and the Institut national de la statistique et des études économiques (STATEC) have been jointly responsible for establishing the BOP of Luxembourg since January 2002.

19.53. Asymmetries with partner countries have always been a major concern for Luxembourg compilers. Systematic mutual exchange of results and underlying data with partner countries in the past has led to significant reductions in asymmetries in different areas. However, asymmetry tables produced by Eurostat identified persistent bilateral asymmetries in the field of financial services between Luxembourg and selected partners. An in-depth analysis showed that the origin of the differences lies in the treatment of asset management costs taken out of income.

19.54. The investment fund industry in Luxembourg is the largest in Europe and serves mainly non-residents. Almost all the activity focuses on the external sector. In principle, domestic undertakings for collective investment have no direct employment, no offices, do not directly charge fees and in most cases, income earned (on assets) is capitalized (i.e., not distributed to investors). Resident undertakings for collective investment incur expenses for management and administration, payable to a very large extent to the resident management companies. A priori, such transactions between residents are outside the field of BOP statistics.

19.55. On the basis of a recommendation stemming from the European Monetary Institute and in line with national accounts concepts, Luxembourg introduced in its BOP time series a procedure to consider the management fees that are implicitly passed on to investors.³³² The economic substance is revealed by rerouting. All income (on foreign or domestic assets) earned by the undertakings for collective investment is assigned simultaneously to the investors, regardless if distributed or not. Therefore, property income earned by the fund determines the income of its unit holder (investor). The offsetting of the income assignment to the investor is both the management fees assigned to the non-resident investors (financial services) and the reinvestment of the income.

³³² See BPM6, para. 10.124.

19.56. The bilateral asymmetries observed have their origin in that specific treatment, partially because partner countries do not always have the necessary information to produce the corresponding records. Indeed, it is assumed that many shares of Luxembourg-based undertakings for collective investment are held by non-resident households whose financial activities are probably not routinely covered by surveys.

19.57. The geographical breakdown is derived from annual reporting to the supervisory authority that requires an estimate of the percentage of shares or units of

the undertakings for collective investment invested in each country. However, uncertainty related to the geographical distribution is permitted; thus, that uncertainty is a weakness of the procedure.

European Union: validation of data

19.58. Validation of data is performed by the national data providers as well as by Eurostat. Through that process, the plausibility of the data (e.g., the development of time series and possible outliers) and their internal consistency (aggregates should match the sum of the sub-items) is verified. The strong link between structural business statistics (SBS) and inward FATS also exists when validating the data.

19.59. In European Union countries, inward FATS data are usually extracted from the data sources used for SBS, and the results for both domains should be consistent. Some member states have registers of enterprise groups or foreign-owned enterprises that can be used as a basis for identification of the population of foreign-controlled domestic enterprises and such registers are treated as the main source of information for identifying the target populations. However, in practice, such consistency is not always assured. A principal cause of inconsistency is the sometimes considerable difference between the frame populations used for the inward FATS data collection and the foreign-controlled subset of the SBS population. That should not be a problem if correct grossing-up methods are used. In that case, the total number of all enterprises, including domestic-controlled ones, should be equal in both SBS and inward FATS.

Chapter 20

Data and metadata dissemination

20.1. Chapter 20 contains the following sections: a summary of good practices (section A); an introduction to data and metadata dissemination concepts (section B); factors to consider in data and metadata dissemination (section C); the presentation of statistics by mode of supply (section D); and a combined presentation of international merchandise and trade in services statistics (section E).

A. Summary of good practices

20.2. It is good practice for countries continue their efforts in the implementation of the Fundamental Principles of Official Statistics of the United Nations, according to which the dissemination of data and metadata compiled within the statistical framework for describing the international supply of services should be carried out with great care and attention to the needs of users while, at the same time, ensuring adequate confidentiality of data providers. In particular, compilers should ensure the equal treatment of all users, adequate user access and the provision of advance release schedules, and pay due attention to metadata dissemination. It is good practice to discuss and agree with major user groups on the adequate balance between timeliness and reliability and accuracy. It is also good practice to develop a well-designed and transparent revision policy that is well publicized, and coordinated with other areas of statistics.

20.3. More specifically, it is advised that compilers ensure consistency between disseminated data sets covering services transactions between residents and non-residents, FATS and additional indicators on the international supply of services, and that they coordinate the dissemination of trade in services statistics with the dissemination of BOP statistics. It is further advised to disseminate preliminary estimates of available or priority aggregates on services transactions between residents and non-residents monthly, with the main aggregates (by main EBOPS 2010 categories and by main trading partners) disseminated on a quarterly basis and the full detailed data sets on an annual basis. In particular, it is good practice for the value data on services transactions between residents and non-residents be broken down by (a) direction of trade flows (exports and imports), (b) EBOPS 2010, by the 12 first-level categories, at a minimum, but preferably by all relevant subcategories, (c) trading partners, (d) enterprise characteristics (if available) and (e) modes of supply, if such data are compiled or if an allocation is performed following the recommended procedures contained in chapter 14 of the present *Guide*.

20.4. For FATS, the selection of variables to be disseminated is dependent on the quality assessment of the compiled variables and the information needs of the country. However, efforts should be made to disseminate the variables identified in MSITS 2010 and elaborated in chapter 15 of the present *Guide*. It is advised that dissemination of the following annual data be treated as a matter of priority: (a) sales (turnover) and/or output, (b) employment and (c) number of enterprises. It is advised that the data be

broken down by (a) the direction of investment (outward and inward FATS), (b) activity (and if possible, for output or sales (turnover) by product, or at a minimum, a disaggregation into total goods and total services for each activity) and (c) partner (economy of affiliate operations for outward and economy of ultimate controlling institutional unit (UCI) for inward). Moreover, if possible, data on sales (turnover)/output that are rendered to residents of the economy of the affiliate should be separately identified.

20.5. It is good practice to regularly (i.e., on an annual basis) disseminate statistics on service transactions between residents and non-residents, FATS sales (turnover)/output data and selected additional indicators on the international supply of services in a common report, presenting the international supply of services broken down by mode, if possible. For non-monetary indicators, in particular on the movements and stocks of persons covered by modes 2 and 4, as a minimum requirement, countries are advised to disseminate the full detailed data sets on an annual basis, using the breakdowns as suggested in chapter 16. It would also be desirable to disseminate main aggregates on a quarterly basis.

20.6. In terms of maintaining statistical confidentiality, compilers should strive for the full coverage of all flows and stock data that are in the scope of trade in services statistics, while applying appropriate methods to keep, as relevant, certain information confidential.

20.7. The present *Guide* stresses that the provision of microdata (or data about a data provider, including an individual person, household, business or other entity) should be consistent with legal and other necessary arrangements that ensure that confidentiality is protected and that procedures for access to microdata should be transparent and publicly available.

20.8. It is good practice to adopt several formats and means of dissemination to ensure that data and metadata are delivered efficiently to all user groups. In that connection, it is advised to make the most use of electronic databases for the following reasons: (a) to allow free and equal access to all users to any data record considered part of the official trade in services statistics, (b) to store and deliver to users extensive metadata and a broad knowledge base and (c) to allow users to make queries easily with a user-friendly interface throughout the database and to download query results in the most commonly used electronic data formats. It is also recommended that statistical agencies consider the application of SDMX standards in the dissemination of data and its accompanying metadata in order to ensure consistency and coherence.

B. Data and metadata dissemination: an introduction

20.9. The availability of official statistics, including statistics compiled within the framework for describing the international supply of services, is one of the cornerstones of public confidence in good governance, as such statistics can inform debate and decision-making by Governments and the wider community. The present *Guide* highlights the importance of countries' adherence to the Fundamental Principles of Official Statistics which, inter alia, state the following:³³³

- (a) Official statistics "provide an indispensable element in the information system of a democratic society, serving the Government, the economy and the public";
- (b) Those statistics should be made "available on an impartial basis by official statistical agencies to honour citizens' entitlement to public information";

³³³ The Fundamental Principles of Official Statistics are available from <http://unstats.un.org/unsd/dnss/gp/fundprinciples.aspx>.

- (c) The statistical agencies should “facilitate a correct interpretation of the data”, and, therefore, should “present information according to scientific standards on the sources, methods and procedures of the statistics”;
- (d) The statistical agencies “are entitled to comment on erroneous interpretation and misuse of statistics”.

20.10. In the light of those principles, the dissemination of data and metadata should be carried out with great care and attention to the needs of users while, at the same time, ensuring the adequate confidentiality of data providers. Dissemination enhances the accessibility of statistical information and constitutes an indispensable building block for the production of integrated statistics.³³⁴

20.11. The following is a brief description of several good practices that countries are advised to follow in setting up their dissemination policy:

- (a) Users should be treated equally, whether national or international;
- (b) Data should be made available to all users at the same predetermined time;
- (c) Adequate user access to data and metadata (including information on quality of data³³⁵ and methodologies) should be ensured, in terms of making information publicly available in a clear manner that is easy to understand and in adequate forms of dissemination; making statistics available on an impartial and timely basis; and providing prompt and knowledgeable support services to users (e.g., “frequently asked questions” and contact information for questions, as well as technical help). For a major statistical release, it is often helpful for the statistical agency to organize a press briefing covering highlights that could be used to convey significant findings, comparisons and trends to assist the media and other users in understanding and using the publications. Where feasible, special data services could be provided, including special or non-standard groupings of data items or outputs, and information on their usefulness and costs;
- (d) An advance release schedule should be published. It is essential that the dates in the schedule be met.

20.12. **Importance of metadata dissemination.**³³⁶ The statistical agencies responsible for statistics on the international supply of services must ensure that users are able to access and correctly interpret the information about the statistical methods, concepts, variables and classifications used in producing statistical results. Additional guidance on the dissemination of metadata is as follows:

- (a) Sufficient metadata should be made available to enable both the least and the most sophisticated users to readily access data and understand their quality. It is good practice to structure metadata in layers of incremental detail;³³⁷
- (b) Structural metadata should be presented as an integral part of the database and be published as part of statistical tables (e.g., in the form of flags or footnotes identifying differences in definitions, estimations and imputations, provisional values, confidentiality and break in the time series, etc.) by default, unless explicitly removed by the user. Reference metadata can be presented as a detailed explanatory note describing the scope, coverage and quality of a data set and can be made available electronically alongside the database or in special publications. In addition, compilers should make every effort to ensure that users have ready access to metadata through multiple dissemination channels, in both printed and electronic formats (in which Internet dissemination plays a key role), and be free of charge, regardless of whether the statistics they describe are disseminated for a fee in line with the compiling organization’s policies.³³⁸ Any deviation from

³³⁴ See *Guidelines on Integrated Economic Statistics*.

³³⁵ See chapter 19 for more information on quality reporting.

³³⁶ Also see chapter 18.

³³⁷ See OECD, *Data and Metadata Reporting and Presentation Handbook* (Paris, OECD Publishing, 2007), p. 22.

³³⁸ *Ibid.*

international standards (e.g., MSITS 2010, BPM6 or IRTS 2008) should be adequately explained to the user. Whenever feasible, it is good practice for compilers to disseminate metadata using standardized concepts that are relevant across statistical domains (e.g., by adopting cross-domain concepts from the SDMX framework, annex 4).

C. Factors to consider in the dissemination of data and metadata compiled within the framework for describing the international supply of services

C.1. Variables to be disseminated

20.13. MSITS 2010 contains recommendations with respect to the kinds of data variables that should be considered for dissemination. Taking into account the elaboration of the data and metadata variables provided in the present *Guide*, countries are encouraged to organize their dissemination policy as follows:

- (a) **Statistics on the value of trade in services between residents and non-residents.** It is recommended that the full detailed annual value data be broken down by (a) direction of trade flows (exports and imports), (b) EBOPS 2010, by the 12 first level categories as a minimum, but preferably by all relevant subcategories, (c) trading partners, (d) relation between the parties and (e) modes of supply, if such data are compiled or if an allocation is performed following the recommended procedures contained in chapter 14 of the present *Guide*. It is good practice to disseminate on a quarterly basis the main aggregates of such data (in particular for exports and imports, by main EBOPS 2010 categories and by main trading partners). It is also good practice to disseminate preliminary estimates of available or priority aggregates monthly. Compilers should ensure coherence among disseminated data sets and should closely coordinate the dissemination of the statistics with that of BOP statistics;
- (b) **FATS.** The selection of variables that should be disseminated is dependent on the quality assessment of the compiled variables and the information needs of the country. However, efforts should be made to disseminate the basic variables identified in MSITS 2010 and elaborated in chapter 15 of the present *Guide*, namely sales (turnover) and/or output; employment; value added; exports and imports of goods and services; and number of enterprises. As a priority, given their relative ease of production, and the primary interest of users, data should be disseminated for (a) sales (turnover) and/or output, (b) employment and (c) number of enterprises. It is recommended that the data to be disseminated be broken down by (a) direction of investment (outward and inward FATS); (b) activity according to ICFA rev.1 or on a compatible basis such as ISIC rev.4; (c) if possible, for output or sales by product, using a classification system compatible with EBOPS 2010, but if not achievable as a minimum compiling total goods and total services for each activity; and (d) partner (economy of affiliate operations for outward, UCI for inward). For sales/output, if possible, services rendered to residents of the economy of establishment of the affiliate should be identified. FATS statistics should ideally be disseminated at least on an annual basis for variables deemed to be the most important (i.e., priority variables). The corresponding structural and reference metadata items should also be made available (see chapter 18);

- (c) **Dissemination** Countries are further advised to disseminate resident/non-resident trade in services and FATS sales/output data in a common report;
- (d) **Non-monetary indicators, in particular on the supply of services by modes 2 and 4.** These include data on the number of persons crossing borders (or trips), broken down by several classification criteria appropriate for such modes. For countries that have not started compiling trade in services by mode, a possible alternative would be to perform a “conceptual” allocation, as presented in chapter 14, section C. It is good practice to concentrate, at a minimum, on disseminating statistics on an annual basis, using the breakdowns suggested in chapter 16. However, given the strong link of that information with trade and labour mobility policy, it could be of interest to also envisage the compilation of information for shorter periods, for instance on a quarterly basis, at least for main aggregates. Countries are also advised to pay special attention to the dissemination of the relevant structural and reference metadata in order to ensure the correct interpretation of the data. For the other statistics described in chapter 16, section D, given that those are compiled by statisticians in other statistical domains, no particular dissemination practices are detailed in the present *Guide* other than the general principles described above (see also chapter 20, section D).

C.2. Timeliness

20.14. Timeliness in data dissemination is one of the recommended quality dimensions and should be fully taken into consideration when developing the release schedule. The delays in time between data collection and publication should be monitored, as well as how the release of those data fit with the release of related data, such as BOP and national accounts.³³⁹

20.15. When disseminating data, there is usually a trade-off between timeliness, on the one hand, and reliability, accuracy and the level of detail of published data, on the other. To help in making relevant decisions, compilers should consider user requirements (e.g., discussing trade-offs with major user groups and making decisions public) and the timing of the collection of initial and revised data from various sources.

20.16. Compilers are advised to publicly post, for example on the website of the national agency responsible for the dissemination of the official trade statistics, before the beginning of each year, an advance release calendar of data with precise dates at which they will be released and possibly revised. It is also good practice to inform users about the availability of such calendars, using all appropriate means of communication. In addition, to improve timeliness in the dissemination of statistics on the international supply of services, it is good practice to publish on a regular basis the provisional estimates of totals, as well as breakdowns by major service categories and main partners (see section C.1 for more details), soon after the end of the reference period. Such estimates, by their nature, would be based on relatively limited data content and should be replaced by more accurate, but less timely, figures at a later date. Users must be aware of the trade-off between quality (size of revisions) and timeliness (e.g., it is generally not a good practice to publish large revisions frequently), and quality aspects need to be taken into account when deciding on the frequency of publication.

20.17. Compilers are encouraged to issue, as relevant, the first releases of resident/non-resident trade in services data as follows: (a) monthly totals within 45 days after the end of the reference month, at least by main categories of services and, if possible, by major trading partner, (b) quarterly data within one quarter after the

³³⁹ See *BPM6 Compilation Guide*, para. 17.4.

reference period and (c) annual data generally within six to nine months after the reference period. The release of certain data sets, such as annual FATS, can be extended.

20.18. In addition, compilers are advised that data for the fourth quarter (or for the twelfth month) must be compiled and disseminated in their own right, and should not be derived as the difference between the annual totals and the sum for the first three quarters (or 11 months), in order to provide undistorted data for all months and quarters.

20.19. Regarding coherence among monthly, quarterly and annual data, countries should ensure that additivity is always present, possibly by systematic automated checks. In the case of non-additivity, compilers should make available the reasons underlying it in the metadata or explanatory notes.

C.3. Statistical confidentiality

20.20. Statistical confidentiality refers to the protection of information of individual statistical units and must be differentiated from other forms of confidentiality under which information is not disseminated owing to other considerations, for example national security concerns. It is good practice to always strive for the full coverage of all data that are in the scope of statistics on the international supply of services, while applying appropriate methods to keep certain information confidential. The present *Guide* recognizes, however, the necessity of both statistical confidentiality and balancing it against the need for public information in cases in which the application of statistical confidentiality would limit information or make it impossible to provide sufficient or meaningful information. It is also good practice to disseminate a quantitative indicator of the amount of data subject to confidentiality.

20.21. The implementation of recommendations on statistical confidentiality depends to a large extent on each country's legislation and the general confidentiality policy adopted by its statistical system. The assurance of confidentiality is essential to securing the cooperation of reporters and to maintaining the integrity of the statistical system. Confidentiality concerns may also be a more serious issue in smaller or less developed countries in which there are fewer entities likely to be engaged in the international supply of services. An important challenge in the implementation of confidentiality rules is to ensure that confidentiality is applied across all the different classifications in which data are disseminated.

20.22. Active confidentiality is advised, which implies that the statistical agency should take the initiative to actively suppress or aggregate data whose dissemination would enable the identification of any individual person or entity.³⁴⁰

20.23. The Eurostat *Handbook on Statistical Disclosure Control* provides detailed examples and approaches to sensitivity rules when applying active confidentiality and is recommended for further reading.³⁴¹ As shown in table 20.1, common sensitivity rules used include the following: (a) the minimum frequency rule (data suppressed for cells that have less than a pre-determined number of respondents reporting, typically three)³⁴² and (b) the dominance rule, in which the preponderance of the value (whose exact share is to be predetermined by the compiler) is derived from the top one to three entities). It is important to keep the exact predefined parameters confidential. In some cases, the contributor with the second- largest contribution to a cell that is non-sensitive according to the sensitivity rules cited above is able to derive a close upper estimate for the contribution of the largest one by subtracting his or her own contribution from the aggregate total. In such cases, the dominance rule would need to be adapted (see the *p*% rule in table 20.1).

³⁴⁰ It may be interesting to note that in the domain of international merchandise trade statistics, "passive confidentiality" is recommended (i.e., data are treated as confidential only when the trader requests so on the grounds that his or her interests would be harmed by the dissemination of their data and the statistical authority finds the request justified based on the confidentiality rules), unless the use of active confidentiality is already the established, desired and accepted practice (see IMTS 2010, para. 10.3); and *International Merchandise Trade Statistics: Compilers Manual, Revision 1* (IMTS 2010-CM), Studies in Methods, Series F, No. 87/rev.1 (United Nations publication, Sales No. E.13.XVII.8), para. 1.14, available from <http://unstats.un.org/unsd/trade/EG-IMTS/IMTS2010-CM%20-%20white%20cover%20version.pdf>.

³⁴¹ Eurostat, *Handbook on Statistical Disclosure Control: Version 1.2* (2010). Available from <http://unstats.un.org/unsd/EconStatKB/Attachment474.aspx>.

³⁴² While three is a common criteria, some statistical agencies use others. For instance, the United Kingdom sets this number at five companies (see United Kingdom, Department of Trade, Enterprise and Investment, "DETI Confidentiality Statement", available from www.detini.gov.uk/data_confidentiality_statement__principle_5_of_the_code_of_practice_for_official_statistics_.pdf).

20.24. If one data cell is made confidential, it is typically advisable to also suppress the next available cell with the smallest value, so that the value of the primary confidential cell cannot be calculated.

Table 20.1
Sensitivity rules³⁴³

A cell is considered sensitive when:	
Minimum frequency rule	The cell frequency is less than a specified minimum frequency of n respondents
(n, k -dominance rule)	The sum of the n largest contributions exceeds $k\%$ of the cell total, e.g., $x_1 + \dots + x_n > k/100 \cdot X$
$p\%$ rule	The cell total minus the two largest contributions x_1 and x_2 is less than $p\%$ of the largest contribution; e.g., $X - x_2 - x_1 < p/100 x_1$ ⁵

³⁴³ Eurostat, *Handbook on Statistical Disclosure Control: Version 1.2* (2010), para 4.2.1, table 4-1.

20.25. It is good practice to publish an overview of the confidentiality rules so that data reporters are assured that their right to confidentiality is guaranteed, while data users are informed about certain data limitations, enabling them to use the data more appropriately. It is also good practice to provide details to users on what data areas are affected most by the application of confidentiality rules and the magnitude of that effect.

20.26. Demand for access to microdata has been increasing amid the growing recognition of its value for social, economic and business analysis. Arrangements for access to microdata vary from country to country, but compilers should ensure that data are made available only for statistical purposes and that access for research purposes is granted only as long as confidentiality is protected. More information on basic principles to be adopted can be found in *Managing Statistical Confidentiality and Micro data Access: Principles and Guidelines of Good Practice*, published by the United Nations Economic Commission for Europe (ECE) and the Conference of European Statisticians (CES).³⁴⁴

20.27. It is the role of the statistical compiling agency to decide whether, how and to whom its microdata are released, based on well-established considerations, such as (a) the merits of the research proposals and the credibility of the researcher, (b) whether the risk of identification is sufficiently small and (c) whether the confidentiality adjustments made to the data have unduly damaged the microdata for research purposes, among others. Legal arrangements or some form of administrative arrangement to protect confidentiality should be put in place and made visible before any microdata are released. Such arrangements should cover what can and cannot be done and for what purposes, as well as the conditions of release and the consequences if those conditions are breached. Transparency is important to increase public confidence that microdata are being used appropriately and that decisions regarding access are made objectively. The compiling agency's website is an effective means of ensuring transparency and for providing information on research based on released microdata.

20.28. **Managing breaches.** The statistical compiling agency should ensure that researchers are aware of the consequences to them and their institution if there are confidentiality breaches. Legal action could be considered if a legal offence has occurred, but at a minimum, the researcher (and possibly the researcher's institution) should be prevented from further access to microdata. For minor breaches, a warning may be sufficient.

³⁴⁴ *Managing Statistical Confidentiality and Microdata Access: Principles and Guidelines of Good Practice* (United Nations publication, Sales No. E.07.II.E.7). Available from www.unece.org/fileadmin/DAM/stats/publications/Managing_statistical_confidentiality_and_microdata_access.pdf.

³⁴⁵ Special Uniques Detection Algorithm is a system for detecting and grading special uniques. This is needed for confidentializing data sets by first identifying all special unique records and either disguising or removing them. SDCMicro is a free software for the generation of protected microdata for researchers and public use, available at www.ihsn.org/home/software/disclosure-control-toolbox. Country-specific examples of microdata procedures as presented at plenary sessions of the Conference of European Statisticians held by ECE are available from www.unece.org/stats/documents/2013.06.ces.html. More details regarding remote analysis servers can be found in a note by the Australian Bureau of Statistics presented at the sixty-first plenary session of ECE/CES, entitled "Innovative microdata access—confidentiality on the fly" (ECE/CES/2013/29).

³⁴⁶ For example, a number of national statistical offices release public use files, also referred to as confidentialized record files (CURFs), which are heavily confidentialized files that remove names, addresses, geographic information and other details. Microdata can also be made available via research data centres or data laboratories, either on-site or through virtual terminals installed in other organizations. Outputs removed from these centres should be checked manually. Finally, some statistical agencies have begun using remote analysis servers, which allow researchers to submit a query via the Internet to the agency's server, which sends confidentialized output back to the researcher.

20.29. There are a number of software products currently available for managing the confidentiality of microdata³⁴⁵ and many national statistical offices also develop their own tailored processes and software specific to their legislative requirements.³⁴⁶

C.4. Users and data dissemination

20.30. Major users of trade in services statistics that a statistical agency disseminates are likely to include BOP and national accounts statistics compilers (generally the central bank or the statistical office). Key government agencies, such as ministries of the economy or trade, are other major users that will need detailed data on the international supply of services to assist in the determination, monitoring or modification of specific trade or industry policies. Industry bodies, researchers and the media may also be important users. Given the complexities surrounding statistics on the international supply of services, users will often require support, by way of explanatory material of key statistical concepts, for example, and their expectations may need, initially at least, to be more closely managed. Effective interaction with users also includes the promotion of metadata so that they can make better use of the data disseminated.

20.31. It is therefore essential that the compiling agency (or agencies) responsible for the dissemination of data on the international supply of services negotiate with its users in terms of content, standards, classifications, accuracy, timeliness, output format and platform for delivery. Such discussions would also seek clarity concerning the unavoidable trade-off among timeliness, accuracy and cost. When users are from other government agencies, the discussion should occur in the context of the institutional arrangements (see chapter 3). Ideally, users' output requirements would be discussed well before data is to be disseminated, as those requirements have a significant impact on decisions made throughout the statistical process, including the scope of the collection, its cost, required levels of accuracy, timeliness, standards, classifications, explanatory material, format of the output, platforms for its delivery, possible or likely limitations imposed by data providers' confidentiality requirements and the handling of ad hoc requests.

20.32. The compiling agency should be aware that users' requirements may evolve over time. It is a good practice to systematically monitor changing user needs in order to ensure higher relevance of the compiled data, for example via user satisfaction surveys. A well-designed user satisfaction survey regarding data dissemination would normally focus on the following aspects of data dissemination: (a) user-friendliness of the trade statistics database interface, (b) clarity and completeness of available metadata, (c) desirability of continuation of traditional paper publications and (d) ways to improve data and metadata presentation.

20.33. It is also good practice to establish close and long-term relationships with representatives of major user groups in order to identify the most effective ways to disseminate data and metadata. That contact might be done via regular forums for structured communication involving key users and stakeholders, such as standing advisory committees, as well as via ad hoc promotional events. While statistics can be acceptably used and interpreted in many different ways, it is important to maintain trust in, and the credibility of, official trade statistics. The responsible statistical agency, therefore, has to prevent obviously erroneous interpretation of the data, and undertake the necessary corrective actions if such faulty interpretations are detected (for instance, conducting press conferences and press releases, and writing letters to the editor of publications in which misinterpretations have been detected). A good practice for avoiding the misinterpretation of data is to place special attention on

establishing direct contact with the main users of trade statistics whose analyses have a major impact on public policy and public opinion.

20.34. At all stages of the production cycle of statistical output, a statistical agency should have clearly formulated and documented procedures for communication with users. Those procedures should cover content, frequency and protocols for interaction with the media and for ad hoc communication. It is good practice to conduct regular outreach activities aimed at helping users better understand data and put them to the most effective use. Such activities should include efforts to improve the statistical literacy of users and to prevent misinterpretation within the context of a broad public relations strategy to deepen the general public's understanding of the importance of statistics. The following outreach activities could be encouraged: (a) conducting regular user group meetings or seminars; (b) conducting user satisfaction surveys; (c) offering tutorials and user guides explaining how to find data on the dissemination website; (d) organizing press conferences and including contact information in press releases to assist users in the correct interpretation of the statistics; (e) participating in annual conferences of user groups, as well as book fairs and other suitable events; and (f) launching awareness campaigns, such as a national statistics day/week/month. It is also good practice, in all relevant outreach activities, to raise users' awareness of the importance of metadata for correct data interpretation and effective use.

20.35. **Working with the media.** It is also in the best interest of the agency responsible for disseminating external sector statistics to build a strong working relationship with the media, to make it easy for journalists to report on statistical information in an accurate, timely and informative manner and to take steps to increase media coverage as a way of reaching the broader society with important statistical information.

20.36. The capacity of users to pay for data is a factor to be considered in the selection of the best data dissemination method. If users have a limited capacity to pay, especially in cases in which the broad dissemination of data is desired, making data freely available electronically or making hard copies available at libraries would be useful. Regular data dissemination should satisfy most, if not all, user needs. However, some users might have special needs that would require complex data extraction that the users might not be able to perform themselves. Countries might consider offering such users premium data extraction services for a fee. In any case, compilers should ensure that users are made fully aware of all available options for obtaining the required data.

20.37. Both data and metadata can be disseminated in various formats and by various means. In light of the diversity of user groups, it is good practice to adopt several formats and means of dissemination to ensure that data and metadata are effectively delivered. For example, press releases aimed at the general public should be disseminated in ways that facilitate redissemination by the mass media, while more comprehensive or detailed statistics intended for researchers should be disseminated via online databases, with hard-copy publications used as reference materials. Similarly, an individual data set with a range of features may be presented using multiple dissemination methods (e.g., data in a spreadsheet format and the explanatory notes as a PDF file). (See chapter 21, section C, for more information on the use of information technology in data and metadata dissemination.)

20.38. The method of dissemination should also give consideration to the maintenance of links between data and metadata, classifications and explanatory material so that clients can understand and easily access all publicly available statistical information.

20.39. Statistical organizations may choose to publish a standard data set of statistics on the international supply of services that meets the needs of most users via the most readily accessible means or technology (e.g., spreadsheets or printed or electronic documents). For example, in areas in which access to the Internet is limited or lack of bandwidth would make downloading the data too slow, publishing some data sets in a printed format could be preferable to publishing everything online. However, countries are advised that it is generally no longer necessary to issue paper publications containing many detailed sets of tables. A better practice is to focus such publications on the main features of the statistics, presenting data in a more user-friendly way by resorting to enhanced visual elements, such as colour charts, and by adding more analytical information.

20.40. Statistical organizations can also provide more sophisticated data sets via different dissemination methods to more demanding users, if necessary, and possibly with the ability to query the data and create customized data sets. For example, data may be published at a national level as a PDF file on the statistical organization's website, with more data available (which could or could not be free of charge) for more detailed service categories or for more detailed geographic areas through a custom request for data and supplied to individual clients directly. For such an instance, it is worth considering creating interactive tools, such as an online table-building facility, with a user-friendly interface.³⁴⁷ It is important that any customized, automated or interactive systems be designed to correctly apply the compiling agency's confidentiality rules before the data are released.

³⁴⁷ See chapter 21 for more information on the use of information and communications technology.

20.41. There are a number of processes and mechanisms for the exchange or dissemination of data and metadata between different organizations. Bringing together output in a single repository, supported by standard services for loading and extracting content and managing associated metadata, is a good way of ensuring consistency and coherence and can facilitate dissemination to different users with different needs. In that context, the present *Guide* encourages countries to cooperate with regional, supranational and international organizations to identify and apply the most efficient means of disseminating their data on the international supply of services and related metadata, in particular through a relevant use of SDMX. Also, a new dissemination format for BOP metadata uses standardized web forms accessible via the Integrated Correspondence System (ICS), developed to provide reporting countries with an easy-to-use and efficient system for reporting data and metadata to IMF.

C.5. Revision policy

20.42. Recognizing that revisions of data on the international supply of services are often necessary, and given that dissemination of the revised data is essential for users, the present *Guide* encourages compilers to develop a well-designed, carefully managed and transparent revision policy that is well coordinated with other areas of statistics, thereby allowing users to cope with revisions in a systematic manner. A proper revision policy entails the following aspects:

- (a) A detailed description of the revision policy on the responsible agency's website, including the data to be revised, the frequency at which data is to be revised and any reasoning behind such revisions;
- (b) A reasonable stability of timing of the revisions, clearly reflected in the data-release calendar;
- (c) An early notification whenever a revision requires changes in the time series, going as far back as the beginning of the series, to retain methodological consistency, explaining the reasons for the revision and providing information on its possible impact on the data;

- (d) Easy access to sufficiently long time series of revised data;
- (e) The dissemination of all revised monthly, quarterly and annual data to ensure the consistency of all data available to users, including seasonally adjusted data and indices;
- (f) Adequate documentation of revisions in the statistical publications and databases;
- (g) Coordination of revision policy with data providers that might be the origin of large revisions;
- (h) Establishment of an archival database to measure the size of revisions and generate quality indicators.

20.43. Data sources are often continually updated, and some data sources are received with a lag, making it necessary to revise data. Any revision has the potential to impact multiple sections and teams, all operating on different time periods and publications, so consistent treatment surrounding the revision process is necessary to maintain quality, coherence and the usability of the published data.

20.44. Revision policies should balance accuracy with usability. On one hand, it is desirable to account for each and every possible change in the data as soon as possible. On the other hand, frequent changes to a data set may make it difficult for users to get a clear picture of the underlying series and makes version control difficult. The policy should be practical to implement, and should itself be revised if necessary.

Country experience: Russian Federation: data revision policy

20.45. Russian external trade in services data are revised and updated within the overall framework of Bank of Russia's data revisions policy and methodology, in order to ensure the accuracy and comprehensiveness of external sector statistics and ensure the temporal consistency of time series. The revision rules applied in practice to external trade in services time series provide for three different kinds of adjustments:

- (a) *Regular revisions*: when published data are updated, for example in order to replace initial estimates with actual data (in case of time lags);
- (b) *Ad hoc revisions*: when new information becomes available on unrecorded large transactions or when changes are made in the compilation methodology;
- (c) *Technical revisions*: related to the application of the double entry principle in recording external trade in services transactions within the BOP and the need to correct the corresponding double entry, or reflect the change in the source data coverage or other changes.

20.46. Historical data are revised as far back as possible in instances of major changes in methodology; however, they are not revised in the case of changes to data collection systems.

20.47. The results of revisions are published. Annually, Bank of Russia prepares a detailed table of revisions that includes the initial data, revised data and discrepancies, followed by detailed commentary on data revisions. The quarterly publications also contain a detailed list of updated items, periods subject to review and reasons for the revisions, which are assigned special codes. The coded reasons for revisions are:

- (a) Changes in previously reported data;
- (b) Improvements in compilation methodology/computation and evaluation methods;
- (c) Inclusion of information from new sources on non-resident transactions;

- (d) Corrections owing to changes in the pairs of BOP double entry transaction records;
- (e) Replacement of earlier estimates with actual data;
- (f) Other miscellaneous changes.

Country experience: Australia: data revision policy

20.48. The Australian Economic Statistics Revisions Policy (ASERP), published by the Australian Bureau of Statistics (ABS), states, in summary, that economic statistics are typically high-frequency data that require a trade-off between accuracy and timeliness, and it aims to maximize both factors. The policy states that the following principles should be observed: (a) as far as possible, users should be informed in advance of significant methodological changes that will result in revisions; (b) information on revisions, including their reasons, should be kept and published as appropriate; and (c) revisions should be analysed to determine whether improvements in sources or methods could lead to a future reduction in the extent of revisions.

20.49. The current ASERP has been presented with challenges. Among those are: (a) the complexity and risk imposed on business statistical centres (BSCs) from having to maintain parallel data for six to nine months on systems that are not designed for that use; (b) clients agreeing to the introduction of concurrent seasonal adjustment and regular revisions based to a desire to know the true result sooner (the current policy of Australia delays the release of that true, or improved quality, data); (c) increasing reliance on administrative data and not being able to impose the ASERP revisions policy on the administrative sources; and (d) maintaining internal as well as external coherence for statistical data.

20.50. Trade in services statistics have developed their own revisions policy that is consistent with AESRP on a broad level (that is, maximizing accuracy and timeliness while taking both into account) but also guides decisions BSC use. In summary, it states that survey revisions may be recorded at any stage but should be applied only after the current survey data has been finalized to ensure consistency across publication cycles, particularly during periods of monthly, quarterly and annual releases. Historical revisions should be recorded as soon as they are identified, as they only occur once a year in statistics on the international supply of services and may not cover periods in which revisions are identified. Any revisions that do not fit the other two criteria may be applied at any stage. For instance, if the survey data are revised from the previous quarter, the following steps are taken: (a) revisions are identified and confirmed; (b) revisions are documented; (c) revisions are applied in the processing system for trade in services through to working spreadsheets; and (d) those spreadsheets are updated with only the revisions mentioned above and are sent to other areas for further processing.

D. Presentation of statistics by mode of supply

20.51. The present section deals with the dissemination of statistics on the international supply of services by mode 4. The allocation of FATS as a mode 3 supply of services is relatively straightforward (see chapter 15), whereas the modal breakdown or allocation of resident/non-resident trade in services to modes is described in detail in chapter 14, section C. The modal breakdown is key for trade negotiations and analysis, and could provide statistical background for settling disputes, better evaluating market opportunities and monitoring changes in patterns in the international supply of services. Modes of supply statistics could possibly be disseminated on an annual or pluriannual basis as (a) FATS data are more likely to be produced yearly and (b) data on resident/non-resident transactions broken down by mode may not be compiled every year.

20.52. Given the complexity, and different levels of advancement in producing relevant data, it is proposed to proceed in stages in the dissemination of combined information on modes of supply, initially concentrating on monetary aspects. From that perspective it is of utmost importance that compilers provide metadata to users on the issues of comparability of FATS and BOP services transactions data, in particular if for the former the data refer to sales rather than output, are not broken down by product but rather by activity or it is not possible to separately identify sales to the residents of the territory of establishment of the affiliates.³⁴⁸

20.53. First, combining statistics on resident/non-resident transactions in services and FATS gives users a broad perspective on the international supply of services. That broad perspective recognizes the key role in the delivery of services internationally played by affiliates that are located in, but are owned outside, the markets they serve. It is also consistent with the view that many firms take of their worldwide operations. Once countries have developed FATS and BOP services data, a first step would be to report data on BOP services with no distinction of modes alongside data on inward and outward services output (or sales) by foreign affiliates (as a close estimate of the supply of services through mode 3),³⁴⁹ as shown in table 20.3. A data set could first be produced for total services, but then a breakdown into partners and services sectors (keeping in mind the comparability issues that may ensue) would also be useful.

Table 20.2

Services supplied to foreign and national markets through international transactions and through affiliates

	To foreign markets		To the national market	
	Through exports of services (credits)	Through foreign affiliates of resident companies (outward, output of services)	Through imports of services (debits)	Through resident affiliates of foreign companies (inward, input of services)
2000				
2001				
2002				
...				

20.54. Second, for those countries with specific services niches, there may be interest in compiling a breakdown of relevant monetary data (i.e., FATS services output (or sales) and BOP services data) into modes of supply for that sector, in particular to assist the policymaking and negotiations. Data on FATS and services transactions may be collected or compiled separately or together (as described in chapters 6; 14, section C; and 15). Accompanying metadata should be very detailed, since the sector under consideration might not be directly comparable with statistics disseminated by other countries on similar service sectors. Each country might indeed choose to compile services data by mode of supply in very specific niches, taking into account their comparative advantage and the relative importance of the service for their domestic economy.³⁵⁰

20.55. Table 20.4 provides a sample format for disseminating statistics for a specific service for the four modes of supply. Depending on needs, data could be broken down by more detailed types of services and/or by partner, and could also be produced for services supplied to both foreign (exports/outward) and national markets (imports/inward).

³⁴⁸ Concerning FATS data, as long as they are provided only on an activity basis, it will most probably be difficult to present a breakdown of sales or output by product using EBOPS 2010 or ISIC Categories for Foreign Affiliates in services, revision 1 (ICFA rev.1) as suggested in MSITS 2010, chapter V. However, it is important to keep in mind that MSITS 2010 suggests as a long-term goal to develop statistics on sales/output of services by product, using a classification compatible with EBOPS, if possible. An interim solution is to break down output (or sales) for each activity between total services and total goods, the former being of interest in the context of the international supply of services.

³⁴⁹ For a proper estimation of mode 3, one should identify output or sales of services to residents of the country of establishment of those affiliates.

³⁵⁰ A description of the services sector in terms of the Central Product Classification (CPC) could be useful in order to clarify the scope of the service under consideration, which is broken down by modes.

Table 20.3

Dissemination of data on the international supply of services according to the four modes

	Through trade in services			Through foreign affiliates (output of services)
	Mode 1	Mode 2	Mode 4	Mode 3
Services X				
Services Y				

20.56. It is important, however, for compilers to aim to disseminate services data by mode of supply, at least for each main services item and direction of supply (i.e., to foreign markets and to the national market). That is why, as a third step, it is advisable to disseminate a table similar to 20.4, but with the breakdowns described for all main sectors, with more or less detail depending on the interest or availability of data for specific services. Where no data collection or compilation by mode is established, a possible alternative for presenting and disseminating data would be to perform, as a starting point, the “conceptual” allocation of trade in services as presented in chapter 14, section C, (see also table V.2 of MSITS 2010). If it is not possible to use FATS data (e.g., not compiled, or comparability issues are too big), an alternative solution could be to present only the breakdown of BOP trade in services into modes and, if relevant, have the available FATS sales/output data (preferably focusing on services) shown in a separate set of tables. Again, very detailed metadata should be provided that explains the rationale for the allocation of the services items to specific modes.

20.57. Presenting modes of supply data by main service sector will facilitate cross-country comparison, keeping in mind that the presentation may be adapted according to the data availability in the country, as well as on the basis of the compiler’s knowledge of how services are supplied by or in the country. Relevant economic or geographical zones or regions could be presented that would provide additional insight for informing policy decisions. If, for BOP services transactions, it is not possible to distinguish among modes, additional columns could be added (for example at the right-hand side of table 20.4) providing the possibility of presenting information for a combination of modes (e.g., “modes 1 and 4”, “modes 2 and 4”). It is advisable, however, for the headers to reflect the two modes most likely to be relevant for services sectors. To ensure the usefulness of the information, the use of such additional columns should be limited, the longer-term aim being to show all transactions under respective single modes, ultimately removing the combined columns.

20.58. Finally, for other indicators relevant in the context of the international supply of services, the details of interest from a trade policy perspective should be made available or easily accessible for policymakers and analysts. It is therefore suggested that the responsible agency at the national level make information (or links to it) available to users in a standardized format, for example in a database or analytical report alongside the FATS and BOP services data, as described above. Particular attention should be brought to modes 2 and 4 non-monetary indicators, which should be disseminated using the breakdowns suggested in chapter 16 to the extent possible.

20.59. Examples are shown in Table 20.4 and Table 20.5 for the United States and New Zealand, respectively. However, as shown in the present *Guide*, other national agencies have engaged in the publication of monetary data broken down by mode of supply, including Reserve Bank of India and the International Legal Services Advisory Council of Australia. In addition, reports combining indicators from various sources are published by some agencies in charge of analysing the international supply of ser-

vices, such as the International Trade Commission of the United States or Department of Foreign Affairs and Trade of Australia. Readers are advised to refer to those reports for examples of the dissemination of data on the international supply of services.

Country experience: United States: combining statistics on resident/non-resident transactions in services and FATS

20.60. The United States Bureau of Economic Analysis (BEA) releases statistics on the international sales and purchases of services on an annual basis.³⁵¹ Those statistics cover resident/non-resident transactions in services as well as services supplied through locally established direct investment enterprises, or affiliates, obtained from FATS.³⁵²

20.61. The annual statistics on resident/non-resident transactions in services are consistent with the statistics on United States trade in services that BEA disseminates via monthly (global aggregates for selected types of services), quarterly (detail for more types of services and for selected partner countries and regions) and annual (greatest details by service categories and by partner) releases. The statistics on services supplied through affiliates included in the international services statistics are derived from FATS. Separate releases for inward and outward FATS provide detail by country and industry for all the data items that BEA collects.

20.62. In the presentation on international purchases and sales of services, resident/non-resident transactions of exports and imports represent trade in the conventional sense and cover transactions between residents of the United States and residents of foreign countries. They include both transactions between unaffiliated parties and trade within multinational enterprises (intrafirm trade). The data on services supplied through affiliates cover majority-owned affiliates and include services supplied to foreign residents through the foreign affiliates of United States multinational enterprises and services supplied to United States residents through the United States affiliates of foreign multinational enterprises. Such transactions are not considered United States international transactions because under the residency principle of BOP accounting, affiliates of multinational enterprises are regarded as residents of the countries where they are located rather than of the countries of their owners. The measures of services supplied are based on data that require affiliates' sales or gross operating revenues to be distributed among sales of goods, sales of services and investment income.

20.63. BEA recognizes in its reports that there are differences in coverage that make comparisons of services supplied through affiliates to resident/non-resident transactions imprecise.³⁵³ However, the large gap between resident/non-resident transactions and services supplied through affiliates indicates the importance of such services as a channel through which enterprises sell services to foreign markets. This could be due to the fact that selling through locally established affiliates is the only practical method of delivery for many types of services because of the need for proximity in both time and space between the consumer and the producer. In addition to coverage differences, precise comparisons of the relative size of the two modes of delivery cannot be made for specific types of services because the data on cross-border trade are classified by type of service, whereas the data on sales of services through affiliates are classified by the primary industry of the affiliate. An example of the data release on the United States international supply of services is provided in table 20.5.

³⁵¹ See website of the United States Department of Commerce, Bureau of Economic Analysis, www.bea.gov.

³⁵² Cross-border trade in private services excludes transactions by the Government of the United States (including the military). Trade in private services is featured in the statistics on international sales and purchases of services because they are most comparable to the services supplied through affiliates, which cover activities of businesses.

³⁵³ An example of a difference in coverage is the inclusion of distributive services in the measure of services supplied through affiliates but not in the cross-border trade statistics. The distributive services associated with importing and exporting goods are included indistinguishably in the value of trade in goods.

Table 20.4
Services supplied to foreign and United States markets through cross-border trade and affiliates

	To foreign markets		To United States market	
	Through cross-border trade (United States exports)	Through foreign affiliates of United States enterprises ^a	Through cross-border trade (United States imports)	Through United States affiliates of foreign enterprises
Billions of dollars				
2008	516.3	1,116.9	372.5	701.6
2009	490.5	1,071.6	350.4	669.3
2010	538.6	1,155.2	372.9	701.2
2011	595.7	1,287.0	39.4	754.0
2012	628.1	Not available	414.7	Not available
Percentage change from preceding year				
2008	9.8	9.6	10.4	2.6
2009	-5.0	-4.1	-5.9	-4.6
2010	9.8	7.8	6.4	4.8
2011	10.6	11.4	6.8	7.5
2012	5.4	Not available	4.1	Not available

^a A non-zero value between -0.05 and 0.05 percent.

Note: The statistics on cross-border trade for 2003-2011 and services supplied through affiliates for 2010 are revised from those released in October 2012.

Country experience: New Zealand: disseminating trade in services by mode of supply by broad service type and by partner

20.64. New Zealand disseminates two tables presenting services exports by mode of supply for main services items and main partners. Mode 3 is out of the scope of the BOP survey, which is used to collect the information on trade in services by mode, so only modes 1, 2 and 4 are presented in the two tables. Table 20.6 presents exports of services by mode of supply and broad type of services. A similar table shows, by mode, the main partners to which services are supplied.

Table 20.5
New Zealand supply of services to foreign markets by mode and broad type of services

Broad service type	Year ended 30 June 2011 New Zealand \$ (million)		
	Cross-border supply ^b	Mode of supply ^a Presence of natural persons ^c	Consumption abroad ^d
Information and communication technology services	642	69	14
Financial services	189	2	1
Trade and sales services	551	34	20
Business services	831	66	25
Technical and professional services	343	137	9
Intellectual property	469	...	...
Miscellaneous services	136	84	12
Entertainment and recreational services	219	71	24
Services not elsewhere classified	43	--	1
Total	3,424	463	105

^a Data may not add to stated totals due to rounding.

^b Cross-border supply is when the work is performed in New Zealand and delivered to a customer overseas (e.g., by Internet, phone or mail).

^c Presence of natural persons means the work is performed by a New Zealand employee working in a foreign country.

^d Consumption abroad is when the customer travels to New Zealand to take delivery of the service.

Symbols:

.. not applicable

-- amount too small to be expressed

Source: Statistics New Zealand.

E. Combined presentation of international merchandise and trade in services statistics

20.65. The presentation of an integrated set of statistics is recommended by the Statistical Commission, as it will benefit the user by creating a better understanding of the disseminated data and reinforcing messages in favour of evidence-based policy- and decision-making.³⁵⁴

³⁵⁴ *Guidelines on Integrated Economic Statistics*, para. 5.115.

20.66. Users expect that trade statistics cover both goods and services and are presented to them as a coherent data set. Such presentation of the data is essential for enabling users to better understand international trade between countries A and B and a country's export and import profile.

20.67. To meet that user expectation, it is good practice for compilers, in addition to making trade in services statistics available in their own right, to closely cooperate with compilers of international merchandise trade statistics (IMTS) in order to develop a policy of presenting some data on resident/non-resident trade in services and merchandise trade alongside each other (as appropriate), accompanied by an appropriate explanation of their scope, including conceptual overlaps and numerical assessments of such overlaps. It is also good practice to provide guidance on interpreting the data, including examples on how the data can and cannot be used.

20.68. In particular, a combined presentation of the data should be considered, as long as users are informed of the methodological differences behind the figures, and the data are made as comparable as possible beforehand. For further discussion of the methodological differences between trade in services and merchandise trade (e.g., in terms of coverage, timing, valuation and classification) and for adjustments needed to make the data comparable, see annex D.³⁵⁵

³⁵⁵ Annex D will be made available on the United Nations website.

Country experience: Germany

20.69. In 2011, Deutsche Bundesbank and the Statistical Federal Office of Germany decided to present merchandise trade data along with trade in services data in a collaborative publication for interested users on a yearly basis. It was published for the first time in 2012 on the websites of both institutions and is available only in an electronic version.

20.70. The publication contains annual data from 2009 on of merchandise trade from foreign trade statistics (FTS) broken down into main industrial groupings, selected economic activities and country groups. Due to the methodological differences between FTS (movement across the border) and BOP concepts (change of ownership), the publication also provides some basic information about the total corrections made to reconcile merchandise trade with the goods account on a BOP basis.³⁵⁶

³⁵⁶ For further details about the necessary adjustments, see BPM6, table 10.2, p. 161.

20.71. Trade in services is broken down by such major services items as travel, transport, construction or financial services and by country groups already used for merchandise trade. To highlight the relevance of the aggregates for the economy, the publication further contains a table showing the relationship of exports and imports of merchandise and services to gross domestic product (GDP).

20.72. The publication provides users, for the first time, with a complete picture of German trade with the rest of the world in a coherent way. However, the current version is quite condensed and so Deutsche Bundesbank must wait for users' feedback. As mentioned before, the publication will be updated on regular basis at the end of year following the reporting period ($t-1$).³⁵⁷

³⁵⁷ An English version of the publication is currently not available. The German version is available from www.bundesbank.de/Redaktion/DE/Pressemitteilungen/BBK/2012/2012_12_07_ausfuehren_waren.html.

Chapter 21

Use of information and communications technology

21.1. Chapter 21 provides a summary of good practices associated with the use of information and communications technology (ICT) (section A) in the collection and dissemination of statistics compiled within the framework for describing the international supply of services. The ways in which ICT can be used at the data collection stage are discussed in section B, while the data compilation and dissemination stages are reviewed in section C. The topics covered include electronic data collection and compilation methods, including electronic questionnaires, computer-assisted personal interviewing, Internet data collection and data and metadata warehousing, as well as technological considerations at the dissemination stage. The chapter also includes country examples on implementing web-based statistics reporting portals and on a mobile application for data dissemination.

A. Summary of good practices

21.2. Compilers are encouraged to consider implementing such electronic data collection methods as electronic questionnaires, computer-assisted personal interviewing, Internet data collection and electronic file transmission, as they offer the potential for improving the accuracy and timeliness of statistics, reducing survey cost and reporting burden and diminishing the compilation burden. Given the complexities of collecting data on the international supply of services and its various dimensions, adopting an electronic data system may assist in collecting detailed breakdowns by type of service, partner country or mode of supply, as well as for different types of variables.

21.3. It is good practice for electronic data collection methods, especially electronic surveys, to include the use of built-in automatic edits and other devices, such as automatic data fills and calculations, prompts for missing fields and automatic skipping of not-applicable questions, that allow respondents to avoid errors and to fill in the questionnaire faster and more easily.

21.4. Compilers should also be aware that the use of electronic questionnaires may introduce a certain bias in survey results (at least in the early stages of implementation), because some potential respondents may be unable to participate owing to a lack of access to, or a lack of familiarity with, the appropriate technology.

21.5. Compilers are advised to design their processing systems in an efficient way so that data and metadata can be conveniently retrieved from the relevant databases, be used in the generation of the intermediate and final data sets and be updated and synchronized. In that context, compilers are encouraged to design and use a warehousing system for data and metadata to integrate the dissemination of information with the collection and processing components of the statistical production process.

21.6. Compilers are further advised to choose the form of technology used for dissemination on the basis of the nature and quantity of data to be published. In making such decisions, statistical organizations should also consider the needs of their users, e.g., publish a standard data set that meets the needs of most users via the most readily accessible technology, and provide more sophisticated data sets via different dissemination methods, such as online interactive databases (free or not). Printed publications can also be produced more easily with an effective use of information technology.

B. Use of information communications technology at the data collection stage

21.7. Electronic data collection includes the use of electronic questionnaires via computer-assisted personal interviewing (CAPI), computer-assisted telephone interviewing (CATI), computer-assisted web interviewing (CAWI) and Internet data collection (possibly via an Internet portal), among others. Electronic forms may ease the collection of data but also present new challenges as well as opportunities, for example for improving editing. In particular, they offer the possibility of using built-in edits previously not possible in paper or other non-electronic modes of data collection. More generally, electronic data collection can result in other efficiency gains by allowing for the study and upgrading of current editing practices or editing practices associated with other non-electronic collection modes, analysis of different problems using multimode data collections, measuring the respondent burden and measuring the quality and reliability of responses in order to provide valuable information to other survey processes.

21.8. The use of electronic questionnaires improves accuracy and timeliness and, at the same time, reduces survey cost, reporting burden and processing burden. First, the elimination of the need for the statistical agency to manually enter data from surveys prevents a common source of error. Moreover, improved accuracy results from the possibility of adding built-in automatic edits in electronic questionnaires, allowing respondents to avoid errors or reduce the time spent filling in questionnaires. For example, devices such as automatic data fills and calculations, prompts for missing fields and automatic skipping of not applicable questions could help the respondent to fill in the questionnaire more easily, more accurately and faster. Although, as with any form of questionnaire, it is possible for survey respondents to misinterpret the questions, electronic questionnaires would help to reduce that risk by including within the electronic forms notes explaining the type of information that is expected from respondents and definitions of key concepts. Therefore, the use of electronic questionnaires is encouraged as it enhances data quality, and, in the case of statistics compiled within the framework for describing the international supply of services, can also help in the collection of multiple variables (e.g., receipts or payment for services and associated quantity indicators, such as number of mode 4 persons/trips) and accompanying dimensions (service type, partner, relationship between the parties, modes of supply, etc.).

21.9. It is very difficult to measure the real impact of the use of such questionnaires on accuracy, given the self-selective nature of the respondents who choose the electronic option. Compilers should also be aware that use of electronic questionnaires may introduce a certain bias in survey results (at least in the early stages of implementation), because some potential respondents may be unable to participate owing to the lack of access to, or the lack of familiarity with, the appropriate technology (e.g., those without a computer or Internet access, the elderly, low-income groups or those with little education).

21.10. There are several methods that compilers can employ to encourage respondents to provide data via electronic questionnaires. For example, compilers can explain the time-saving benefits of such questionnaires to respondents or can offer incentives (e.g., temporary access to or previews of information on survey results, or free deliveries of customized data queries). Compilers are also advised not to underestimate the value of providing a high level of customer service and thanking respondents for their responses, regardless of the method of questionnaire response. Finally, it is important to note that the success of the implementation of such a process also lies in the cooperation of survey managers and information technology specialists.

21.11. **Computer Assisted Personal Interviewing (CAPI).** CAPI is a computer assisted data collection method that replaces pen-and-paper methods of survey data collection and is usually conducted at the home or business of the respondent using a portable electronic device, such as a laptop, notebook or tablet. As the technology advances to provide lighter devices with longer battery life and more user-friendly software, CAPI is expected to be used more often, especially for quick turnaround surveys.

21.12. **Internet data collection (IDC).** IDC is a means of quick survey data collection using the Internet in which respondents submit responses using web-based forms, sometimes available on statistics “portals”. A system administrator retrieves the completed forms and routes them for further processing. Existing systems of IDC often produce ready-made data files with all answers, which can subsequently be combined, if necessary, with data obtained by other modes of collection.

21.13. **Electronic file transmission.** Compilers can also collect data via transmissions of data files (e.g., spreadsheets or in text format) through a secure website or e-mail address. That method has the advantage of eliminating the need for the compiler to manually enter data from a survey; however, automatic edits or checks for accuracy may not be built into the data file in the most straightforward way in an electronic questionnaire.

21.14. **Extensible Business Reporting Language (XBRL) reporting.** XBRL is an XML-based computer language developed for the electronic transmission of business and financial reports. Some regulatory agencies have established processes for businesses to fulfil their mandatory reporting requirements using XBRL standards. XBRL tools have also been developed for the reporting of financial information to taxation and statistical agencies. Such tools reduce the cost of compliance for businesses by building reporting requirements into standard accounting software packages in a way that automates the process of reporting to government agencies.

21.15. The core methodology is an XBRL taxonomy that defines all the data items that the relevant agencies require from businesses. An essential step in developing the taxonomy is harmonizing the data items collected by different government agencies. If two agencies require the same definition of a data item, it is given the same name. If the different agencies establish that they need different definitions, then they are specified with different names. That harmonization process not only simplifies reporting by businesses by standardizing definitions, it also assists with the integration of statistics, ensuring that different collection agencies have coherent data definitions.

Country experience: Germany: statistics reporting portal

21.16. As in other countries, the former practice of collecting data exclusively through the use of paper forms was replaced by offering respondents the ability to transmit the requested information by electronic means, e.g., a spreadsheet that can be uploaded via the extranet infrastructure of Deutsche Bundesbank³⁵⁸ or the submission of an electronic report in Extensible Markup Language (XML) format.

³⁵⁸ For more details see www.bundesbank.de/Navigation/EN/Service/Extranet/extranet.html.

21.17. The reaction of the reporting community to such offers was very positive, resulting in an annually increasing share of reports transmitted electronically. Although in the beginning, the target was to motivate mainly the “big players” (representing a high share of the overall reported data) to use electronic means, later the focus shifted to encompass small and medium-sized enterprises. That shift came in response to the conclusion that only a complete electronic data collection system enabled efficiency gains in the different stages of the statistical production chain (editing, aggregation, dissemination, etc.) and the reduction of the reporting burden.

21.18. The statistical reporting portal was designed to allow all respondents to electronically and securely transmit their data on international transactions and positions to Deutsche Bundesbank. The respondent can either manually enter the data or import it into the portal from another source in a prescribed data format (i.e., comma-separated values (CSV) format). In addition, the portal contains a range of help functions and plausibility checks to ease the creation of reports, e.g., when entering data, drop-down lists show the selection options available. The data are automatically checked and any potential errors are identified. The portal is also a multi-client system, meaning that it can be used by third-party submitters, such as a lawyer’s office reporting on behalf of its clients.

21.19. The main advantage of the portal is the possibility of receiving higher-quality data more quickly than with paper or other means of electronic data collection. Other advantages include the high level of security, user assistance (e.g., plausibility checks) and the integrated interface for uploading large files.

21.20. At the time of writing, Deutsche Bundesbank receives more than 86 per cent of the referenced transaction volume electronically. That high proportion of electronic reports encouraged the bank to change its legal requirements so that all respondents transmit the requested information solely by electronic means.

Country experience: United States

21.21. The Bureau of Economic Analysis (BEA), an agency of the Department of Commerce of the United States, started collecting international investment data via the Automated Survey Transmission and Retrieval (ASTAR) system in 2000. The system was subsequently used in connection with surveys of trade in services. One of the key features of the ASTAR system is its ability to allow respondents to work at their own pace until the data are ready for submission. The system also incorporates data export and import capabilities for integration with other software, such as spreadsheets, as well as encryption features that safeguard the confidentiality of the reported data. In 2005, BEA began researching electronic filing alternatives in the face of evolving technology, and selected e-forms as the basis of its second-generation electronic survey data collection program, called eFile.

21.22. One of the main benefits of the eFile system is the lower cost of maintenance when compared with ASTAR. The eFile system is supported and maintained in-house and not by external contractors. More specifically, BEA can build the fillable forms in-house (using forms supplied by the Census Bureau), whereas ASTAR must be supported by external contractors.

21.23. Another key benefit and feature of eFile is the password-protected portal site, which allows respondents to manage their own passwords; with ASTAR, respondents must contact BEA at the beginning of each reporting cycle to receive period-specific passwords. The ease of eFile password management reduces the maintenance burden for BEA and may also encourage more respondents to use the eFile system.

21.24. The eFile system also has the potential to collect more accurate data, as fillable forms allow more flexibility in checks for validity and form-specific logic than ASTAR. Additionally, BEA can better ensure data security, as respondents save and submit their encrypted data on the BEA website. Lastly, eFile users receive confirmation of their submissions almost instantaneously, whereas ASTAR respondents receive confirmation only after the data have been loaded into the internal database of BEA. BEA plans to phase out ASTAR and convert to eFile for all of its surveys. In addition, the development of a feature allowing respondents to import their data directly into eFile, without the need to enter data manually, is seen as a major improvement. The survey managers and information technology specialists at BEA are committed to working together to continually improve and augment the system.

C. Use of information and communications technology at data compilation and dissemination stages

C.1. Data and metadata warehousing³⁵⁹

21.25. With well-designed data and metadata warehouses, the dissemination of data and metadata becomes integrated with the collection and processing components of the statistical production process. Use of a centralized data warehousing system for data and metadata can make creating, maintaining and accessing data and metadata more efficient and can contribute to the integration of economic statistics, as well as help to bring together the various set of statistics that respond to user needs with respect to the international supply of services.

21.26. As better information technology tools have become available, many statistical agencies are moving towards the development and population of such data warehouses. A data warehouse should establish a simple and efficient process for accessing data to provide the following:

- (a) Comprehensive metadata to facilitate understanding and analysis;
- (b) Consistent and coherent long-term time series;
- (c) Reliable information about the availability of data;
- (d) Information about the availability of updated versions of published series;
- (e) Contact details for the people who can provide more information about a statistical output.

C.2. Means of dissemination

21.27. Both data and metadata can be disseminated in various formats and by various means. The present *Guide* advises that the statistics compiled within the framework for describing the international supply of services be made available to users through the electronic databases maintained by the responsible agency.³⁶⁰ An efficient use of information technology may also simplify the production of statistical publications, whether in electronic or paper form.

21.28. The nature of the data to be published will have a significant influence on the form of technology used for dissemination. For example, large, detailed data sets are likely to be more appropriately published electronically, since the format increases the ability of users to adapt the presentation of the data to satisfy their information needs. Likewise, where very large amounts of data are involved, the ability to query the data and create customized data sets could be useful. In that instance, it is worth considering creating interactive tools, such as an online table-building facility, with a user-friendly interface. Often such online facilities also provide the option to dis-

³⁵⁹ See chapter 18 for more information on data and metadata warehouses.

³⁶⁰ Such databases should: (a) allow free and equal access to all users to any data record considered part of official trade in services statistics; (b) contain an extensive metadata and knowledge base; (c) allow for easy querying, with a user-friendly interface on the entire database, and for downloading query results in commonly used data formats, such as spreadsheets and comma-delimited text files, thus reducing the need for personalized handling of most data requests and greatly enhancing the efficiency of data dissemination.

play the data in interactive graphs or maps, or via such other forms of visualization as infographics. Such visualizations can be very helpful for communicating data and information (e.g., trends over time, distributions, comparisons across groups and geographical origin/destination) clearly to users and can make complex information stories easy to grasp.

21.29. Web-based electronic publications can also contain data and metadata presented in html format, as a downloadable document (e.g., PDF) or a spreadsheet. Internet access is clearly a key consideration when assessing user accessibility and the additional publication of some data sets in a printed format. It should be considered in those areas in which Internet access is limited or lack of bandwidth would make downloading the data too slow. (See chapter 20, section C, for more information on data and metadata dissemination.)

Country experience: Austria

21.30. The central bank of Austria, Oesterreichische Nationalbank (OeNB) offers a statistics mobile application (known as an “app”)³⁶¹ that connects mobile users to the broad range of data provided by OeNB, including pertinent press releases. The application runs on Android or iOS mobile devices and was designed for smartphones, but also works well on tablets. The tool application enables OeNB to meet its social responsibility of providing sound financial statistics to the broad public in a highly efficient and user-friendly way. A mobile application can reach out to a large number of recipients and address fast-emerging target groups that are heavy users of modern technologies.

³⁶¹ See www.oenb.at/en/Statistics/Statistics-App.html.

21.31. The application provides access to the following domains:

- (a) OeNB, Eurosystem and monetary indicators;
- (b) Interest rates and exchange rates;
- (c) Financial institutions;
- (d) Securities;
- (e) Prices and competitiveness;
- (f) Economic and industry indicators;
- (g) Financial accounts;
- (h) External sector;
- (i) International comparisons.

21.32. Users can select specific time series to be displayed as tables and charts. Data can be filtered for specific frequencies and ranges, and can also be forwarded to an e-mail address for access through another end device, such as office computers. Bookmarks allow for quick and regular access to specific time series. Moreover, the application automatically suggests a list of the most frequently accessed time series. Users are alerted to new developments through integrated statistical press releases, and can also access explanatory notes and publication schedules. Users can install the application via the Android and iOS application markets or by scanning the Quick Response (QR) Code provided on the OeNB website.

21.33. OeNB launched its mobile application in 2011 and reached about 4,000 users in the first year. A specific function allows for carrying out highly flexible user surveys, on the basis of which the application can be adapted to user needs.

21.34. The application complements the mix of communication tools used by OeNB, such as its web presence, publications geared to specific target groups and several instruments aimed at enhancing financial literacy. Substantial synergies have been achieved by implementing the application in the existing information technology

infrastructure. Basically, the application serves as an alternative tool for presenting data extracts from the database that feeds the statistics applications of the web portal; the application connects to that database through an interface developed in-house. The software itself was developed by an external software consultant. The whole project took about 18 months to develop and implement. The effort required to maintain the application is limited, as the application is built upon an existing and well-established infrastructure, and its administration is highly automated.



14-66197

ISBN 978-92-1-161592-0

