

The 2008 SNA - compilation in brief

A complement to the System of National Accounts 2008

World Bank

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Preface

The System of National Accounts (SNA) aims to cover all aspects of all economies necessary to measure economic activity comprehensively and in a manner that will be comparable over time and across countries. This is ambitious and because large, complex economies must be covered as well as smaller and less complex ones, the resulting manual is large and may seem daunting to someone trying to determine how to approach the task of compiling the accounts for the first time. Further, some of the detail in the SNA is simply not applicable to all economies, in particular the detailed treatment of complex financial instruments. In addition, when a staff member of a statistical office comes to the national accounts for the first time, especially if there is little experience of compiling accounts in the office, the fact that the SNA concentrates on concepts with much less discussion of practical compilation problems, may be disappointing and frustrating.

The System of National Accounts (SNA) was first adopted by the UN Statistical Commission (UNSC) as an international standard in 1953. This version of the SNA included rudimentary sector accounts, which were considerably elaborated in the 1968 SNA. The development of balance sheets and their integration with the rest of the system was proposed in a national accounting handbook in 1977 and fully integrated in the 1993 SNA, along with the integration of measurement in constant price terms. The 2008 SNA took consideration of the integration of various sectors of the economy and the role of assets further. Until the late 1980s, centrally planned economies used an alternative system, the System of Material Balances, but all countries in the world now accept the SNA standard.

However, not all countries have been able to implement the SNA in its entirety or incorporated the elaborations of later version of the SNA. In the early 1990's, many developing countries were still mainly using the guidance in the 1953 SNA. Thus these countries were implementing a very small subset of the whole system, basically just the various estimates of the GDP aggregate with little if any information on income flows and capital accumulation relating to the main sectors of the economy.

At various points the UNSC has considered why greater progress to implement the whole system has not been made. Calls are regularly made to provide more technical assistance and training materials but despite the positive response by many donors, the situation has not improved dramatically over the last two or three decades. In the national accounts data base posted on the UN web site in November 2010, data for only 80 countries appears, of which only about 25 are not members of the OECD, in Europe or were part of the former Soviet Union. Of these, only about a dozen, mostly in Latin America, provide information on income flows by sector.

From time to time the idea of devising a simplified SNA has been floated for developing countries. This has not been pursued because the range of developing countries is extensive; some are close in economic sophistication and statistical resources to many OECD countries, possibly further advanced than some of these. At the other end of the range, however, are very many countries with

relatively small populations, economies that are still concentrated in a few areas and with a limited number of skilled professionals.

With this background the World Bank has undertaken the preparation of two handbooks to help extend the implementation of the SNA in countries such as these. The proposition here is that the problem is not that the SNA is too complex for developing countries or that staff in developing countries are unaware of the guidelines it contains. Rather it is that statistical offices do not have the resources available to both collect and analyse all the data required for an exhaustive implementation of the system and that some of the recommendations in the SNA have marginal consequences for many small countries without sophisticated financial markets.

One of the new handbooks is described as *Concepts in Brief*. It is not only strictly consistent with the full text of the 2008 SNA, but uses that text. However, by setting aside some aspects of limited (or possibly no) relevance to many small developing countries, such as a description of sophisticated financial instruments and some possible elaboration of links to other systems, the 600 pages of the full text of the 2008 SNA is reduced to one third of this. The document carefully enumerates what has been omitted so that the reader is aware of these and able to turn to the more extended volume if required.

The second of the World Bank handbooks, described as *Compilation in Brief*, suggests that the way to extend the range of implementation of the whole system, however, is not a simplification of the basic theory of the SNA but a simplification of compilation practices. Ideally this should be a first step towards a more extensive coverage of the accounts but even the simplified accounts should serve to make users aware of the potential of the whole system and give the compilers courage to build on these first steps.

Countries with abundant resources (of both staff and data) produce annual accounts consisting of:

Estimates of GDP from three perspectives in value and volume terms,

Supply and use tables (and possibly an input-output table) detailing which goods and services are used to produce other goods and services,

Sets of accounts for the four major domestic sectors and the rest of the world,

Balance sheets of financial and non-financial assets for the same sectors

In addition they will produce quarterly accounts of the three estimates of GDP.

The simplifications suggested in *Compilation in Brief* are to reduce the detail underlying the supply and use tables, not to proceed to calculate an input-output table, and to simplify the demarcation of sectors. Input-output tables were a key feature of the 1968 SNA and reflected the policy interest at the time in trying to mimic the technology of production within a statistical table. Although the technological applications have diminished since the 1970s, supply and use tables are still a very powerful tool with which to assess the quality of the statistics emerging from the national accounts tables. However, working with a relatively small table and abandoning the attempt to identify technology-based establishments necessary for formal input-output tables preserves the quality control aspects at very greatly reduced resource cost.

Sector accounts show the different roles of enterprises, government and households in the economy. Who benefits from government spending and the payment of benefits? How are these financed by tax revenue and borrowing? Are households living within their means or on credit? Are enterprises sufficiently profitable to be able to afford new investment? These are the questions on every commentator's mind but most developing countries can give no answers from their national accounts. In all economies the borderline between small enterprises and household activity is fuzzy and difficult to draw in strict statistical terms. It is arguably the difficulty of drawing this line that has inhibited the development of sector accounts in many countries. The proposal made here is to concentrate in the first instance on large companies which are small in number but account for the overwhelming majority of corporate activity. This makes the borderline with households fuzzier but enables the process of drawing up accounts

to start. Once some figures are available the compiler gains confidence to go further and the analyst sees what is available and learns how to use these more elaborate accounts to answer the questions of the moment

With these two steps, it is argued, it is possible for even a country with limited resources to produce a set of accounts that is recognisable as portraying the whole economy in the sort of detail envisaged in the SNA. Obviously, in an ideal world with unlimited resources neither of these approximations would be desirable but it is close to half a century since many African countries and Pacific islands achieved independence and not only have plentiful resources still not become available but they do not appear to be on the horizon. These publications suggest an alternative strategy whereby staff in developing countries can themselves take the initiative to redirect limited resources towards a slimmed down but complete implementation of the SNA that is still able to produce more policy-relevant statistics than existing approaches.

This publication is intended as a complement not only to the full version of the 2008 SNA but also to the many handbooks and guidelines that have been developed over many years giving comprehensive advice on data collection and compilation practices in many areas of economic statistics. Many of these are referred to at various places in the text.

This document and the companion one were prepared for the World Bank by the editor of the 2008 SNA, Anne Harrison.

List of abbreviations and acronyms

BOP	Balance of payments		
BPM	Balance of Payments and International Investment Position Manual	MFSM	Monetary and Financial Statistics Manual
		MMF	Money market fund
		MNE	Multinational enterprise
CIF	Cost, insurance and freight	MPI	Import price index
COFOG	Classification of the Functions of Government		
COICOP	Classification of Individual Consumption by Purpose	n.e.c.	Not elsewhere classified
		NDP	Net domestic product
COPNI	Classification of the Purposes of Non-profit Institutions Serving Households	n.i.e.	not included elsewhere
		NNDI	Net national disposable income
COPP	Classification of Outlays of Producers by Purpose	NNI	Net national income
CPC	Central Product Classification	NOE	Non-Observed Economy
CPI	Consumer price index	NPI	Non-profit institution
		NPISH	Non-profit institution serving households
DBMS	Database management system	NPV	Net present value
FDI	Foreign direct investment	OECD	Organisation for Economic Cooperation and Development
FISIM	Financial intermediation services indirectly measured	OEEC	Organisation for European Economic Cooperation
FOB	Free on board		
F _p	Fisher price index	PAYE	Pay-as-you-earn
F _Q	Fisher volume index	PF	Pension fund
		PFI	Private finance initiative
GDI	Gross domestic income	PIM	Perpetual inventory method
GDP	Gross domestic product	PIM	Perpetual inventory model
GFS	Government finance statistics	P _p	Paasche price index
GFSM	Government Finance Statistics Manual	PPI	Producer price index
GNI	Gross national income	PPP	Public/private partnership
		PPP	Purchasing power parity
		P _Q	Paasche volume index
IC	Insurance corporation		
ICLS	International Conference of Labour Statisticians	R&D	Research and development
ICPF	Insurance corporations and pension funds		
ICT	Information, communication and telecommunications	SAM	Social accounting matrix
IIP	International investment position	SDR	Special drawing right
ILO	International Labour Organization	SEEA	System of Environmental and Economic Accounts
IMF	International Monetary Fund	SITC	Standard Industrial Trade Classification
IMTS	International Merchandise Trade Statistics: Concepts and Definitions	SNA	System of National Accounts
IPSASB	International Public Sector Accounting Standards Board	SPE	Special purpose entity
ISIC	International Standard Industrial Classification of All Economic Activities	TSA	Tourism satellite account
ISP	Internet service provider	UNSC	United Nations Statistical Commission
KAU	Kind-of-activity unit	VAT	Value Added Tax
KLEMS	Capital-labour-energy-materials-service inputs		
		WHO	World Health Organization
L _p	Laspeyres price index		
L _Q	Laspeyres volume index	XMPI	Export and import price indices
LFS	Labour force statistics	XPI	Export price index

Chapter 1: Facing up to limited resources

A. Introduction

- 1.1 This document is intended as a complement to “*The 2008 SNA Concepts in brief*”. It is written with the needs of a statistical office in a developing country with limited resources in mind. If others find useful information here, that is welcome, but the main focus is on a country still in the relatively early stages of development and a statistical office facing demands for an increasing range of statistics so that very few staff can be allocated to the production of national accounts. The intent is to show that acceptable national accounts can be produced with relatively few resources if a few basic principles are kept firmly in mind. These principles are described in this chapter and it is hoped that managers as well as the national accounts practitioner will benefit from the suggestions made.
- 1.2 The importance of national accounts and of having estimates of gross domestic product (GDP) for a country is hardly, if ever, questioned. Having such estimates is seen almost as a vindication of the country’s independence. Those in statistical offices responsible for devising a programme of work accept that this is a task that must be done and to which they must be seen to be giving priority. Policymakers outside the statistical office use estimates of GDP to monitor whether their policies are successful or not and international agencies such as the World Bank and International Monetary Fund regularly begin their assessments of the economic prospects for a country by considering the estimates of GDP.
- 1.3 Nevertheless, heads of statistical offices are often extremely uncomfortable with these demands. There is a widespread perception that compiling national accounts is difficult and so resource intensive as to lie beyond the capacities of many countries with small statistical offices and limited staff resources. Over many years there have been calls in the United Nations Statistical Commission to simplify the System of National Accounts (SNA) and at different times enquiries have been launched to find out how far the SNA has been implemented and to discover why in many countries implementation is at best partial and often does not progress beyond the initial milestones laid out for a full implementation of the system.
- 1.4 As explained in the preface, this book is aimed primarily at countries with limited resources, both in terms of staff and data, typically small countries still in the early stages of development. It assumes that the starting point is one where either national accounts have never been developed beyond a simple estimation of GDP or where circumstances have led to earlier processes being suspended, sometimes for a considerable period, pending the availability of extra resources which have not eventuated. If staff in other countries find useful suggestions in this book, that is to be welcomed but the simplifications suggested should be considered carefully to see how far adopting them would seriously impair the quality of the resulting accounts.
- 1.5 The present document therefore considers how a member of staff in a statistical office in a small country with limited statistical resources may still manage within a fairly short space of time to compile most of the system of national accounts up to a reasonable level of quality and in a reasonably timely manner.
- 1.6 Success in this goal depends on a couple of premises. One is that the best is often the enemy of the good. Trying to perfect one part of the accounts before moving on to other stages may well be doomed to failure. No country in the world has perfect national accounts but an increasing number have accounts that are good enough for the purposes of local and international policymakers. Applying the precept that it is possible to do 80 per cent of the work with 20 per cent of the effort means that it is possible to establish a robust working framework in a relatively short period of time. Once the framework is in place it is possible to elaborate the detail and improve the quality. Once the framework is in place and users can see the benefit of it, it becomes easier to find the resources that allow the extensions of the system. Once the framework is in place, those responsible for its construction and maintenance will develop their abilities and self-confidence that also lead to improvements in the system.
- 1.7 The objective of compiling a set of national accounts needs to be kept clearly in mind. It is to portray in numeric terms a picture of how the economy is operating and how it is changing over time. The statistician facing a daunting task may be tempted to focus simply on how to update previous calculations and forget this end objective. This publication aims to illustrate how and where the ultimate goal may be better served by introducing new techniques and data sources. Because the nature of an economy changes over time, the ways of measuring it may need to change also.
- 1.8 Before starting to consider how to implement the SNA, it is useful to explore a number of other issues.
- a. What background information is necessary to assess the comprehensiveness of a set of national accounts? Can an outside expert match the background understanding

- of the nature and characteristics of the country of a local staff member?
- b. How is the guidance in the system of national accounts to be taken? Is it meant to provide instructions that must be followed to the last detail before it is possible to say the SNA has been implemented or is it meant to provide answers to questions not all of which may be relevant to all countries and at all times?
 - c. How should the national accountant address the conflicting goals of timeliness, comprehensiveness and accuracy?
 - d. How should the national accountant reconcile adhering to international statistical standards with local needs?
 - e. How can a statistical office find the resources to implement the SNA in full given budget constraints and other statistical priorities? How much do senior managers in the statistical office need to know about the way in which national accounts are compiled to determine the resources necessary and to assess whether these are being used in the most effective way?

Each of these areas is explored in a little more detail below to encourage a more flexible approach towards providing a set of national accounts that is robust, timely and analytically useful.

B. Background information

- 1.9 All national accounts give a picture of an economy but it is impossible to interpret the picture the accounts tell, or even to recognize the picture, without some background knowledge about the physical, historical and cultural background of the economy being portrayed.
- 1.10 The first topic to consider concerns the physical characteristics of the country. Is it large or small? Is it in the tropics or in colder latitudes? Is it landlocked or a series of islands? This information leads immediately to an indication of how easy it is for people in the country to communicate with the rest of the world. Are there land borders through which goods may enter and leave the country or must everything come by sea or air? Is the climate so harsh that special measures have to be taken to combat either extreme heat or extreme cold? Are natural events such as cyclones a more or less regular occurrence? Quite apart from environmental accounting, the role of nature in the country may have a significant effect on economic activity.
- 1.11 The next item to consider concerns people. What is the population of the country and how is it distributed? Are people spread throughout the country so that the density of population is fairly similar everywhere or are they concentrated in particular areas, for example away from deserts or very mountainous regions? How many large cities are there and what size are these? Are the largest cities continually increasing in size as people leave rural areas to look for greater economic opportunity in the urban areas? Does this mean that there are large shanty towns on the outskirts of large cities? Is the capital city the largest, or one of the largest, cities in the country or is it an administrative capital separate from the main commercial centre. The answer to these questions, showing knowledge about population distribution and movement, already tells us something about whether we would expect to observe rapid changes in the type of economic activity, for example out of agriculture and into particular types of small-scale commercial activity in towns.
- 1.12 What is the age distribution of the population? How many people are under the age of 15 and how many are over 60 and how are these proportions changing? If the population of the country is growing, one would expect economic activity to grow also but GDP per capita cannot grow unless GDP grows faster than population growth. A feeling for whether people are getting worse off or better off, and if so by how much, combined with a knowledge about how the population is changing already gives some indication of how one would expect GDP to change.
- 1.13 What is the cultural and historical background of the population? Have there been large movements of immigrants at some stage in the past making for a diversified population? If so, is there a tradition of some groups of people carrying out some particular activities or not carrying out others? Such factors may affect the economic mobility of parts of the population. Does everybody speak, or at least understand, a single language? What is the level of literacy among the population especially the younger age ranges? More complicated tasks, often those that are more economically rewarding, are likely to be reserved to those with greater language and literacy skills. In the global economy where increasingly many tasks may be outsourced to less developed countries, an educated labour force is likely to be a great advantage.
- 1.14 What is the employment situation in the country? Do most adults of working age expect to be in paid employment? Does the country measure and worry about the size of the unemployed working age population or is the concentration rather on the number of people who are employed? How many government employees are permanent staff and how many are casual or occasional workers? Are there many organisations outside government who offer jobs seen to be permanent and bringing with them a range of social benefits including perhaps housing and pensions? Who provides health and education services? Is it the government only? Are there significantly large charitable organisations involved? Is there a well-developed private sector in either or both fields?

- 1.15 Questions like this may seem simple-minded. The answers are so familiar to those living in the country that they may tend to forget that they already have a set of criteria against which to judge the plausibility of any estimates that they

make. In contrast, an external consultant or analyst has to learn these facts consciously and bring them to bear on their assessment of the situation in a way that will be much less intuitive than for local staff.

C. How much of the 2008 SNA is relevant for developing countries?

- 1.16 In the earliest stages of the revision of the SNA leading up to the 1993 edition, there was discussion about whether there should be a simplified version for developing countries. Participants from the developing countries were unanimously opposed to such an idea. It was pointed out that there can be as big a difference between some developing countries as between some developing and some developed countries. Despite this, however, almost 20 years after the 1993 SNA was published, many developing countries are still implementing only a very small part of it. As an aid to assessing the progress on implementation, a series of milestones were determined, essentially following the order of the chapters in the SNA. Those who only got as far as chapter 6, the production account, achieved milestone one. Those who made it to chapter 11 on the financial account reached milestone five. Those who got to chapter 13, the balance sheet, reached the last milestone, number six. According to this way of reckoning, very many countries have still not made it past the first one or two milestones. Was the original rejection of a special version of the SNA for developing country wrong? If not why has progress been so slow?
- 1.17 Most of us have had the experience of starting to read a long book, getting bogged down after 100 pages or so and not making it to the end. The 2008 SNA is a long book, some 600 pages, and probably comparatively few people have conscientiously read it from beginning to end. Not all the topics covered in the 2008 SNA are relevant for all countries. For this reason a companion volume to the present one, entitled *The 2008 SNA – concepts in brief*, has

been prepared. This contains text from the 2008 SNA but not all of the text. Topics thought less relevant to small developing countries are omitted. In particular, most of the discussion on how to treat complex financial instruments and how to record the intricacies of different pension schemes are excluded as well as some alternative versions of the main accounts. The result is a volume of about 200 pages that should be less daunting to the new national accountant but still covers all the main aspects of the system. Once the principles in the shorter volume are familiar, the full volume can be consulted for more complex areas.

- 1.18 The present volume addresses how the parts of the 2008 SNA covered in *Concepts in brief* can be implemented. The basic position is that, once the complexities relating mainly to large sophisticated economies are set aside, it is both desirable and practical for all countries to aim for much fuller implementation of the SNA than just a production-based estimate of GDP.
- 1.19 In subsequent chapters sections headed “Is this the SNA?” are included. The intent of these is to show which parts of the 2008 SNA are probably of sufficiently little importance in a developing country to ignore, or, sometimes, where the resources required to deal with them would be so great that the benefit of including them would not be cost effective. On a regular basis, however, these assumptions should be checked and, if necessary, the simplifications should be replaced by more appropriate approaches.

D. Facing conflicting objectives

- 1.20 It is natural in any task to aim to produce results that are complete, accurate and timely. The lesson of the last 20 years is clearly that the resources available to statistical offices in developing countries are not sufficient to meet all three of these goals at the same time. The question therefore is how to reach a compromise between the three of them.
- 1.21 The guidance in the SNA is conceptual. It does not address the question of how time-consuming it might be to follow the advice given nor does it give advice about when some aspects may be unduly complex, or too resource-intensive, for some economies. Suppose we consider a diagram with three axes, one of which relates to accuracy, one to comprehensiveness and one to timeliness. Diagram 1 shows a situation that is common in a lot of countries. The accuracy

is fairly high but the comprehensiveness and timeliness rather low. In response to demands to increase the timeliness diagram 2 may be reached. Here the accuracy is reduced and the timeliness is increased but the comprehensiveness has not altered. In the third diagram we can see what might happen under the pressure to increase the comprehensiveness without sacrificing timeliness. Again it is accuracy that suffers, possibly to a dangerous level.

- 1.22 Consider what these three situations mean for the analysts. Information underlying diagram 1 is not only incomplete but out of date and therefore of little use. The situation underlying diagram 2 is better in that the accounts are more timely and there may still be reasonably accurate but have gained nothing in comprehensiveness. Under diagram 3

however the accuracy of the data has suffered to the point where even though the results are timely and comprehensive, they are so unreliable that any analysis based on them may be misleading, but the analyst is not necessarily in a position to know how far accuracy has been compromised.

- 1.23 It is suggested that a better approach is to aim the something like the picture in diagram 4. None of accuracy, comprehensiveness or timeliness is as desirable as possible but none of them is in a minimal position as shown in the first three diagrams. Working with a framework like this it is possible to think more explicitly about the trade-offs between the three goals and consider how far it is possible to push the plane representing the outcomes along one or all of the axes without compromising the others too far. This trade-off will be referred to frequently throughout this publication.
- 1.24 Another aspect of a more extensive implementation of the SNA will also be referred to in the context of timeliness versus accuracy and comprehensiveness. The very first paragraph of the 2008 SNA stresses that the system is not only comprehensive but also consistent and integrated. One advantage of going beyond the production-based estimate of GDP is to be able to use the consistency and integration constraints to improve the estimates. A modest amount of time spent on implementing these constraints can have a much more significant effect on accuracy and timeliness than repeated examining of data reported in statistical questionnaires.

1. Accuracy vs. timeliness

- 1.25 Let us begin with an obvious constraint, that of time. If national accounts are to be prepared every year, a system that takes more than 12 months to complete is obviously destined to failure. Any accounts produced by such a system will become increasingly less relevant simply because they are less timely. Absolutely accurate accounts for a country (even if they were possible, which they are not) that existed only five years after the year to which they relate would be of interest only to economic historians. They would provide no information at all to those needing to make policy decisions in the current period or those who wish to analyse how the economy has developed over the last two or three years. All statisticians are faced with a

continuing dilemma about whether to have figures that are accurate or timely and there is a perpetual trade-off between the two.

- 1.26 Giving more attention to timeliness usually means compromising on accuracy. A case in point is the difference between quarterly and annual national accounts. The former can be produced more quickly, indeed must be produced within three months rather than twelve to be useful, but here the range of data used is less extensive and so the results are less accurate. In the limit, excessive attention to timeliness over accuracy can lead to a decision to simply stop producing annual series. There are examples of countries in Africa in particular where the efforts to produce timely annual national accounts have failed and the decision has been made to discontinue such series. One reason for this may be an increasing demand for quarterly series to the point where almost all resources are devoted to producing quarterly accounts.
- 1.27 One lesson that can be drawn from this is not just a question timeliness over accuracy. Suppose that for many years a methodology for producing annual national accounts existed but not for quarterly accounts. Deriving quarterly accounts is necessarily somewhat easier and quicker to implement. Instead of considering a choice between the traditional method of developing annual national accounts and a new methodology for quarterly accounts, perhaps it might have been possible to say what parts of the new quarterly methodology could also be applied to simplify, streamline and accelerate the publication of the annual accounts. This might have meant dismantling or radically changing the previous computer programs and statistical collections but might have led to a much better outcome. At some time, attention needs to be given to data available only annually which can be used to benchmark and improve the quality of the series. Too great a concentration on quarterly series only may lead to this very important exercise being unnecessarily postponed. It is possible of course that decisions are made to postpone or temporarily suspend a system perhaps because of staff vacancies. Temporary expedients often become the norm, however. In the United Kingdom, income tax was introduced in 1798 as a strictly temporary measure. Income tax is still a regular way of life in the United Kingdom more than 200 years later.

Diagram 1

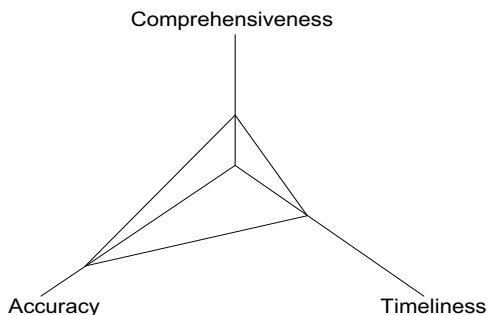
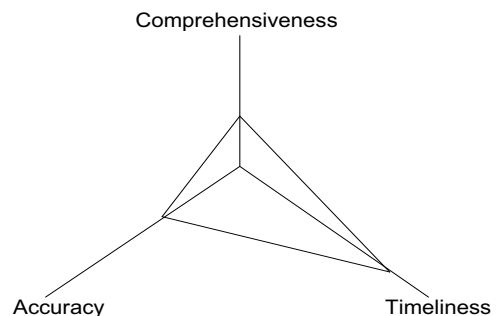


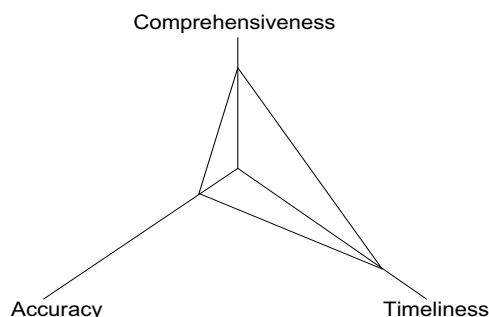
Diagram 2



2. Accuracy vs. comprehensiveness

- 1.28 Another approach that is sometimes adopted mistakenly is to try to eliminate part of the economy that is difficult to measure and measure the remainder accurately. There are two problems with this approach. One is that it is almost impossible to eliminate accurately all implications or a particular sort of activity. Given the identity between the output, expenditure and income estimates of GDP, eliminating a production activity means eliminating the expenditure on that activity but what happens to the income earned by those engaged in the activity and the purchases they make with this income? For example if one tries to eliminate the sale of drugs one needs to eliminate the purchase of drugs. How then do the purchases made on other items by those individuals that sell the drugs fit into the accounts if they receive no income? The other reason why this approach is mistaken is that in a country such as Colombia, for example, a measure of the economy that ignored drugs would be of little practical use to anyone studying the country. This is not to deny the difficulty of trying to capture all the effects of drug production and drug dealing. However it is vitally important to remember that it is more useful to measure the right thing approximately than the wrong thing exactly. Ignoring an entry in the accounts because measurement is “too difficult” is in fact to make an estimate of zero.
- 1.29 Here is a supposed anecdote recounted in the Financial Times some years ago. A man went up in a hot air balloon in England, crossed the Channel and came down in a field somewhere in northern Europe but he did not know exactly where. Soon, however, another man walked past the field where the balloon was. The man in the balloon called out and asked the passer-by where he was. The passer-by said “you are in a balloon in a field”. “Ah”, said the man in a balloon “I can tell you are an accountant”. “Yes” said the passer-by, “how did you know that?” “Well”, said that man in the balloon “your information is precisely accurate and absolutely useless.” The goal of this publication is to assist national accountants to know how to balance the desire for accuracy against the more pressing demands of relevance, both in terms of timeliness and comprehensiveness, international standards and local needs.

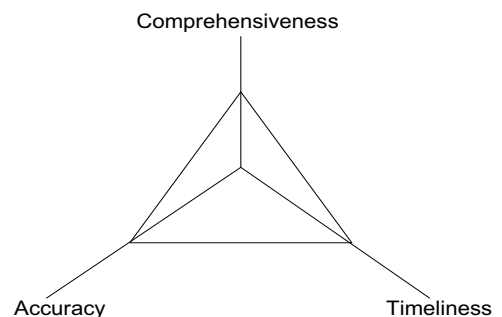
Diagram 3



3. Revisions

- 1.30 Many economic and social statistics are prepared repeatedly on a regular basis, whether monthly as for price indices or trade figures, annually as for government accounts or every ten years as for many population censuses. Usually, though not invariably, the less frequent the survey, the more comprehensive the basis for the results. Timely accounts, and in particular quarterly accounts, are likely to be very dependent on data that is itself available monthly or quarterly. A question arises, therefore, about what to do with annual data when it becomes available.
- 1.31 Best practice is to undertake an annual benchmark to bring the quarterly estimates into line with data, based on the information available only annually, assuming that this is more reliable than the quarterly information alone. The underlying judgement is that the quarterly or monthly data are good indicators of the changes taking place in the economy but the annual data are better indicators of levels. If pressure of time leads to ignoring the annual benchmarking process, over time the accuracy of the series may become a serious problem. Any error in the first period based on quarterly data only becomes magnified as the time since the figures were benchmarked increases.
- 1.32 Incorporating the impact of an annual benchmarking will almost inevitably lead to changing the earlier estimates for the quarters. Users are not always happy to see that figures have been revised so it is important to produce an explanation of the reasons for the changes along with the new data. Such an explanation will involve describing the inherent conflict between making a timely estimate before all the basic data-sets are available and waiting to make any estimate until all the possible data-sets are available.
- 1.33 Another potential cause of revisions is due to the need for the national accounts to be comprehensive. Statisticians working in a particular field, such as an industry or household survey have a luxury not allowed to the national accountant in that they can decide that some aspects are simply too hard to cover well and so omit them. For many years, coverage of activity undertaken by informal enterprises was one such instance. In some cases, particular regions of a country may not be regularly covered statistically for reasons of cost or other consideration. When no basic data are available, the national accountant must make an estimate for the missing item. Suppose the

Diagram 4



estimate is 10 per cent of the measured total but in time, this missing area is covered but results show that the estimate should have been 20 per cent of the previously measured total. The previous estimate of 10 per cent is better than an estimate of zero, but not as good as the new information suggests. Leaving the old estimate of 10 per cent unadjusted would imply a sudden growth that is not appropriate and so the appearance of new data, even of the same periodicity as before, can also lead to the need to make revisions to past data.

1.34 There is no need to be apologetic about revisions when these are due to the incorporation of new information, whether this is because of better information coming from less frequent surveys or from more comprehensive underlying data. Having the confidence to make revisions in such circumstances should be seen as a sign of strength, not a sign of weakness. While much attention is often focussed on only the last one or two data points, for in depth analysis of the working of the economy, long time series are essential. It is important that changes over time can be attributed to economic factors and are not simply the result of changes in the statistical sources used.

E. International standards and local needs

1.35 It is crucially important that if a statistical office is to be successful, staff have to spend a significant effort interacting with the users of their statistics in other government departments and beyond. Interacting with other statisticians both at home and abroad is easy and comforting in that other statisticians are familiar with the same technical and practical issues. Such interaction can be extremely beneficial but it is not a substitute for interaction with the users of the statistics.

1.36 Economics is about supply and demand. A successful enterprise is one that finds out what customers want and comes up with products that meet these wants. An enterprise that produces goods, however technically advanced and however well manufactured that do not appeal to customers will not be successful. For many years statistical offices have produced statistics according to what has been produced in the past or what it is possible to produce with the information currently in existing surveys or maybe what is specified in international economic classifications. But these statistics may not respond particularly to the needs of an individual country. In some instances, because the statistical office does not have the reputation of producing the necessary statistics, users may cease to ask for the data and in some cases will produce their own estimates, estimates that typically are much less good than those that the statistical office can produce.

1.37 This is not to say that a statistical office should ignore international statistical standards in an attempt to provide whatever statistics the users demand. However, some users have little idea about what is already available, what might be made available, and what is simply impossible to compile in any reasonable way at reasonable cost and on a reasonable timescale. International statistical standards have been developed over many years drawing on the experience of many countries. This pedigree means international standards are likely to set the broad framework appropriate for most if not all countries. However it will often be the case that some adaptation may be beneficial in particular circumstances. One example is the International Statistical Industrial Classification (ISIC) where some expansion of agriculture and some aggregation of manufacturing industry may produce headings of approximately equal importance in a country where a rigorous pattern of the two or three digit heading levels of the classification does not. It is interesting to note that although the United States of America, Canada and Australia all implement all parts of the SNA, each of these countries introduces some variations in specific recommendations in order to suit local circumstances. Using the guidance in the SNA as the basic framework for the national accounts and interaction with users to determine where the variations in coverage and emphasis may be useful should be seen as a positive way of implementing the system rather than a divergence from it.

F. National accounts and senior managers

1. Finding resources

1.38 The previous section discussed the need to consult local users about how the national accounts should be presented to be most useful analytically. Engaging with users is beneficial in another important aspect also. It is probably true to say that every country in the world would like to be able to devote more resources to improving the quality of their national accounts particularly in terms of the number and quality of staff available. Just as a national accountant has background information about the economy that is so

familiar that he or she might forget it can feed into the process of developing and validating the accounts, some of the users making demands on the statistical office may also have some of the information that the statistician needs to build up the pictures the users are interested in. This is particularly true of users in the Ministry of Finance and the Central Bank who together are likely to have access to the detailed information of how the government accounting system works and how financial institutions operate. It is also true of other parts of the statistical system where colleagues working on labour statistics, on household budget surveys or on the consumer price index are likely to

- have insights in these areas that can be used to improve the national accounts. Calling on colleagues in other government departments for their background knowledge of how parts of the economy function is a way of relieving pressure on the statistical office and improving the quality of the accounts simultaneously. It may also be an effective way to learn exactly what these users would like to see coming out from the national accounts.
- 1.39 Requests for extra resources are necessarily made to the heads of offices. These heads are often not in a position to authorise extra staff positions but they are very well placed to use their influence to increase the degree of cooperation and coordination both within the statistical office and with other departments of government.
- 2. National accounts and basic data**
- 1.40 Much statistical information produced by a statistical office comes from conducting censuses and surveys. The census or survey is conducted, the information collected analysed and the results are published. Over time the information collected may change, the timing of the census may change, the sample size of a survey may change and the way the results are presented may change but each individual census or survey is essentially a discrete exercise. Once publication takes place it is time to move on to the next data collection exercise. Each exercise brings
- experience that lead to improvements in the techniques to be used in future, but the results once published are seldom if ever revised at a detailed level.
- 1.41 National accounts are different. There are few if any primary data collections that are aimed uniquely at providing the basic data for the accounts. Instead the national accountant is dependent on a wide range of sources, some statistical and some administrative. All portray some aspects of the economy but it is the task of the national accountant to bring these together in a way that allows the user to see a single picture of what is happening in the economy. This reconciliation process is described by the SNA as ensuring the accounts are integrated, consistent and comprehensive. A less grandiose way of expressing this is to say that in statistical terms the national accountant is a benign parasite. Few if any of the data sources used are specifically designed with the needs of national accounts in mind and the national accountant may have little if any input into the scope of the data coverage, the timing of its collection or the way in which non-response is handled.
- 1.42 In general, the national accountant will be dependent on the senior managers of the office to explore how far the quality of the national accounts can be enhanced not by adding resources to the national accounts section but by making small adjustments to other data collection exercises to improve their appropriateness for other uses.

Key points to remember:

The trade-off between accuracy, timeliness and comprehensiveness should always be kept in mind by managers as well as working level staff.

Even though the number of staff devoted full-time to compiling national accounts may be limited, staff in other areas of the statistical office and in other departments may be able to give significant assistance in providing useful information and insights at little resource cost and may in turn benefit from the interchange with the national accountants.

Managers should be able to ensure that the needs of the national accounts, in terms of data coverage and timing of results, are taken into account within basic information sources.

While external assistance can on occasion be useful to an office, local staff have an understanding of the characteristics of the local economy that visiting advisors can never compete with.

Chapter 2: Allocating limited resources

A. Introduction

- 2.1 Recognising that resources are limited, the question of how to use them effectively is critical. The temptation is to start on a large task in the hope that somehow more resources will become available in time as needed. Often this means doing the first stages of the task reasonably well and never getting beyond these initial stages because the hoped-for extra resources never arrive. Experience suggests that this is what has happened in many developing countries trying to implement the SNA. This aim of this publication is to suggest how to break through this dilemma and to examine how the same resources can be used differently to produce a more comprehensive set of accounts. While it does give some guidance on how to produce the accounts, it does not aim to give an exhaustive set of guidance about how to compile every aspect of national accounts, issue by issue or overall. There are many other handbooks and manuals that do this and reference will be made to them as appropriate.
- 2.2 Before discussing how to compile a set of national accounts it is worthwhile to consider why it is useful to do so. Who is going to use the information and for what purpose?
- 2.3 The first set of questions asked about an economy concern GDP. What is the level of output? How has it changed since the last period? Over a longer time span? Which industries contribute most to GDP? What proportion of GDP is accounted for by consumption? By investment? How are these proportions changing over time? Can GDP tell us anything about individual well-being and how it is changing?
- 2.4 Another set of questions addresses the interaction between different sections of the economy. How does government raise taxes, who pays them, what are they used for? Do taxes cover government expenditure? What proportion of economic activity is accounted for by very large enterprises, state-controlled enterprises, foreign controlled enterprises? Who receives the benefit of production? Does it all stay in the country or is part an outflow to the rest of the world?
- 2.5 The third set of questions concern investment. How much new investment is taking place? How is it financed? Does the country need to borrow from international financial markets? Is the country as a whole getting wealthier over time? Is this true for government enterprises? Is it true for the population at large?
- 2.6 The following chapters of this publication can be seen as addressing each of these sets of questions in turn. The first section discusses the estimation of GDP. The second looks at sectoral accounts concerned with income and consumption. The third covers the way wealth is accumulated also with a sectoral dimension. A fourth section discusses practical matters. It discusses how to communicate most effectively with the users of the accounts and briefly describes the relationship between different sets of economic statistics. It also suggests how effective work programmes can be determined both for the initial stages of developing comprehensive estimates and for the longer term once these are in place.
- 2.7 This agenda is ambitious and goes farther than many developing countries presently do. The reason is that the questions raised in paragraphs 2.4 and 2.5 are of great policy interest and deserve an answer. The objective is to show that with some judicious pragmatism reasonable answers can be given using a very modest level of resources and that these resources can be found by careful adjustment to the process of compiling GDP.
- 2.8 The result is a set of national accounts that represent a slimmed down version of the complete SNA not just a truncated part.

B. Section 1: Estimating GDP

- 2.9 Anyone with any knowledge at all of national accounts knows that there are three separate measures of GDP and that these must give the same answer conceptually. For this reason some national accountants who are short of resources decide to estimate GDP from only one of the three sources and assume that this is sufficient. One of the purposes of this section is to show that it is always better to make three separate estimates of GDP and to reconcile these. This has two benefits. The first of these is that it gives a much more robust measure of GDP so both compilers and users can have more confidence in the value of the estimates produced. Secondly, and perhaps

surprisingly, rather than using extra resources the compilation of three measures and the act of reconciling these in a supply and use table can in fact save resources. It will be shown (in chapter 8) that it is more cost-effective to take estimates as originally produced and reconcile these rather than to concentrate on trying to improve a single estimate by repeatedly questioning the basic data or the compilation practices that have been used.

2.10 The first section also covers the derivation of GDP in volume terms. This allows an assessment to be made about how far an increase in the values of GDP and its components are due only to increases in prices and how far the level of activity has really increased.

2.11 There are seven chapters in this section as follows:

3. Collecting enterprise data

4. The industry dimension

5. Compiling the production account and the first measure of GDP

6. GDP estimated from the income side

7. The expenditure estimate of GDP

8. Reconciliation of the three measures of GDP within supply and use tables

9. Information in volume terms

C. Section 2: How income gives rise to consumption and saving

2.12 A great deal of space in the 2008 SNA is given over to a description of the sectors. All the tables included in the manual give a sectoral breakdown. Yet almost no developing countries provide sector accounts. Is this because it is too difficult? Or because it is not very interesting? The aim of this section is to show that not only is sectoral information of great analytical interest, it is also not as difficult to compile as commonly assumed.

2.13 A first concern is to identify where and how the domestic economy interacts with economies in the rest of the world. Production gives rise to income but not all of it is available in the country where the income arises. With the increasing interest in globalisation and the interaction between different economies, it is of increasing interest and urgency to capture a measure of national income as well as one of domestic production. Many countries that do not develop a full set of national accounts nevertheless have fairly comprehensive balance of payments statistics. Using these figures in conjunction with data for the domestic economy, and setting aside some aspects of income redistribution as either irrelevant or marginal for developing countries, it is possible to elaborate the national accounts leading up to a measure of national income and national disposable income with remarkably little effort.

2.14 A second reason to try to look at sectors is that government interacts with corporations and households in quite different manners. Government encourages corporations to expand their activities in order to provide the setting within

which individuals in households can become better off either because there are greater employment opportunities or because government is able to redistribute income received as taxes from both corporations and those in employment to other households.

2.15 One consideration that discourages compiling sector accounts is the difficulty of establishing a boundary line between which production activities are carried out by households and which by small and medium-sized corporations. One way to overcome this difficulty is initially to relax the conditions for separating corporations and households. Identifying large corporations and including smaller corporations with households is a valuable first step towards a full set of accounts and can still provide an insight into the role of government in the economy. Section 2 of the publication addresses this proposition in detail and shows that compiling these accounts is much less difficult than often assumed.

2.16 The section consists of four chapters.

10. Identifying sectors

11. Relations with the rest of the world

12. Getting to gross national income

13. Redistribution by government and consumption

D. Section 3: Building national wealth

2.17 It has long been recognised that production using capital as well as labour is more efficient than production using labour alone. Further, the use of capital releases labour for other uses. One of the major handicaps to development is

lack of appropriate capital starting with basic infrastructure but also including schools and hospitals as well as factories, equipment and vehicles. Capital items such as these do not last forever. The extent to which they decline in a year is

- referred to as the consumption of fixed capital. To keep track of whether the extent of capital available to an economy is being maintained, or better still increased, it is necessary to draw up a balance sheet that allows the end of period stock to be compared with the start of period stock plus the additions during the year less the amount used up or disposed of in the year.
- 2.18 For countries with significant natural resources, it is particularly helpful to be able to see how the wealth of the country changes over time. Discovering a new oil field adds to the potential for economic activity. Pumping oil out of the ground and selling it reduces the potential for future activity. In very many countries, especially developing countries, natural resources are claimed by government on behalf of the community at large and so again government has a clear interest in accounting for the wealth available and monitoring how this changes from one year to the next. Such information is captured in balance sheets and the accounts associated with them.
- 2.19 One of the fundamental principles of economics is that, for the economy as a whole, savings must be equal to investment. However it is obviously not the case that government can only invest what it saves or that households must invest what they save. Seeing exactly how saving is reallocated between units that save to units that want to invest gives an insight into whether economic growth is sustainable or not.
- 2.20 Another aspect revealed by measures of wealth and how they are changing is the extent of government lending to or borrowing from the rest of the world and how this is changing over time.
- 2.21 The interest in such questions is not in doubt. What is not always realised is how much of the necessary information is available from other data-sets. Showing how such information can be utilised is the subject of two chapters:
14. Fixed capital and natural resources
15. Financial assets and liabilities.

E. Section 4: Practical matters

- 2.22 The main goal of compiling national accounts is to give relevant information to those who wish to make use of the information for administrative or policy purposes. Such users are sometimes unclear about how the SNA relates to other international standards concerning macro economics and indeed other official statistics also.
- 2.23 Three very important data sets are those compiled according to the IMF's standards on government finance statistics (GFS), the balance of payments (BOP) and monetary and financial statistics (MFS). The GFS and BOP derive from a concern to see the exact role of government in terms of revenue and expenditure within the economy and the relation the economy to the rest of the world respectively. MFS is concerned with the role of financial institutions in the economy. Each of these is a valid in its own right but the 2008 SNA allows each to be put in the context of the whole economy and juxtaposed with one another. Use is made of information from all these systems and from other statistical areas to ensure that as far as possible all the information being made available to users is consistent and is being used effectively in a wide context.
- 2.24 The question of how the results of compiling the accounts are presented to users in the most informative is also worth some consideration.
- 2.25 All these topics are discussed briefly in chapter 16, Presenting the accounts.
- 2.26 Chapter 17 turns to the practical problem of determining a work programme to initiate and then carry forward the proposals in this document.

F. In conclusion

- 2.27 Running through all the following chapters are suggestions for those areas where a pragmatic approach may be beneficial. How far should a statistician pursue the goal of obtaining comprehensive and accurate data? When should he or she determine that the benefits of trying to improve the data are not worth the cost and that moving attention to another area is likely to produce a better overall result? Throughout the publication, suggestions are made about where it may be useful to consider introducing a further breakdown in the headings suggested by the SNA and where amalgamating some headings may not impact on the usefulness of the accounts but save considerable resources. It must be emphasised, though, that these suggestions are intended to be only indicative of what might be done. Each national accountant must be prepared to adopt this approach in light of individual circumstances and possibly change these adjustments over time in order to keep the right balance both between accuracy, timeliness and comprehensiveness.
- 2.28 It must also be borne in mind that this is intended to be a guide to those who do not currently have estimates of the

whole of the SNA. It is not a recommendation that those countries that do currently produce comprehensive accounts on a regular and timely basis should restrict them to the basis described here.

2.29 Some readers may question whether the system described here is indeed the SNA or not. In each of the following chapters there is a last section headed “Is this the SNA?” that spells out the aspects of the full system that have been set aside. This can only be justified if the phenomenon omitted are of limited importance in the country concerned or where the data and staff resources to cover them are simply not available. These two constraints should largely coincide, since resources certainly should be found to cover important features of an economy. This is not the same, however, as placing unreasonable demands on inadequate resources. The message must be that in these circumstances, more resources may be needed. To the extent that the lack is of data resources, new resources may not always be needed in the national accounts section or even in the statistical office and the responsibility for

pursuing this is likely to rest with the senior management of the statistical office rather than those responsible for compiling the accounts.

2.30 It may also be relevant to bear in mind that no country in the world currently implements the SNA in full exactly as described in the 2008 SNA. The European system, ESA2012 is based on the 2008 SNA but includes some European-specific variations. The USA and Australia, for example, do not follow the SNA recommendations for the treatment of private pensions as part of social insurance. These variations should be seen as a statement that the basic SNA recommendations are not wholly appropriate to the economic conditions in the countries in question and that they have therefore decided to implement the system in a manner that is more relevant. It is exactly this principle that is espoused in this document. There is no suggestion that the conceptual basis of the SNA be changed, rather that some simplification in compilation practices are appropriate in the face of limited resources.

Key points to remember

International standards should be used as basic guidelines to be implemented in a way that best suits local circumstances.

The accounting constraints of the system can be used to fill gaps and check the plausibility of results.

The SNA has the power to answer many more questions than just what is the level of output.

Providing users with more data for analysis may be the best way to encourage them to make more resources available.

Never lose sight of the trade-offs between accuracy, timeliness and comprehensiveness.

Chapter 3: Collecting enterprise data

A. Introduction

- 3.1 This chapter considers three types of issues. The first is what data is required in order to compile GDP, the second looks at the different types of enterprises and considers how to treat the different types in the data collection process. The third consideration is the difference between enterprises and establishments.
- 3.2 In order to compile national accounts, use is made of a wide range of data, both information collected as part of a statistical survey and information coming from administrative sources. This chapter assumes that the office will have a survey addressed to enterprises that collects information that can be used for national accounts compilation of the production account and estimates of capital formation. Using information relating to enterprises covered by the survey is a good starting point for characterising different sorts of enterprises in a way that will be useful later in going on to look at the income and accumulation accounts.
- 3.3 The use of other data, including administrative data is mentioned briefly in this chapter and more extensively in later chapters, particularly in chapter 6.

B. Data requirements

- 3.4 It is not the purpose of this publication to give detailed information about how to collect information from enterprises but a couple of comments are necessary by way of introduction. The first is that a business register is absolutely essential and furthermore this business register must be kept up-to-date. The business register shows the total number of enterprises in the economy, the industry in which they are occupied and the relative size of the firm. Very importantly, it is necessary to note every year which new firms come into existence and which ones go out of business. The latter are also often called births and deaths of enterprises and leading on from this terminology, the study of the characteristics of the enterprises in existence at any time in the economy is often called the demography of enterprises.
- 3.5 Using the business register as a base, a survey procedure will be set in place to collect information from enterprises. Again it is not necessarily the business of the national accountant to get involved in the sample design of the survey or the questionnaire design. However it is important that the basic information necessary for national accounts should be requested from enterprises. It may also be useful for the national accountant to counsel against trying to collect too much information in a questionnaire. Long questionnaires have a lower and slower response rate than short ones. This is an area where for the regular collection of basic national accounts data, accuracy and timeliness should be ranked ahead of comprehensiveness.
- 3.6 It is important to recognise that some of the information that is necessary for national accounts may already exist in other parts of the office. For example if the office regularly collects information on production in order, say, to construct an index of industrial production, then this information may be already available and fit for use for the national accounts. Sending multiple questionnaires to enterprises asking for the same information in association with different data is irritating to the companies who may often react by not responding to all, or possibly to any, of the questionnaires. Further if the same information is collected only once in the office and is processed adequately by the people receiving it, this too can save resources used throughout the office to validate the information that has been collected. A small extension of a questionnaire used for other purposes may be more effective than having a questionnaire designed specifically to collect national accounts information.
- 3.7 There are seven separate items that can be considered as necessary for the calculation of production accounts for enterprises. These are
- A measure of output,
 - A measure of sales,
 - Changes in the inventories of finished goods,
 - Intermediate consumption,
 - Employment,

f. Capital formation.

The exact coverage for output, sales and changes in inventories and the reasons for requesting all three bits of information will be discussed in detail later when the compilation of the production account is discussed in detail in chapter 5. There is discussion in chapter 5 also on the amount of information to be collected under intermediate consumption.

3.8 It is necessary to ask for information on total intermediate consumption from enterprises. Often countries are tempted to ask for a breakdown of intermediate consumption into some of the major components. Before asking for this information it is helpful to consider whether it will actually be possible to make use of the information even if the enterprises can provide it. For example suppose the enterprise is asked to provide information on electricity consumption. Some rough and ready checks can be made on how electricity consumption varies over time and whether this varies in line with production. At various points, some analysts have suggested a strong correlation between energy use and output but this is a very simplistic assumption and is by no means an infallible check. It may be that trying to follow up this line of enquiry will use significant resources but with doubtful benefits.

3.9 The more detailed the questionnaire that is sent to the enterprise the less likely it is that they will complete it in detail or even at all. The main rationale for collecting detailed information on intermediate consumption is in order to compile detailed input-output tables. If there are no resources available to compile input-output tables then it is probably a waste of time collecting this information in the first place; a waste of time for the statistical office and for those asked for the information also.

3.10 It is helpful to ask for information on employment at the same time as information on output. This allows coordination with information in a Labour Force Survey and possibly information relating to the total number of employees in the economy coming from other surveys.

3.11 It is also helpful to ask for information on new capital formation that is undertaken by the enterprise. The use of this information will be discussed in chapter 14.

3.12 Note that there is no point in asking enterprises for information on consumption of fixed capital since they will not recognise the SNA concept or have figures on the desired basis. The availability of figures on depreciation and the problems with them are discussed in chapter 14.

C. Data validation

3.13 It is very good practice in conducting statistical enquiries to remind the companies of the information that they supplied in the previous year. This will help them to identify the information being requested this year and makes it easier for them and for the statistical office to be confident that the information is consistent from one year to the next.

3.14 Not only is having the information on the previous year's data useful to those validating the survey data, it is essential that the national accountant compares data for this year with that for last year and previous years. Changes from one year to the next have to be plausible taking into account the economic developments in the country. There are numerous examples of where data appeared to be internally consistent within a questionnaire but was not consistent from one year to the next. The simplest example is where there is a change of units with data in one year being given in thousands and the next in millions, for example. Not recognising this may result in an apparent decline in figures for an individual enterprise that may be significant enough to affect the aggregate.

3.15 The national accountant needs to be aware of any exceptional events that have taken place in the country; for example the recent banking crisis, a new mineral discovery or a major new innovation where a foreign investor has

opened a new factory or for that matter has withdrawn and the factory has closed down.

3.16 The sorts of checks that are essential to validate the data for national accounts purposes not only include checking the value for an indicator in this year with the previous years but also ratios between indicators. For example, is the ratio of intermediate consumption to output this year plausible when compared with previous years? Similarly the ratio of output per employee needs to be checked. Common sense needs to be applied to figures reported. For example it is not possible to have large inventories in soft fruit and vegetables.

3.17 Some of these checks can be made easily by eyeball examination but it is straightforward to have simple computer programs that will allow such checks to be carried out and any outliers to be flagged. However it is necessary to remember that two sorts of errors are possible. The first is that this year's figure is implausibly different from last year's figure. Such errors are easy to spot mechanically and to investigate. More difficult is the case with this year's figure should be different from last year's figure but appears consistent. These are the cases where the national accountant must use his specialised knowledge of the economy to check that such events are accurately captured.

D. Types of enterprises

- 3.18 It is a well-known phenomenon that for every economy the distribution of income is far from equal. There are a very few, very rich people and very many much poorer people. But it is not only income distribution that is skewed like this. In every country the share of production that is carried out by the few largest enterprises is very large.
- 3.19 Some of the large enterprises will be public corporations. Some of the large private corporations may be foreign controlled. Both of these sets of enterprises are interesting in their own right and merit very considerable investigation by national accounts compilers.
- 3.20 The next set of enterprises to consider are those that are not so large but are still covered by regular statistical enquiries. It is usual to limit enquiries to enterprises over a certain size, for example those that employ five or more people or perhaps 10 or more people or those that have a turnover beyond a certain figure. Whatever the criteria that is used in any country, the term “medium sized enterprises” will be used to refer to those enterprises, other than the largest, that are covered by regular statistical enquiries.
- 3.21 Beyond that there are small and informal activities. Much work has been undertaken in recent years to develop methodologies for measuring the informal economy. It is not quite the same concept as that of the not observed economy but there is a large degree of overlap. In all economies, but particularly in developing economies, it is interesting to know how large the informal sector is. The reason for this is that it is in the informal sector that the increase in involvement in the market economy is most easily detected and policymakers have a strong interest in seeing how fast this movement is taking place.
- 3.22 A recent survey of the demography of enterprises in OECD countries (*Structural and Demographic Business Statistics*, OECD, 2010) gives figures for the concentration by number of establishment, total employment and value added for a variety of industries for most OECD countries. Some of the results are shown in table 3.1.
- 3.23 In Mexico in 2003, less than one per cent of the number of manufacturing establishments employed more than 250 people but they accounted for half of total employment in the industry and almost three quarters of value added. In the UK in 2007, just over one per cent of establishments in manufacturing employed more than 249 people but accounted for more than 40 per cent of employment and over half of value added.
- 3.24 In wholesale and retail trade and in hotels and restaurants, the concentration of the largest firms is less in Mexico than in the UK but these are typically industries with very large amounts of activity undertaken by informal enterprises especially in developing countries. If the class with 10 or fewer employees was broken down to show the informal sector separately, the concentration of formal sector activity in the larger size firms would be emphasized again.

1. Large enterprises

- 3.25 It cannot be emphasised too strongly that because of the importance of very large enterprises it is absolutely essential that information on all large firms is collected. This is not an area where allowing for non-response is an adequate procedure. The importance of the large firms is so great that it is not acceptable to make imputations for their results and particularly it is not helpful to assume that their

Table 3.1: Distribution of establishments by size, Mexico and United Kingdom

Mexico	Percentage by size class					Total
	0 - 10	11 - 20	21 - 50	51 - 250	251+	
Manufacturing						
Number of establishments	89.7	3.1	2.2	1.8	0.7	347,151
Total employment	18.6	4.0	6.4	19.4	51.5	4,313,907
Value added	4.1	1.9	3.7	17.3	73.0	950,885
Wholesale and retail trade etc.						
Number of establishments	97.2	1.4	0.8	0.3	0.0	1,803,209
Total employment	64.5	7.0	8.1	12.8	7.5	5,476,713
Value added	37.2	11.5	14.6	25.0	11.7	600,050
Hotels and restaurants						
Number of establishments	94.3	2.6	1.4	0.6	0.0	277,436
Total employment	56.0	8.7	10.4	16.8	8.2	1,216,262
Value added	39.3	10.4	12.0	22.5	15.9	64,700
United Kingdom						
	Percentage by size class					Total
	1 - 9	10 - 19	20 - 49	50 - 249	250+	
Manufacturing						
Number of establishments	75.4	10.6	7.6	5.2	1.2	149,147
Total employment	11.3	7.2	11.8	26.2	43.5	3,072,203
Value added	7.9	5.1	8.8	22.7	55.5	155,288
Construction						
Number of establishments	91.2	5.3	2.4	1.0	0.2	240,401
Total employment	37.3	11.9	12.3	16.5	22.0	1,430,515
Value added	29.2	11.5	13.2	19.9	26.2	73,951
Wholesale and retail trade etc.						
Number of establishments	88.2	7.4	2.9	1.3	0.3	378,175
Total employment	21.4	7.6	7.0	10.0	54.0	4,896,531
Value added	19.6	8.3	9.1	16.0	47.1	152,727
Hotels and restaurants						
Number of establishments	74.1	19.3	4.6	1.8	0.3	133,779
Total employment	23.0	17.3	9.5	11.5	38.8	1,931,337
Value added	9.2	3.8	5.5	9.8	71.8	87,643

behaviour this year compared to last year necessarily conforms to what is happening in other large firms.

3.26 It is particularly important that the national accountant ensure that the business register is complete and up-to-date in the case of large firms. This should not be difficult since the creation of a new firm either by investment from abroad or the merger of several smaller firms is likely to be such that it has featured in the news over the previous year and should be common knowledge. Similarly if a large firm has become bankrupt and gone out of business, this also will be well known to the national accountant. Such considerations underline the importance of applying local knowledge to an assessment of the accounts and as noted previously is something that is easier for local employees to do than for an external consultant not present during the whole of the previous year and therefore not necessarily aware of major news events.

3.27 The sort of validation that needs to be carried out on data for large enterprises is similar to that mentioned above in the general case. However, for large enterprises extra information is available and should be utilised. One of the characteristics of large enterprises is that almost all of them must have commercial accounts that are published and therefore in the public domain. The national accountant should locate these accounts and be able to consider those in connection with the information given by these companies in response to statistical enquiries. There may be a reconciliation needed between the two of them. For example commercial accounts may not always be compiled on the same accounting period as is needed for national accounts but given that the commercial accounts will show both figures for this year and for the previous year it is possible to use this information in connection with the data collected by statistical enquiries in order to validate the information in the latter.

3.28 The aim of this publication is to give an overview of what the main considerations should be in compiling national accounts. It cannot aim to be exhaustive and it is worth pointing out now and again later as appropriate that there are other handbooks available that deal with particular aspects of compiling their accounts. For large enterprises, reference should be made to the United Nations *Handbook on National Accounting: Links between Business Accounting and National Accounting* (published by the UN, 2000) on how to reconcile national accounting information with information shown in commercial accounts.

3.29 When looking at the commercial accounts it is necessary to consider that some of the terms used in commercial accounts do not agree into exactly with what the national accounts require. For example commercial accounts will often include a figure for depreciation that looks as if it ought to correspond to consumption fixed capital but will not. This is because in commercial accounting depreciation applies to the cost of capital assets when they were acquired and are written down over time whereas for national accounts the consumption of fixed capital must show the decrease in the value of the asset at current prices during the year. Another way of looking at the difference is to think of depreciation writing off past costs but consumption of fixed capital showing the amount that needs to be set aside year by year in order to build up a fund

that would enable the capital to be replaced at the end of its useful life.

3.30 Another point to note is that commercial accounts may give more emphasis to sales than to output whereas it is output that is needed for the national accounts. It should be possible to make adjustments to the commercial accounting information by finding information on changes in inventories of finished products elsewhere in the accounts though sometimes this information may not easily be distinguished from other changes in inventories.

3.31 The commercial accounts may also give useful information about elements associated with compensation of employees that are important for the national accounts. For example some large companies may provide benefits in kind such as housing, pensions, bonuses and holiday pay that need to be included in the national accounts measure of compensation of employees but which are not included in figures of wages and salaries.

2. Medium sized enterprises

3.32 In many countries, a business register will not attempt to catch the smallest enterprises because it is so difficult to enumerate them and keep the list up to date. Even when in principle the list should be exhaustive, on pragmatic grounds, surveys will often not be aimed at all enterprises but only those above a minimum size, expressed often in terms of number of employees, but sometimes in terms of turnover. In the context of this publication, the expression medium sized enterprises is used to cover enterprises above such a cut-off point but excluding the largest enterprises discussed above.

3.33 Medium sized enterprises are those where the information available to the national accountant will come only from a survey conducted by the office. Even if commercial accounts are available for some of these firms, on the whole it will be too labour-intensive to process all of them and reconcile them with the requirements of the SNA. Therefore it is simplest to ignore the existence of such accounts unless there is particular reason for pursuing enquiries about a particular firm. It should also be remembered that it is desirable to ensure good coverage of many firms and if this means collecting rather less data than might otherwise be desirable this course of action should be actively considered. Such an approach reduces the resources needed to process the data and may well increase the response rate.

3.34 If the economy is very small then returns may be sent to all medium-sized enterprises (as well as large ones). However in larger economies a sampling technique may be adopted. The sampling technique should ensure that there is adequate coverage of the different industries of interest in the economy and if regional considerations are important that the coverage by regions is also satisfactory.

3.35 The national accountant has to decide when enough firms have replied to the questionnaire to close the period for accepting replies and process the information. It is possible that this may be done in two stages. First of all a preliminary estimate may be made when a reasonable rate of return, though less than finally required, is available and

- to redo the exercise when more replies have been received. Inevitably this doubles the work involved and on the whole it is probably better to adopt techniques that will enable a high-quality first estimate to be made. Quite often an adequate response rate will be set in terms of employment data and it may be that, for example, a coverage of 70 per cent of employment in medium-sized firms is taken to be sufficient.
- 3.36 In deciding whether enough replies have been received to declare the survey closed, the coverage by industry and region has also to be considered. It is difficult to process the national accounts if there is inadequate data for important industries.
- 3.37 In terms of data validation the same ratios can be checked as listed above in the general case. However for medium-sized enterprises it is also practical and desirable to compare one firm with another in a similar industry. This is not to say that the ratios should be exactly the same for every firm in the same industry but they are likely to be fairly similar. If there are outliers then these should be investigated. The first item to consider is whether there are any special circumstances that would make the deviation either from past information or from other firms in the same industry plausible. For example there may have been new firms starting up or technological developments may mean there is a difference from the past.
- 3.38 If some of the ratios produced during the validation exercise are implausible, then steps have to be taken to decide what to do with these figures. In such cases it is possible to send a query to the enterprise concerned. This should be done with discretion. Consideration should be given to why the information is problematical. If this is because the questionnaire might have been ambiguous or the degree of detail asked for was daunting, then it is unlikely that repeated requests for information will be successful. Further, it should be remembered that continuing to pursue an enterprise for more information may not lead to a response and may simply antagonise the enterprise so that in future they are less likely to respond.
- 3.39 If the company is incorporated and large enough to have commercial accounts, it may be possible to look at them but this is not likely to be the case very often.
- 3.40 If neither of these courses of action is possible, the national accountant is faced with three alternatives. The first is to reject the response as unreliable and simply proceed without it. This is unfortunate and should be adopted only if one of the other options is not acceptable. The second possibility is to accept the results as reported even though they are questionable. If the variation is very considerable however this may not be a desirable course of action.
- 3.41 The remaining course of action is to adjust the data on the basis of the judgement of the statistician. Many people find this daunting and worry that they may not have sufficient expertise to make reliable adjustments. It should be remembered that deciding to reject the results or to accept them without adjustment is also a judgement call, however, and requires just as much courage. A more informed judgement will lead to better figures overall. In order to make an adjustment, a national accountant can make use of information from other colleagues for example those who conduct the Labour Force Survey or those with special knowledge of the industry to see how far the figures reported for other firms in the industry may be subject to variation. Not all the people from whom assistance may be sought must necessarily be staff in the statistics office. Anyone with specialised knowledge of the industry in question may be able to give useful information about it. (Remember though that confidential information should not be revealed to people outside the office in the course of investigations.)
- 3.42 Once problematical returns have been resolved, by one or other of the possibilities listed above and when an adequate response rate has been achieved, it is essential to close the survey and make estimates for the firms that are missing. Such a process is often called "grossing up". Usually this is done by very simple means. If the number of employees covered by the respondent's account for 80 per cent of the employees known to exist in this industry, then the results are increased by 25 per cent in order to give full coverage.
- 3.43 When grossing up care must be taken to consider how up-to-date the business register is. It is typically easier to capture and record new firms entering into business than it is to record those that go out of business. Suppose that in year 1 there are two firms in the same industry. Firm A has 10 employees and firm B has 15 employees. In year 2 information is available about a new firm, firm C, that has 18 employees. Suppose that firm C sends in a response but firms A and B do not. If firms A and B remain on the business register and it is assumed they still have the same number of employees, on the basis of the suggestions just made it would seem that and the response rate corresponding to 18 employees out of a possible total of 43 is something under half. However, if what has happened is that firms A and B have merged to form firm C, then in fact there is a 100% rate of return. Information about the rate at which businesses fail suggests that many businesses fail to survive for more than three years. If defunct businesses are not removed from the business register, the chances are that the process of grossing up will overstate the amount of activity in the economy.
- 3.44 Many countries are now introducing value added tax (VAT) or a similar sort of tax on sales as a major source of tax revenue for government. When this is so, a register of firms liable to pay VAT has to be established by the tax authorities. Unlike a business register, however, firms have a very strong incentive to notify the tax authorities when the firm goes out of business, is merged with another or simply changes its name since until the change is noted in the VAT register, the firm trading under the old name will still be liable to file a tax return and penalties for not filing and for not filing on a timely basis are usually considerable. Where such a VAT register exists, this may be a good source of information to keep the business register up to date especially in respect of "deaths" of enterprises. Since VAT usually only becomes payable once turnover reaches a given threshold, small firms are likely to be excluded from the VAT register. If the business register uses the number of employees as the cutoff point, some firms with turnover below the VAT threshold may appear on the business but not the VAT register and some firms with few employees but high turnover may be on the VAT register

but not the business register. In the main, though, many small firms will appear on neither register.

3. The informal sector

3.45 This topic is both very difficult and very important. As noted above it is important because it is a key indicator of how the market economy is taking hold and people are being drawn into it. It is also important from the point of view of considering social priorities. For example people may be living in rural areas and dependent on subsistence agriculture. If they come to an urban area in search of paid employment, they may find that the only option is to live in a slum area and scrape a living by sorting refuse on dumps. While in an abstract way this represents the drawing people into the market economy, it is not necessarily clear that it is a desirable social outcome. Interest in activity undertaken by informal enterprises has social as well as economic implications.

3.46 A lot of attention has been paid to what is called the not observed economy (NOE). This is not quite the same concept as the informal sector though there is a large overlap between the two. The NOE covers all activity that is not captured in statistical enquiries. It would therefore include those firms that are covered by the grossing up just described as well as coverage of the small firms not included in the survey. On the other hand if there are some small-scale activities that do get captured in a business survey these would not enter into the NOE but would still be regarded as being part of the informal sector. For most developing countries, however, it is possible to assume that the firms below the cut-off for business enquiries that is of interest and they can be taken to represent the informal sector.

3.47 Over recent years a great deal of attention has been concentrated on measuring both the informal sector and the NOE. Relevant publications include the following.:

Organisation for Economic Co-operation and Development, International Monetary Fund, International Labour Organisation and CIS STAT (2002): *Measuring the Non-Observed Economy - A Handbook*; OECD, Paris:
Available from: <http://www.oecd.org/dataoecd/9/20/1963116.pdf>

United Nations Economic Commission for Europe (2003): *Non-observed Economy in National Accounts - Survey of National Practices*, Geneva. United Nations Publication Sales No. E.03.II.E.56.
Available from: <http://www.unece.org/stats/publications/NOE2003.pdf>

United Nations Economic Commission for Europe (2008): *Non-observed Economy in National Accounts - Survey of Country Practices*, Geneva. United Nations Publication Sales No. E.08.II.E.8.
Available from: <http://www.unece.org/stats/publications/NOE2008.pdf>

Husmanns, Ralf (2004): *Measuring the Informal Economy: from: Employment in the Informal Sector to Informal*

Employment, ILO, Working Paper No. 53, Geneva.
Available from: <http://www.ilo.org/public/english/bureau/stat/download/papers/wp53.pdf>

Husmanns, Ralf (2005): *Measurement of Informal Employment: Recent International Standards 2005*. Paper presented to the 14th Conference of Commonwealth Statisticians, Cape Town South Africa.
Available from: <http://www.ilo.org/public/english/bureau/stat/papers/comp.htm>

International Labour Office (1993): *Resolution Concerning Statistics of Employment in the Informal Sector* 15th International Conference of Labour Statisticians: High-lights of the Conference and text of the three resolutions adopted. In Bulletin of Labour Statistics 1993-2, IX-XXIV, Geneva 25.87

3.48 These publications discuss how measures of activity undertaken informally may be captured by special surveys directed to informal enterprises or by household surveys adapted to cover informal activity as well as other more analytical ways of capturing unrecorded activity.

3.49 Although it would be very desirable to be able to show activity undertaken by informal enterprises on an industry by industry basis, this may not always be possible. Many individuals working in the informal sector may undertake activities in a range of areas and it may be difficult to allocate their contribution to output adequately across the different areas. For example, someone may cultivate a plot of land, make furniture for sale and work part-time in a bar, involving activity in each of agriculture, manufacturing and services, each of them on an informal basis.

3.50 In everything to do with the informal sector in particular, it is important to remember that ignoring an item because no information is available is equivalent to making an estimate of zero. In many such cases, however loosely based estimates must be, they will be much better estimates than zero. For example, if the best that can be determined is that the unmeasured activity may be between 30 and 50 per cent of what is measured, any figure in this range is better than zero. Suppose the figure is 30 per cent but the statistician chooses 50 per cent. The result is an overestimate of 150/130 or 15 per cent of the measured figure rather than an underestimate of 30 per cent. If the true figure is 50 per cent but the statistician chooses 30 per cent, the underestimate is 130/150 or again about 15 per cent rather than 50 per cent.

4. The use of administrative data

3.51 It is assumed in the discussion above that the initial estimates for both medium sized enterprises and the informal sector will come from statistical surveys. In some countries, additional data may come from administrative sources. Often administrative sources do not use exactly the same definitions required for the national accounts but they nevertheless provide very useful information which may be used in conjunction with the grossing up procedure described above to validate the results to be used for the accounts.

- 3.52 In some cases administrative data may be the only source of data. It is especially useful to provide estimates of the informal sector and so consideration should be given to the question of how far administrative data covers this. Very often the coverage will be weak in this area and alternative techniques to allow for informal activity must still be made.

5. Enterprises and establishments

- 3.53 An enterprise is a legally separate unit with a complete set of accounts including a balance sheet. Owners of companies can identify the idea of enterprise with the a company or, in the case of a multinational corporation, part of the corporation. Although the SNA uses both the expressions enterprise and corporation, there is effectively no distinction between the two terms.

- 3.54 Large enterprises may have a number of premises from which they operate. Each of these premises may be engaged in the same sort of productive activity but in different locations, for example, a retailer may have shops in many different towns. Alternatively, the different premises, even if in fairly close proximity, may be engaged in different types of production, for example a mining company in a remote location may also operate a shop for the employees, a school and a hospital. The SNA defines an establishment as 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 in which the principal productive activity accounts for most of the value added. (Establishments are sometimes referred to as local kind-of-activity units, or local KAUs.)

- 3.55 The vast majority of enterprises by number engage in only one productive activity in one location. They may produce more than one product but one product accounts for most of the value added of the enterprise. For them, there is no functional difference between enterprise and establishment.

- 3.56 Enterprises that do not easily fall into this category are of two types. The first is the case of an enterprise that undertakes the same productive activity in different locations. Unless there is very strong political interest in regional data *and the resources to compile this*, it is suggested that such enterprises should be treated in total and no attempt be made to distinguish establishments for the premises in the different locations.

- 3.57 A few enterprises, however, cover a number of different productive activities. The first question to ask is how important are each of these activities. In the case of the mining company given above, it is clear that the shop, school and hospital are quite different types of activity from mining. The important question, though, is not are the activities different but how much of the enterprise value added is contributed by each. If the amounts of value added are very small relative to that of the main activity, it may not be necessary to try to treat them as different establishments.

- 3.58 It is likely though, that there will be a very small number of enterprises that do undertake a number of quite different activities, each of which contribute a significant share of the enterprise's value added. In order to treat these as

separate establishments, you need information on output, capital formation, labour and intermediate consumption associated with each productive activity. Information on output, capital formation and labour is relatively straightforward but in order to provide information on value added you must know the value of intermediate consumption for each productive activities.

- 3.59 However, the few large enterprises where information below the level of the enterprise as a whole is desirable are likely to keep internal accounts for each of their main activity as a "cost centre" and they may be willing to provide the information you require at this level of detail. Note that there may still be a question about how to deal with information that applies to the whole enterprise that is impossible to separate exactly to individual productive activities. Examples may include utilities, office supplies and senior management salaries.

- 3.60 A practical way to proceed is to approach the accountant of these few large enterprises and discuss what information might be made available to you. If you ask for information relating to five different products and they only have information on three, there is a good chance that either you may get no response or, if you get one, the information might be unreliable (and especially unreliable when one year is compared with the next). In the trade-off between disaggregation and reliability, good information for three products is to be preferred to dubious information for five. And you may be lucky in that you initially think of asking for information on four products and find you can have six.

- 3.61 For enterprises that have multiple activities but where information on intermediate consumption for each activity is not available, it is still probable that information can be supplied on the value of the output of different products, capital formation and labour.

- 3.62 Note that it is only information relating to production, capital formation and labour where sub-enterprise data is required. For the information necessary on tax payments, interest and dividends, for example, not only is information only available for the enterprise as a whole but this is all that is required for national accounts.

- 3.63 Restricting the number of enterprises for which multiple establishments are identified will save significant resources and, if good cooperation with those few large enterprises concerned will not reduce and may actually improve the quality and timeliness of the accounts. Not requesting information that is not readily available within an enterprise is likely to increase the response rate to enquiries and the timing of response significantly and the time taken to process the responses will decrease

- 3.64 One reason sometimes given for requesting detailed information on intermediate consumption by type of product and in respect of many different productive activities is in order to compile input-output tables. Luckily, however, the process of compiling input output tables can take account of a unit with more than one product as output. The consequences for the supply and use tables of not requesting a disaggregation of inputs according to each product line are discussed in chapter 8.

Key points to remember

A very few large enterprises account for a very large proportion of activity; complete and accurate information for them is vital.

Use sampling for medium sized companies with estimates for missing returns.

Simpler questionnaires are likely to lead to faster, more accurate returns and a better response rate.

Develop different techniques for small enterprises; the informal sector is of major policy interest and well as being necessary for the accounts.

Omitting items that are too difficult to measure accurately is actually to include an estimate of zero for them.

Ignore the difference between enterprise and establishment until resources are plentiful.

Chapter 4: The industry dimension

A. Introduction

- 4.1 The International Standard Industrial Classification of all Economic Activities (ISIC) specifies a comprehensive listing of industrial activities arranged in an agreed order. Details of the fourth revision of the classification can be found on the UN website at the following address: <http://unstats.un.org/unsd/cr/registry/isic-4.asp>
- 4.2 The classification in ISIC is hierarchical in nature. Sections appear at the highest level and are distinguished by single letters. Altogether there are 21 sections. Each section consists of a number of divisions with a two digit code; each division consists of a number of groups with three digit codes and each group consists of a number of classes
- with four digit codes. A list of the sections in ISIC appears in table 4.1.
- 4.3 Not all headings at the same level are of equal importance for all countries. Although there is an international agreement about the classification, it is the order in the classification that should be followed in a more or less strict way rather than the degree of detail. The purpose of this chapter is to show which industries might be identified for developing countries and mentions some of the boundary problems. Measuring the value of output is discussed in chapter 5.

Table 4.1: International Standard Industrial Classification (ISIC) - Section headings

- A - Agriculture, forestry and fishing
- B - Mining and quarrying
- C - Manufacturing
- D - Electricity, gas, steam and air conditioning supply
- E - Water supply; sewerage, waste management and remediation activities
- F - Construction
- G - Wholesale and retail trade; repair of motor vehicles and motorcycles
- H - Transportation and storage
- I - Accommodation and food service activities
- J - Information and communication
- K - Financial and insurance activities
- L - Real estate activities
- M - Professional, scientific and technical activities
- N - Administrative and support service activities
- O - Public administration and defence; compulsory social security
- P - Education
- Q - Human health and social work activities
- R - Arts, entertainment and recreation
- S - Other service activities
- T - Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use
- U - Activities of extraterritorial organizations and bodies

B. Agriculture

- 4.4 The agricultural industry is of importance in all economies. Even in the European Union and the United States, for example, a great deal of attention is paid to agriculture. This is because activity in the agricultural sector corresponds to a large extent to activity in the rural economy and the comparison between the rural and the urban economy is always politically sensitive.
- 4.5 In developing countries there are additional reasons why agriculture may be important. The first of these is that agricultural products may dominate a country's exports and therefore monitoring the level of crop production and the degree to which these are exported is of prime importance. Secondly, as long as many of the population are dependent on subsistence activity the well-being of the population in terms of the adequacy of diet and the whole question of food security depends on the agricultural sector.
- 4.6 This is one area where it may be desirable to have more detail than simply the section level heading. In particular if there are important export crops such as coffee, tea, cotton or rubber it may be useful to specify these.
- 4.7 It may also be useful to distinguish between agriculture that is carried out on a commercial basis and agriculture carried out on a small scale level including subsistence activities. In terms of animal rearing it may be interesting to know which animals are raised on ground where common grazing rights exist as opposed to those animals raised on private land.
- 4.8 Many agricultural crops require some degree of processing before they are ready for the market. For example cotton needs ginning and tobacco needs curing. In earlier versions of ISIC, the manufacturing element and the agricultural element were separated but recognising the difficulty of making this separation, they are now included together in agriculture.
- 4.9 In many countries with significant export crops there may be marketing boards set up by government to collect the produce and arrange for it to be marketed. The activity of such marketing boards needs to be measured carefully as well as the role of storage of crops from the time of harvest until the time of marketing. These issues together with the question of how subsistence agriculture should be valued are dealt with in chapter 5.
1. **Data sources**
- 4.10 Agriculture is not an area where information is typically collected by enterprise statistics. In almost all countries, agricultural statistics are a separate subject within the statistics office. Somewhat confusingly, different techniques of estimating agricultural output may be used for different purposes. For example, there may be a survey of farmers asking about a particular crop; the results of a crop cutting exercise; information from an early warning systems intended to give information on the likely availability of staple foods; and indirect methods of estimation such as assuming that crop yields are directly correlated with fertilizer use. The national accountant needs a single estimate of the crop yield that is actually used or exported
- 4.11 Crop yields are typically estimated by referring to agricultural surveys or returns from offices in the different crop growing areas. One issue that may need to be addressed is that agricultural statistics may be collected on a crop year, that is from the time the crop is sown until the time it is harvested, rather than the national accounts year. This is particularly a problem in the southern hemisphere where the crop year tends to run from the middle of one calendar year until the middle of the next whereas national accounts are most often compiled on a calendar year basis.
- 4.12 Special attention needs to be devoted to the question of losses in crops. These may be losses that happen before the crop is harvested, for example as a result of bad weather, storms or fires, or may occur after the crop is harvested but before it is sold, for example loss to vermin. If estimates of likely crop yields are made before harvest, these can be corrected after the harvest when the actual yield is known. After harvest, regular losses should be taken into account in reducing value added. An acceptable way to do this is to reduce the actual harvest by the average level of losses, crop by crop, observed in recent years.
- 4.13 Conceptually, measuring output related to animals should be easier than for crops but may present particular problems, for instance if farmers are reluctant to disclose information about how many animals they own.
- 4.14 Agriculture is an area where the informal sector is very important. Indeed in many countries there may be very many small-scale activities in agriculture, a few very large-scale activities and relatively few medium-sized activities.
- 4.15 Given the importance of agricultural production for providing food for the population (whether subsistence or marketed) a regional dimension may be of interest to show where food is grown and where it is consumed. It has happened that a country grew enough food for the population but lacked the infrastructure necessary to get it from the farm to urban areas, leaving them dependent on expensive imports. Drawing attention to the geographical factors might have led to a better situation.

C. Forestry and fishing

- 4.16 Like agriculture more generally, forestry and fishing in many developing countries may be of particular importance to poor people in rural areas where most of the activity is for subsistence. Since the 1993 SNA, collecting wood for own use is included within the production boundary. This includes wood collected for fuel as well as wood used in house construction or the making of utensils and furniture.
- 4.17 Fishing can be very important for some countries particularly small islands with an abundance of fish in their territorial waters. As well as providing food for the population often through small-scale fishing, the government may license non-nationals to fish in domestic waters. These licenses represent a considerable resource to the country and special attention needs to be paid to how these are recorded in the national accounts. The question of such licences is discussed in chapter 14

1. Data sources

- 4.18 It is possible to have large enterprises engaged in forestry and fishing but often the industries will be dominated by very small scale enterprises. Much small-scale fishing and wood collecting will be undertaken by units in the informal sector.
- 4.19 In the case of both forestry and fishing, there may be illegal activities being undertaken by non-residents. Such extractions do not contribute to output in the country from where the products are stolen but should be included in the economies where the thieves are resident.

D. Mining and quarrying

- 4.20 All countries undertake some degree of mining and quarrying though for some this may only consist of minor activities related to the extraction of stone and gravel for use in construction activities. Under the latest version of ISIC, such activities related to construction are now included in the construction industry and not under mining and quarrying as was previously the case. This means that in general it may be necessary to show mining and quarrying only if there is specific significant activity for the economy as a whole. In this case, it may be extremely useful to specify exactly what the natural resource is that is being exploited whether it is petroleum, diamonds or copper, for example, since the technology of mining each of these natural resources is rather different.
- 4.21 This is another area where the measurement of natural resource stocks is of major importance for policy, especially when the government claims ownership of natural resources on behalf of the country as a whole. It is also an area where capturing the development of new facilities, such as exploring for petroleum or developing a diamond mine, raises particular problems in the national accounts that need special consideration.

1. Data sources

- 4.22 In many countries, but not all, mining may only be undertaken by large enterprises which, if they are not public corporations, may still have strong links to government because of the question of the ownership of the resources being exploited. Equally there may be significant foreign ownership of mining companies.
- 4.23 Some mineral products such as diamonds that are small but very valuable may be stolen from the mine owner and sold, often abroad. In principle, the items should be included in both output and exports but obtaining reasonable estimates may be impossible.

E. Manufacturing

- 4.24 Within manufacturing some degree of disaggregation will need to be shown but it is not essential to stick to the hierarchy of ISIC rigidly or necessarily include every division or class. Other areas of the statistical office responsible for production statistics may well have made a decision about how to classify local manufacturing and this is likely to be appropriate within the national accounts area also. Note however that if the level of disaggregation was determined some time ago, it may be appropriate to consider some updating of this, in conjunction with the production statisticians.

1. Data sources

- 4.25 Within each of the industries to be distinguished, it is important to identify large enterprises. As noted earlier it is important to get information for each large enterprise. For state enterprises, this should be relatively straightforward because the parent ministries ought to be able to provide information.
- 4.26 In principle it may be desirable to publish data for each industry where there are large enterprises but set against

this desirability from the point of view of analysis there may be problems of confidentiality. If there is only one large enterprise in a given industry, it may not be possible to show this industry separately because information that the enterprise considers to be confidential from a commercial point of view would be exposed. Even more problematical is the case where there are two large enterprises in a heading, since publication of the combined results would enable each of the large enterprises to make reasonable estimates of the accounts of the other, who is necessarily an economic competitor. This question of reaching a compromise between publishing analytically interesting levels of disaggregation and what is practical for confidentiality reasons is a general issue that the office needs to address across a wide range of statistical areas. However, the question of how to publish the data must be seen as distinct from the process of collection. It is important to collect data for all large enterprises, even if it is not possible to publish information that would identify the industry concerned in the published data.

- 4.27 Within all branches of manufacturing, there are likely to be many medium-sized enterprises as well as informal

activities. Another problem associated with the degree of disaggregation to be shown in the accounts concerns response rates. The greater the level of disaggregation in general the higher the level of response rate will be required because the target level must be reached for every level shown. A high degree of disaggregation requires greater resources and longer time periods for the required processing especially for branches without any large enterprises. In practice, working at a higher level of aggregation is likely to be more cost effective than automatically following the degree of detail shown in ISIC.

- 4.28 The degree of activity undertaken by informal enterprises will vary considerably from one branch of manufacturing to another. Refining of oil and gas is dominated by very large enterprises with no activity undertaken by informal enterprises. Preparing food products and making garments are areas of extensive activity undertaken by informal enterprises. The degree of very small scale activity may be another factor to consider when grouping branches since some people may be engaged in several activities that ISIC would allocate to different headings.

F. Electricity and gas

- 4.29 In almost all countries, electricity and gas is supplied by a small number of very large enterprises or possibly by one single enterprise. Often these enterprises may be public

corporations. It should in principle be easy to collect information from these if not through business enterprise surveys then from commercial accounts.

G. Water

- 4.30 Identifying water as a separate activity is of interest since providing clean water and sanitation is seen as a key indicator of development because of the implications for health. However, there may be institutional reasons why it is difficult to identify all water supply on a comprehensive basis.

moves to make explicit charges for water supply in which case an unincorporated enterprise might be established. In some cases, the water supply activity may have been incorporated, either as a public corporation or even a private one. In either of these cases, commercial accounts should be readily available.

- 4.31 In many countries, piped water and sanitation was provided as part of the general services supplied by government, often by a town council. Where this is so, and no explicit charge is made for water, it may not be possible to distinguish this part of water supply from the rest of government output. Increasingly, however, there have been

- 4.32 Some water providers however will be very small-scale informal activities where individuals carry water in containers from household to household selling these. In addition some households will fetch their own water. Since the 1993 SNA, the act of fetching water, even for own use, is regarded as falling within the production boundary.

H. Construction

- 4.33 The construction industry is always important because of its role in capital formation and the provision of housing. However, not all construction output might be attributable to the construction industry.

- 4.34 Traditionally government undertook quite a lot of construction activity both in the provision of public housing and the maintenance of government buildings. Increasingly such activities have been converted either to public corporations or have been privatised, but some may

- remain indistinguishable within government. The construction and maintenance of roads is one example where government may continue to fund this as part of government services. If the work is contracted to a construction enterprise, it can be captured in the construction industry but if there is still a large ministry of public works (or similar title) with many employees, there may not be enough information to separate this activity from government.
- 4.35 Sometimes construction is undertaken by enterprises that are not themselves in the construction industry but are undertaking construction on their own account. This includes farmers erecting barns or shelters for animals as well as firms within manufacturing industry constructing factories and so on. Such activities need to be captured and it is part of the discussion later about whether these should be attributed to the construction industry (if the accounts are being compiled on a strict establishment basis) or whether they remain in the industry that is undertaking the activity.
- 4.36 Informal construction is also very important in almost all countries. Very many individuals undertake do-it-yourself activity in respect of house maintenance or house extension. In developing countries the construction of most rural houses and shantytown dwellings will be undertaken on an own account basis.
- 4.37 Another aspect of the construction industry that needs to be covered is the possibility of communal construction. In some developing countries groups of individuals get together to erect buildings, for example a school or health clinic, or to maintain roads. These activities count as part of
- construction output and need to be measured. These are likely to be one-off exercises rather than continuous ones and are therefore more difficult to capture.
- 1. Data sources**
- 4.38 There are usually a number of very large enterprises in the construction industry but there are also very many smaller enterprises both medium-sized and informal.
- 4.39 Many individuals working in construction may in fact be working as self-employed people who sell their services to a construction contractor rather than being recorded as employees of the construction industry. This makes using employment as a key indicator for construction difficult and makes grossing up of results troublesome. For the construction enterprise, the attraction of employing individuals on a self-employed basis is that some associated costs may be avoided, for example some taxes attaching to employees, and it is possible to hire individuals as and when the work requires it rather than keeping them as full-time employees.
- 4.40 Given this phenomenon, the use of employment as the basis for distinguishing large medium and informal enterprises becomes very difficult as does determining the response rate and grossing up on the basis of reported employment. As already stated, measuring construction activity well is very important and in order to do this it is essential to be aware of employment practices in the industry and to liaise very strongly with labour force statisticians on how the workers are enumerated and classified within labour force statistics.

I. General issues concerning service industries working on margins

- 4.41 One special sort of service is the provision of a margin. This is where one unit facilitates the acquisition of a good (or possibly a service) by another unit. Wholesaling and retailing is one example, whereby a shop acquires and displays goods not for their own use but for the convenience of customers who do not have to seek out the supplier of the goods and arrange to take delivery from the manufacturer. Transport is another example whereby a carrier agrees to transport goods it does not own from the producer to the purchaser. A travel agent who arranges a ticket for a passenger is a third example, involving the acquisition of a service. Financial services are another important margin industry, the simplest example being a foreign exchange bureau.
- 4.42 In all margin industries, the data needs are somewhat different from the general case. Intermediate consumption refers only to the items used directly by the margin industry, such as the cost of electricity in a shop or petroleum for a lorry, and does not include the cost of goods and services that the margin industry resells to a purchaser. There is more detailed discussion of how to measure margin activities, especially financial services, in chapter 5. It is important to note, though, that the special characteristics of margin industries have implications for how to gross up for non-response where turnover may be used in preference to employment, for example.

J. Wholesale and retail trade

- 4.43 The wholesale and retail trade is the most obvious example of a margin industry. It is simplest to think of a manufacturer selling goods to a wholesaler, who sells them to a retailer who then sells them to a final consumer such as a household. At every stage the quantity of goods handled is likely to become smaller and the margin charged (in

proportion to the price) to become larger. This example may be over-simplistic, however. Some goods pass through the hands of more than one wholesaler and some may go directly from the manufacturer to the retailer. Over the last several years wholesaling has become less important relative to retailing as individuals have the opportunity to go direct to manufacturers either through special outlets or via the internet.

- 4.44 In deciding whether an activity consists of wholesale or retailing and whether it is further processing of a good can be difficult. In principle the difference is simple. If there is no change in substance of the good, the activity is wholesaling and retailing. If there is a change in substance then the activity counts as processing and is usually included in manufacturing. However there are borderline areas. For example if a wholesaler takes delivery of a large supply of an item and then packages it in smaller units for sale does this mean a change of substance or not? It is usually assumed that packaging is part of wholesale and retail but it is obvious that some small changes may be incorporated as well and it is not always straightforward to

decide whether this is wholesale and retail or part of processing.

1. Data sources

- 4.45 This is an activity of very considerable importance in all countries. Usually there are a number of large enterprises, many medium-sized enterprises and very many small scale enterprises. These will include street traders and others with no fixed premises. Increasingly, some retail activities are carried out via the internet. This may include enterprises of all sizes, from very large to very small.
- 4.46 The size of margin charged by an enterprise will depend on a number of factors including the nature of the products being sold, the market being targeted and the nature of the outlet. All these factors may have to be considered when deciding how best to collect data in this area.
- 4.47 A special area for attention within wholesale and retailing is any activity undertaken by marketing boards for specific agricultural products.

K. Sale and repair of motor vehicles

- 4.48 This is another area where the latest version of ISIC involves a change in classification. Previously, the sale of motor vehicles was treated as part of wholesale and retail but repair was part of mechanical engineering within the manufacturing. Recognising the difficulty of separating them, the latest version of ISIC includes both within wholesale and retail. In many developing countries, however, sale of motor vehicles may be undertaken mainly

by large enterprises while much repair is undertaken by small scale enterprises, many in the informal sector.

- 4.49 Even if the two elements are not published separately, it may be helpful to make a breakdown at working level while plausibility testing of the results is being undertaken.

L. Transportation and storage

- 4.50 Transportation includes the movement of both people and goods. The movement of goods from one economy to another deserves special consideration to identify whether domestic carriers are moving imports and exports or whether these are being moved by non-resident carriers. A carrier in the transportation industry does not normally take ownership of the goods being moved. However, enterprises in other industries may carry out transportation services, usually moving the goods they have produced from the factory to a location determined by the purchaser. Transportation thus shares with construction the feature that not all transportation activity is undertaken by enterprises in the transportation industry.

same degree of care as the activities of major airlines, bus companies and so on. Transportation also covers the case where a fee is charged to move a liquid through a pipeline. This often applies to liquefied gas and petroleum and may apply to other items also such as water.

- 4.52 The ISIC heading includes storage. This covers the temporary housing of goods in transit as well as the provision of storage facilities as a service to customers. As with transportation, the provision of storage does not normally involve a change of ownership of the goods being stored. Where the owner of the goods undertakes the storage, this part of the activity will not appear in the transportation and storage industry.

1. Data sources

- 4.53 This is another industry where there may be a few very large enterprises, such as a railway and airline, and many small-scale and informal enterprises such as taxis. It should

be relatively straightforward to obtain reasonable data for the large industries but covering the small scale activities

will require the use of the techniques adopted for the informal sector.

M. Accommodation and food service activities

4.54 This is the formal ISIC description of the industry often referred to as hotels and restaurants. For countries with an important tourist industry, it may be important to show the industry separately in the national accounts.

4.55 The industry includes the sale of food and drink by street traders even though they do not have a separate location that can be described as a restaurant. Given that many grocers and convenience stores sell bottled and canned drinks, there is clearly a somewhat fuzzy borderline

between such shops and a street trader and a pragmatic allocation of such enterprises must be adopted.

1. Data sources

4.56 Data from large and medium sized enterprises should be available from statistical surveys. For large enterprises commercial accounts should also be available. As usual, special efforts will be needed to capture small-scale activity.

N. Other services

4.57 Up to this point, nine of the ISIC sections have been covered; twelve remain. All of these twelve cover services. ISIC is conceptually correct in identifying so many industries because the type of activity in each is significantly different and in some countries it will be both practical and informative to treat each of these industries separately. For many developing countries, however, there may not be extensive activity in each area and so an aggregation of these headings may save considerable resources without impairing the overall view of the economy to a great extent.

4.58 The suggestion made here is to distinguish first services provided by government, described here as public services, from others, described as private services. There is a pragmatic reason for this separation. In general public services will be reasonably well measured but only a few private services may be well covered by statistical enquiries.

4.59 Public services include public administration, public education and health services and other public services. Information on these activities should be available from government accounts. Activities carried out by public corporations are not included here; they should be included with the industrial classification appropriate to their main activity.

4.60 Three categories of private services are important in all countries including developing countries, and should be separately identified. These are financial services, information and communication, and the services provided by owner-occupied dwellings. In the case of financial services a considerable amount of information is likely to be available from the central bank. For information and communication some large enterprises will exist providing postal services and internet facilities. There will also be a range of smaller enterprises, for example those people

offering the use of mobile phones for single calls. For owner-occupied dwellings the national accountant must make his own estimates.

4.61 There are a range of other private services that may be important enough to identify, remembering that in this context “important” means the added analytical benefit of identifying them justifies the resource cost of doing so. One example that may be considered is the provision of health and education other than by government, including that provided by NPISHs, such as by religious and charitable organisations. Another is the case of domestic staff in households. At first sight, this seems an odd choice but because domestic staff are paid very little, many more households in developing countries employ some sort of help than is commonly the case in developed countries where the wage differential between domestic staff and average earnings is much less. In some places, such as Hong Kong SAR, China and Saudi Arabia, there are very significant numbers of non-nationals working in domestic service with important consequences for the balance of payments of both the places where they work and their home countries.

4.62 The other categories of private services identified in ISIC include real estate (other than owner-occupied dwellings), professional services, arts, entertainment and recreational activities. Some of these may be of importance only from time to time, for example in connection with an international sporting event or the making of a film locally. The suggestion made here is that for the most part, all these services could be grouped together. As noted previously, this suggestion is purely pragmatic and should be adjusted to local circumstances as needed. For example, it would be quite inappropriate in India not to identify the activities of the film industry (Bollywood) as an important service industry.

Key points to remember

Use ISIC as a guide to the order of industries but choose aggregation levels to suit local conditions.

Keep the choice of industries under review as economic conditions change.

The more industries that are to be shown, the higher the response rate will need to be.

Chapter 5: Compiling the production account and the first measure of GDP

A. Introduction

5.1 Because the SNA is a large book it often seems that the problem of compiling GDP is one of theoretical complexity. However the principle of calculating value added as the difference between output and intermediate consumption is not in itself complicated. It is the problem of collecting information that measures output and intermediate consumption accurately that is the difficulty. It is for this reason that the preceding two chapters are concerned first of all with discussing how information can be collected for different enterprises and secondly with how the information should be aggregated to different levels of industry in order to portray activity in the country in the most helpful way possible without being unduly burdensome in terms of resources.

5.2 This chapter is mainly concerned with how to compile the production account. It therefore looks industry by industry at any particular aspects of the measurement of output and intermediate consumption that need particular attention according to the nature of the industry under consideration. However it also pays attention to the fact that as will have been become obvious in the earlier chapters, measuring small-scale and informal activities adequately is always difficult. One way of overcoming this problem therefore is to look not just at the production of goods and services but to think about their use. This leads to the question of reconciling the production account estimates with estimates for expenditure in chapter 7.

5.3 This chapter also addresses the question of measuring production for two important industries where normal business surveys cannot supply the necessary information. These industries are financial services and the imputed rental of owner-occupied dwellings.

5.4 It is worth recalling two conceptual issues that need to be kept in mind when using data collected from surveys or extracted from commercial accounts to compile production accounts. The first of these concerns time of recording and the second valuation.

1. Time of recording

5.5 It is important both conceptually and in practice that production should be recorded as it takes place and not when the resulting output is sold. It is simplest to explain this by means of an example. Suppose an enterprise produces value of 100 in each of three years and actually sells 95 in the first year, 103 in the second year and 102 in the third year. It is clear that for the three years as a whole total production is 300 and total sales is also 300 but year

by year sales appear to increase from 95 to 103 between year one and year two and declined slightly from 103 to 102 from year two to year three. If the interest is in measuring the growth of the economy, as is frequently the case, the sales figures give a misleading impression of what is actually going on. It is therefore important to recognise that output is equal to the value of sales adjusted for changes in inventories of finished goods, that is goods produced and ready for sale but not yet sold, or goods sold adjusted for sales of goods produced in an earlier period. In the first year therefore there is output of 100, sales of 95 and a change in inventories of 5. In the second year output is 100, sales 103 and the change in inventories of -3. In the third year output is 100, sales 102 and the change in inventories is -2.

5.6 Time of recording is also relevant when identifying the value of the prices to be used when items are put into inventories and removed from inventories. Suppose in our example the price of items in year one is 1.0, in year two it is 1.1 and year three it is 1.2. The value of output in each of the three years would be 100, 110 and 120 respectively. The corresponding value of sales would be 95, 113.3 and 122.4. This implies that the value of inventories must be 5, -3.3 and -2.4 respectively. This is reconciled with the values of inventories ignoring changes in prices by recognising that additions to and deductions from inventories have to be valued *at the prices prevailing when these additions and deductions are made*. If inventories were still valued at the prices prevailing when the goods entered into store, that is at 5, -3 and -2 the identity that production equals sales plus changes in inventories no longer holds. When goods are held in inventories for a long period or when inflation is considerable this difference is very important and the national accountant may have to adjust the figures received from questionnaires to take account of this.

2. Valuation

5.7 Because the SNA records information for both the seller and purchaser of goods and services, clarity is needed about whose perspective of prices is used. This is the problem known as valuation. Information collected from enterprises represents the value retained by the producer of the goods. This is not necessarily the price that is paid by the purchaser. The purchaser must pay the producer but may also have to pay extra for the cost of transport of the items to the place he wishes to take delivery, he may have to pay wholesale and retail margins and he may have to pay taxes to government. Even if the producer collects taxes on

behalf of government they are not normally included in the price of the goods and services that should be recorded in the value of output in the national accounts because these taxes are not retained by the producer.

- 5.8 In national accounts terms these variations in prices are described as the difference between basic prices, producers' prices and purchasers' price. Rather than reiterate the difference between these in detail here, reference should be made to paragraphs 6.49 to 6.69 of the SNA but figure 6.1 from the SNA is included here as table 5.1 as an aide memoir for the difference between the different valuations.

Table 5.1. Basic, producers' and purchasers' prices

Basic prices
+
Taxes on products excluding invoiced VAT
-
Subsidies on products
=
Producers' prices
+
VAT not deductible by the purchaser
+
Separately invoiced transport charges
+
Wholesalers' and retailers' margins
=
Purchasers' prices

- 5.9 The reason why the SNA suggests using basic rather than producer prices to measure output can be seen by considering the case of the industries refining petroleum, making alcoholic drink and cigarettes. All these products typically carry heavy specific taxes, probably in addition to taxes levied as a general sales tax or a form of VAT. If output is measured at producer prices, then the value of the specific taxes will be included in value added. Comparing value added across industries will make these industries

appear disproportionately important. Value added per employee, for example, calculated on the basis of figures including specific taxes in value added will apparently show that workers in these industries contribute much more per head to GDP than workers in other industries in a way that is quite misleading. Equally if an industry receives a subsidy on its products, value added will be misleadingly low.

- 5.10 In addition, the prices available to the national accountant to use in determining volume measures of GDP are likely to be prices that exclude specific taxes and indeed other taxes on products. (It is regrettable that for largely historical reasons, such prices are often called producer price indices when in fact they are closer to basic prices than producer prices as understood by national accountants.)

3. Inventories of work-in-progress

- 5.11 In addition to inventories of finished goods that explain the difference between production and sales, attention must be paid to work-in-progress. For many industries where production is very short-term, including almost all services, this is not an issue but in some industries particularly, for example, construction, production may continue over a number of accounting periods. Suppose a factory takes three years to build and costs 600 in total. It would be quite misleading to record no production at all in years one and two and the whole of the 600 in year three. It does not necessarily follow that the value of production in each of the three years is equal though it is likely that this may be an acceptable approximation if no better information can be found. In principle it is the value of work put in place that should be recorded. So, for example, if work started in year one but for some reason there was a delay of three or four months perhaps because some crucial piece of equipment was missing, it may be that the work put in place in year one was only 125 and that years two and three show an acceleration of work put in place so that a more accurate portrayal of work over the three years might have been 125, 250, and 225. Even if the work is put in place on a regular basis throughout the period, the figures for years two and three will exceed year one by the relative levels of inflation affecting the construction industry over the three years.

B. Agriculture

- 5.12 For most industries, the value of output is given by the value of sales suitably adjusted for changes in inventories of finished goods and work-in-progress as described above. For agriculture the situation may be somewhat different. As noted in chapter 2, very often information for agriculture comes from agricultural statistics and in particular from crop yields. Here the value of the yield is given in physical units such as tonnes and this then has to be multiplied by an appropriate price to yield a value of output. However it is not sufficient to simply take the total yield as estimated in agricultural statistics. There are at least three reasons why the amount to be recorded as output may be less than this.

- 5.13 The first reason is that the estimates of the crop yield may not have been made at harvest time but at some time slightly in advance of harvest and some last-minute natural event such as a hailstorm may have destroyed some of the crop. Such a situation is common in southern Africa, for example, where the climatic conditions at harvest time are also conducive to sudden hailstorms.
- 5.14 The second reason is that although the harvest may correspond with the estimated yield not all of this is eventually used. For example crops that are put into store are subject to be eaten by vermin or may rot in storage due

- to poor conditions such as damp. Even though the physical estimate of the yield is accurate the amount available for consumption is overstated because such losses are not taken into account.
- 5.15 A third reason why the value of crop yield may be an overstatement of what is sold is that there may be regular thefts from storage. Where the theft is a regular occurrence, the SNA recommends that this should be captured by adding it to the changes in inventories withdrawn from storage. That is production estimated as sales less changes in inventories also deducts regular thefts. Note that it is the regularity of the theft that is important not the size of it; even if the thefts are large if they are regular they are treated in this way.
- 5.16 Many crops are annual in nature and thus having a figure of output that is related to crop yield will give an accurate basis for annual measurement but does not help with quarterly figures. Here it is necessary to have recourse to the principle of work-in-progress described above. Spreading the production of the four quarters over the year must be done using some assumptions One possibility is to spread the production in proportion to the costs incurred. This may give quite high production in the first quarter when the crop is sown and in the fourth quarter when it is harvested but relatively little in the second and third quarter. An alternative is simply to spread the crop proportionally over the year. Note also that making estimates of the crop yield in the three quarters leading up to the current period's harvest can only be provisional and these figures may need revising when the crop is actually harvested.
- 5.17 Even when the total amount of the harvested crop that is available for consumption has been estimated it needs to be given a value. The SNA recommends that the value to be used is the price that could be received if the crop were to be offered for sale. This is sometimes seen as being equivalent to saying the crop should be valued at market prices, these market prices being taken to be the prices prevailing in the nearest market. However if there are significant costs associated with getting the crop to market then this will overstate the value of subsistence production. A better description of the price that should be used is that of "farm gate" prices that is the price that would be offered to the farmer at the point where the crop is actually harvested.
- 5.18 A special adjustment is allowed within the national accounts for treating part of the increase in value of seasonal crops as production rather than simply the effects of inflation. This adjustment applies to any unit that keeps the crops in store so as to make them available out of season whether it is the farmer who grows crops or a retailer or wholesaler who undertakes the storage. This applies in particular to marketing boards especially if their main concern is to ensure food security throughout the year. This treatment does not apply to an increase in the value of a crop such as coffee where the marketing board may hold onto the crops on a speculative basis hoping that the world price for coffee will increase in future. The details for how to deal with measuring output due to storage is given in the annex to chapter 6 of the 2008 SNA and for convenience this is included here in its entirety.
- Annex to chapter 6: Separating output due to storage from holding gains and losses*
- A. Introduction*
- A6.1 Paragraphs 6.142 to 6.145 recommend that, in some cases, the increase in value of goods held in inventories may be regarded as output due to storage rather than to holding gains. This annex explores the topic further and gives examples of when it is appropriate to treat any of the increase in value of a product as due to production and how this may be separated from any remaining holding gains and losses.*
- 1.Storage costs and holding gains and losses*
- A6.2 Holding products in inventories always involves costs whether they are being held by the original producer or a subsequent wholesaler or retailer. These costs include those associated with providing the physical storage capacity, maintaining information on levels and types of inventories, costs of supplying withdrawals to customers and costs associated with renewing the level of inventories by acquiring replacement goods (other than the cost of the goods themselves). These costs form part of the basic price charged by a manufacturer or are recovered in the margins charged by wholesalers and retailers. The costs incurred are included in intermediate consumption, compensation of employees and the cost of capital. It may also be the case that specialist storage producers provide a service to other producers and again their costs are included in intermediate consumption.*
- A6.3 For most products, called "type I" products, this is the only aspect of storage that is relevant. All the costs associated with storage are included in production costs. The value of the goods as they are withdrawn from inventories is valued at the costs of producing or acquiring replacement items at that time. As a consequence, output is measured excluding any change in the value of products held in inventories; this change in value is treated as a holding gain or loss, as illustrated in the following example.*
- A6.4 Suppose a wholesaler buys and sells 100 packets of washing powder every period and in order to allow for marginal variations in demand keeps an inventory of 10 packets. At the beginning of a period the price paid per packet is 2, so the value of his inventories is 20. During the period the acquisition cost per packet increases to 2.1. The value of the 10 packets in inventories rises to 21 but the increase in value of 1 reflects the fact only that if the 10 packets were withdrawn from inventories for sale and replaced by identical products, the new products would cost 21 to acquire. Because output is measured with all units, whether newly produced or withdrawn from inventories, valued at the new price of 2.1, the 1 increase in the value of inventories does not enter the measures of production but appears only in the revaluation account explaining how the value of a stock of 10 packets at the beginning of the period, valued at 20, is replaced by a*

similar stock of 10 packets at the end of the period now valued at 21.

B. Goods whose real value changes over time

A6.5 There are three specific cases where the treatment described above is unsatisfactory because other factors intervene in the time while the goods are held in storage. Goods where this is the case are described as "type II" products. The three specific circumstances are the following:

- a. Goods that have a very long production process;
- b. Goods that change their physical characteristics while in inventories;
- c. Goods that have seasonal patterns of supply or demand but not both.

Each of these is discussed in turn below.

1. Goods with a long production period

A6.6 When a product is held in inventories for an extended period of time because of the length of the production process, in principle, discount factors should be used when calculating the value of work put in place each period before the delivery date. For example, if a construction project ultimately worth 200 is put in place steadily over four years, it is unrealistic to count 50 as the contribution to production in the first year. Any purchaser would take account of the fact that he would not be able to realize the value of this production for another three years and discount the value accordingly. As time passes, there is income arising to the unit holding the products as the discount factor unwinds. This case is described in chapter 20, with the full details of this numerical example.

A6.7 It is suggested that in practice it is necessary to make an allowance for the discount factor only for goods of a significantly high value and significantly long production process, where goods are recorded as work-in-progress or capital formation on own account for many periods before completion.

2. Goods whose physical characteristics change

A6.8 The second set of circumstances relates to goods whose physical characteristics change during storage because maturing is part of the production process. The goods concerned are those that in the absence of any general or relative change in prices still increase in value because they improve in quality over the time held in storage. Examples are fermentation affecting food products and the ageing of wine and spirits. When the product is withdrawn from storage, it is physically different from a new item entering the maturing phase and so it is not appropriate to use the acquisition cost of the new entry into inventories as

the value of the product being withdrawn. The question is how to separate the increase in value due to maturing from the overall price increases of the goods concerned.

A6.9 Suppose a product takes three years to reach a sufficient maturity to be sold and there is final demand for the product until it reaches this state. If the good is traded, even in its immature state, then prices will exist for the immature, newly manufactured product, for the one year old product, the two year old product and the mature product. Supposing the product is well-established, at any point in time there will be a mix of newly manufactured items and those of maturities of one, two and three years. If prices exist for these different maturities, separating the value of storage is not difficult. In the first year the new product is transformed into a product of one year's maturity. If the price when the product is brand new is P_0 and when it is one year old is P_1 , and t is the first year and $t+1$ the second, the change in value of a quantity Q of the product is $Q(P_{1,t+1} - P_{0,t})$. The increase in value is due to two factors, the increase in the price of the new product made last year to the price of a similar new product made this year ($Q(P_{0,t+1} - P_{0,t})$) and the difference between the price of a similar new product made this year and the price of the one year mature product this year ($Q(P_{1,t+1} - P_{0,t+1})$). By applying the price differences to the volumes involved, the first difference gives rise to a holding gain; the second to the value of output due to storage.

A6.10 The identity that:

the increase in value from period t to period $t+1$,

is equal to the change in value between products of the same maturity (or vintage) from period t to period $t+1$ (treated as a holding gain),

plus the change in value between products of successive maturities (or vintages) in period $t+1$ treated as the output due to storage,

is true for any two successive time periods. Thus, in the second year the increase in price between the one year mature product at the beginning of the year and the price of a one year mature product at the end of the year gives rise to a holding gain and the difference in price between a one year mature product at the end of the year and the two year mature product at the same time gives the value of output due to storage, and so on.

A6.11 The identity in paragraph A6.10 holds in current values, when each term contains (or consists of) nominal holding gains (or losses) or when each term is deflated by the general level of inflation so that each term contains or consists of real holding gains (or losses). In volume terms, as when there are no price increases, the increase in value is identified with the output due to storage.

A6.12 In practice it is very likely that robust time series of prices at different points in the maturing process do not exist. It is

possible that some close equivalent might be available but even this is not very likely. How can storage be separated from holding gains in the absence of these prices?

there is no pattern established for the probable increase in prices and no predetermined time over which the goods might be held.

A6.13 *From long experience the producer may be able to make a reasonable prediction about the increase in value due to storage. Suppose in a particular case he expects the value in volume terms after three years to be two and a half times the cost of producing the new product. If the new product is worth 100, the three year old, mature, product is worth 250. This suggests that the volume of output due to storage is 50 in each of the next three years. (Like the long construction product discussed above, in principle, a discount factor should be applied to the initial 100 and the first two tranches of 50 because the product is not ready for sale until the end of the third year.) In the absence of information about the increase in the price of the product relative to the general increase in prices, it may be necessary to assume there are no real holding gains in the product and the actual increase in value must be taken as the value of the output due to storage in current values. Once the price of the fully mature product is known, some adjustment could be made or, pragmatically, the difference between the original prediction and the outturn, adjusted for general inflation, may be taken as a real holding gain or loss.*

A6.17 *The ideal situation is one where there is a well-established and robust seasonal pattern for the expected price increases in the crop. In such a case, the seasonal pattern of the prices can be used to establish the output due to storage and the remaining increase in value represents holding gains and losses that can be separated into real and neutral elements as normal.*

A6.18 *However, given that the total level of a harvest can be quite different year on year and the actual time of harvest may vary slightly from year to year depending on climatic conditions, establishing a robust seasonal pattern of prices may not be easy. In such a case, the pragmatic suggestion is similar to that for maturing goods when there is imperfect information. The premise is that the increase in price will be attributable to two factors; the first is an increase matching the general increase in prices. The element of increase in the value of inventories corresponding to this should be treated as nominal holding gains and losses. The second factor leading to the increase in prices is a seasonal scarcity value and this element should be treated as giving rise to output due to storage. Assuming that all the increase other than that matching average price increases is due to storage implies that there are no real holding gains.*

A6.14 *It is not ideal that the output due to storage is assumed to be invariant to fluctuations in relative prices, but in circumstances where most of the price increase will be due to storage and better basic data are not available, this approach gives a pragmatic estimate of output due to storage that is superior to the assumption that the whole of the increase in value is simply a holding gain.*

4. Who benefits from the increase in value of goods in storage?

3. Goods with seasonal patterns of supply and demand

A6.15 *The third case where there is a change in value that is not attributable solely to holding gains and losses is when goods are placed in storage to take advantage of changes in the pattern of supply and demand over a year. The most common case is storage of a staple crop, such as maize, where there is a relatively short harvest period but demand is fairly constant throughout the year. As a result, the price rises as inventories decrease until the next harvest when an increase in supply causes the price to fall again. It is possible to envisage the opposite case where demand is seasonal but it is cost effective for producers to produce the good for the whole, or most, of the year, even though for much of that time the production goes straight into inventories and stays there until demand peaks.*

A6.19 *The fact that type II products give rise to production of storage depends only on the type of product, not on the producer. If a farmer produces a seasonal crop and then stores most of it to sell bit by bit throughout the year, he records the benefits of the increase in value due to storage in his output. However, if he sells all of his crop at harvest time to another unit (for example, a wholesaler) and that unit puts it in inventories and sells it continuously throughout the year, then that unit derives the benefits from holding the crop in storage and records in his output these benefits that would otherwise have been recorded by the farmer as output. However many times a type II good changes hands between its production and sale, the value of output due to storage will be the same. It is likely that every time it changes hands, the associated intermediate consumption will increase so that value added will decrease but the level of output will not be affected. Thus an increase in value accrues to the unit holding the goods, if they are type II goods and the holder is a wholesaler or retailer, he may have output just as the original producer may.*

5. When is output due to storage recorded?

A6.16 *The reason that this type of product is different from a type I product is that, as with the goods that change characteristics due to maturing, the price increases, relative to the general level of inflation, in a more or less predictable way because of the effect of transporting the goods through time, from a period of abundance to one of relative scarcity. This is a quite different motivation from holding items in store for purely speculative reasons when*

A6.20 *Output due to storage is produced on a continuous basis. In order to have an articulated set of information on production and inventories, output from storage must be*

calculated period by period. If the goods that are changing value remain in inventories, the owner of the goods has output that is treated as an addition to inventories. Even though the quantity of the inventories may not change, the quality-adjusted measures do change to reflect the increase in price that is treated as a quality change and not as a holding gain.

1. Some examples

A6.21 These simple examples show how the approximate approach to calculating storage works under different assumptions.

Example 1

A6.22 Unit A purchases goods to the value of 100 and they rise in value to 110 by the middle of year 2 when he sells them. At the end of the year the value of the goods is 108. There is no general inflation in the period.

A6.23 In year 1, A records output of 8 and additions to inventories of 108 in total. In year 2, A records output of 2, additions to inventories of 2 and sales of the withdrawals from inventories of 110.

Example 2

A6.24 The goods bought in example 1 also increase in line with inflation so that they are worth 115 by the end of year 1 and 120 on disposal.

A6.25 The recordings in year 1 are complemented by holding gains of 7 in year 1. At the end of year 1, it is necessary to re-estimate the expected price level on disposal. If this is estimated to be 117, showing the same absolute increase as previously expected, for example, then a holding gain of 3 will be recorded in year 2.

Example 3

A6.26 The goods in example 1 are sold to unit B for 105 part way through the year. B then holds the goods until selling them at the same point in time in year 2 for 110.

A6.27 In year 1, A has output of 5 and acquisition of inventories of 105. A withdraws inventories of 105 and sells them to B. B has output in year 1 of 3, which is recorded as an addition to inventories. B's total additions to inventories in year 1 are thus 108. In year 2, B has output of 2, additions to inventories of 2 and sales that represent withdrawals from inventories of 110.

C. Forestry

5.19 The value of felled timber available within the domestic economy includes the amounts available to the construction and other industries and for exports as well as timber that has been felled or collected for own use by residents. This necessarily includes the result of any illegal logging that may have taken place either by felling within the domestic economy in contravention of regulations or felling that takes place across an international border with the resulting timber brought into the domestic economy. Illegal logging carried out by non-residents who remove the resulting timber to their own country of residence is shown as production of the country where those felling the timber are resident and not as production and exports from the country where the trees were standing.

5.20 For both forestry and fishing, illegal activity can be very significant. Illegal logging and poaching by non-nationals may have a major detrimental effect on the stock of forests and fish stocks for a country. However the extraction of timber and fish in such cases does not form part of the output of the country owning the stocks and will be recorded only in the other changes in the volume of assets account or as a memorandum item. By having data of the stock of timber and fish available, and changes in these stocks, assessments can be made not only of the extent to which a country is managing to exploit its own resources or is having them exploited without permission by someone else but also environmental sustainability.

5.21 On the other hand a country whose nationals engage in illegal logging or poaching should show output and value added of the resulting timber and fish. Often the statistical agencies will not know these activities have been carried out illegally, since they will not be able to distinguish legitimate logging and fishing from the illegal component.

5.22 Valuing the output of forestry is similar in many ways to valuing agriculture since often a quantity figure needs to be multiplied by a price rather than simply measuring the value of sales adjusted for changes in inventories.

5.23 An enterprise managing a plantation also needs to take account of work-in-progress. Trees take many years to come to maturity and be ready for felling and it would not be appropriate to record the whole of the value of the felled timber at the time that it is felled.

5.24 Strictly speaking, the output of forestry may include some other forestry products such as wild berries, birds and livestock if these are harvested for human consumption. It is possible that information on such products may be available, for example from a household income and expenditure survey. If not, such an adjustment should only be attempted if the amounts of such products are significant.

D. Fishing

- 5.25 The value of fishing is given by the value of fish landed by boats operated by residents whether this landing is in the domestic economy or abroad. This means that fish caught in international waters or caught illegally in the waters of another country are included in the output of the country where the operator of the fishing boat is resident. Fish that are caught in national waters by non-residents are not part of the output of the country even if the catch is illegal.
- 5.26 As noted earlier for some countries with large fish stocks in national waters, the government may license non-residents to catch these fish. The value of these licences is an important source of income to the government but is not recorded as the output of the fishing industry but as giving rise to rent payable to government. This is discussed further in chapter 14.

E. Manufacturing

- 5.27 Conceptually and practically the output of manufacturing industry is the easiest to measure. The data collected will normally reflect the value of sales and this needs to be adjusted for the changes in inventories of both finished goods and work-in-progress. The valuation should preferably be at basic prices, that is excluding any taxes on products levied by the government and before the addition of transport, wholesale or retail margins.
- 5.28 Note however that the price paid should reflect the actual price paid and not the price that the manufacturer hopes to achieve. For example if the manufacturer has output of 1,000 units and reckons to sell these at 10 per unit he will hope to have sales of 10,000. However if a customer orders 200 units and because he takes such a large proportion of the output, the manufacturer gives him a 10 per cent discount, then the value of these 200 units is not 2,000 but 1,800 and this is the value that should be included in output. Similarly if the manufacturer makes seasonal goods, for example some types of clothing, and at the end of the season the prices are reduced in order to clear any remaining inventories, it is the reduced price for these sales that should be used in the measurement of output.
- 5.29 Some manufacturing industries undertake production that takes a very long time to complete. This may be the case for shipbuilding and for some large engineering works. In such cases work-in-progress should be measured based on work put in place. In order to estimate the value of the work put in place it may be necessary to use the costs incurred in a period, that is all the intermediate consumption, the cost of labour and an allowance for the cost of any fixed capital used.
- 5.30 It is also the case that manufacturers may undertake construction on their own account for example if they build their own factory, or transport their own goods to the purchaser or run their own retail outlet. As described above unless there are compelling reasons to do otherwise, it is simplest to measure output on an enterprise basis rather than an establishment basis and include all of these activities as part of manufacturing industry.
- 5.31 Manufacturing industry is the industry where many goods are produced. However many manufacturing industries may also produce services. One example is where a textile manufacturer may undertake to print a pattern on material belonging to another firm. In the past such activities were called industrial services. Increasingly, however, the most important activities undertaken by manufacturing are in the realm of services include outsourcing. Outsourcing is a process whereby an enterprise engaged in manufacturing undertakes processing activities on behalf of another unit and using goods owned by the other unit. One example is refining petroleum belonging to another unit possibly even in another country. Another is assembling electronic components into computers or other equipment. The 2008 SNA introduces greater clarity about how such activities are to be recorded. The consequences for validating basic information are quite significant.
- 5.32 Suppose a petroleum refinery purchases crude petroleum to the value of 1000, uses other inputs, engages labour and eventually produces refined petroleum to the value of 1500. The same refinery is then asked by another unit to process the same amount of petroleum for them. The fee that will be received for this processing is 500. Clearly this 500 allows the refiner to undertake the same costs, pay the same amount of labour and make the same amount of profit as before. However the pattern of the production account is quite different. In the first case both intermediate input and output are greater by 1000 than in the second although value added in both cases is the same. However, the ratio of value added to output or output per employee will be quite different in the two cases. In terms of validating the data received, therefore, it is important for the compiler to know whether a firm is operating using its own inputs or is processing those belonging to another unit. Such activity is likely to be concentrated in a few specialised industries and it is important to identify these both as far as collecting data is concerned and validating it. It should also be noted that major changes from one year to another are quite likely in the mix between working for oneself and working for others and in the development of new markets.

F. Gas, electricity and water

- 5.33 The value of output for the gas and electricity industries is the amount of gas and electricity paid for. This is not necessarily the same as the amount of gas or electricity “sent out” times the average price paid. One reason is that there are always some losses in distribution. Further, in some cases, there may be gas or electricity “stolen” by routing the provision in such a way as to bypass the meter that is used to determine the bills.
- 5.34 Calculating an average price for a unit of gas or electricity is not straightforward. Different types of customers, such as households and businesses, are often charged different rates. Different rates may be charged at different times of year, for example prices being higher when demand is higher for climatic reasons and the rate charged may depend on the level of consumption with prices increasing (or decreasing) as usage increases.
- 5.35 Water is another utility where output is measured by the charges made for providing water, either piped or in containers, and providing drainage. In some case, as noted previously, the costs may be covered by taxes so only explicit charges will be covered in the water industry,

G. Construction

- 5.36 As noted in chapter 4, construction is a very important industry and one where measurement presents a number of special problems. These include the question of production over a long time scale where estimates need to be made on a year by year basis of the amount of work put in place. The most practical way of doing this may be on the basis of the costs of materials used, labour costs and the cost of capital used. Note that it is important to value the costs of materials at the prices prevailing when they are used and not to rely on the costs at the time of purchase.
- 5.37 Reference was made in chapter 4 to the fact that some workers in the construction industry may work on their own account rather than as employees of a construction enterprise. Consider the case of five builders and suppose that initially all of them work for a construction company. The value of the output of the construction industry is 500 and the pay of the five builders is 50. Two of the builders then decide to work on their own account and charge the construction industry for the work they do. The production account for the construction industry shows a change. Intermediate consumption has increased by 20, the services provided by the two builders, and compensation of employees has fallen by 20. However for the industry as a whole the output of construction has increased by the value of 20 representing the services provided by the two builders. That is the total value of output for the industry has increased by 20 and is now 520. Total intermediate consumption has also increased by 20 but the value of labour services is not changed. Initially when all the builders worked for the construction industry, their compensation of employees was 50. After two of them become self-employed, compensation of employees payable to the three builders still employed in the construction industry is 30 but to this must be added 20 of mixed income accruing to the two builders working on their own account.
- 5.38 Increasingly when large buildings are erected quite a lot of fittings are also included. This will include lifts or elevators, it may include heating and air conditioning and so on. Buildings may include special fittings for example those necessary for shops and houses may include kitchen equipment such as cookers and refrigerators. Even though the final customer will pay for these installations, it is more practical to include them in the cost of the building than to identify them separately but the fact that they have been included must be borne in mind when accounting for the destination of the use of the lifts, air-conditioning equipment, refrigerators, etc.
- 5.39 Construction is a classic industry where there is a lot of small-scale activity. As noted it may not be possible to collect information about this through business surveys. An alternative approach is to consider the use of the construction output. Large and medium-sized enterprises will have provided a value for the total value of capital formation and some of this will be for buildings and other construction projects. Clearly these cannot be purchased by enterprises in the economy if they are not produced by the same or other enterprises. Equally households may report through a household survey that they have had a builder carry out repairs to the house. Again such work cannot be purchased if it has not been produced and looking at the uses of the output of construction may be the way of ensuring that total output of construction is large enough to satisfy these demand. For more information on how to use demand information to determine supply reference should be made to chapter 8 below and also to the manuals on measuring the not observed and informal economies.
- 5.40 Remember that in some cases construction work may be carried out by a non-resident firm. Although the normal treatment of short term activity carried out by a non-resident is usually recorded as an import of a service, an exception is made in the case of construction since the result is a structure that is physically located in the country in question.

H. Wholesale and retail trade

- 5.41 The measurement of output of wholesale and retail activity is different from all other industries. It is not equal to the value of sales adjusted for changes in inventories of finished goods; rather it is treated as a margin industry and the value of output is estimated as the cost of sales less the cost of the goods that have been sold without further processing. From this value of output the costs incurred by the wholesaler and retailer, other than the cost of the goods sold, are deducted in order to reach value added.
- 5.42 One of the reasons for working in this way goes back to the original extensive use of input-output tables. If wholesalers and retailers were shown as acquiring the products which they later sell, almost all goods would be purchased from wholesalers and retailers and few directly from the manufacturers of these products.
- 5.43 In calculating the costs of goods sold the same sort of adjustment is necessary as is necessary for the value of production in other industries. Goods are not always purchased immediately before sale but may enter inventories, in this case inventories of goods for resale. The cost of goods to be sold is therefore equal to the cost of goods purchased for resale less any additions to the inventories of goods for resale plus any withdrawals from inventories of goods for resale. As with the adjustment for sale of inventories of finished goods, so it is necessary to adjust the value of inventories of goods for resale to ensure that withdrawals are valued at prices prevailing at the time that the goods are sold to the final purchaser rather than at the time they are acquired.
- 5.44 An example of how the production account for a retailer may be calculated is given in table 5.1
- 5.45 There are very many different types of wholesalers and retailers. Some may specialise in a very narrow range of goods while others may carry a very wide variety of goods. The degree of margin that is charged will vary according to the type of trade carried out by the wholesaler or retailer. For example, a supermarket that carries a wide variety of food products will typically charge a much smaller margin than a retailer specialising in some rather exotic item, for example expensive clothes. The reason for this is fairly simple. Supermarkets expect not to hold goods in store for any great length of time. They expect to buy the goods and sell them very quickly and in large quantities. A shop that has a range of goods that appeal only to a fairly narrow customer base will have to hold goods for a longer period of time and may have to have more expensive premises. Shops that are in remote locations and those that are open at anti-social hours typically charge a higher margin than those in the centre of a town with normal shopping hours. Factors such as these should be taken into account when validating the information received from wholesalers and retailers to see whether it is reasonable.
- 5.46 It is worth considering the case of goods that are stolen and then sold. The seller may or may not know that the goods were stolen. Regardless of this, the output of the seller is still the value received for the goods from the purchaser less the cost paid to the supplier. Suppose a seller pays 80 to a thief for some goods that he then resells for 100. His output is then 20.
- 5.47 As noted in Chapter 4, the difference between wholesale and retail is becoming blurred and there are new developments which means this is likely to continue. One such example is the sale of goods on internet sites such as

Table 5.2: Example of an account for a retailer

Value of sales in period	250
Value of goods bought for resale	195
Value of goods added to inventories	15
Cost of electricity consumed	10
Cost of packaging materials	8
Compensation of employees	35
Value of output	= value of sales - cost of goods for resale adjusted for changes in inventories = 250 - (195 - 15) = 70
Intermediate consumption	= cost of electricity and packaging = 10 + 8 = 18
Value added	= output - intermediate consumption = 70 - 18 = 52
of which compensation of employees	= 35

eBay. Some small retailers may work entirely through eBay or some similar on-line facility. The output of these retailers should be covered in the same way as retailers having physical premises.

- 5.48 Some goods are sold on-line by people who do not register as an enterprise and indeed they may simply be individuals who occasionally sell products that they have in their possession, not goods that were specifically bought for

resale. Similarly, charity shops may receive items without cost that they resell. In these cases, the SNA recommends that such transactions should be recorded as transfers between those giving up the goods and those acquiring them with positive expenditure by the latter and matching negative expenditure by the former. Unless there is a significant amount of activity taking place in this way, trying to make estimates for the transactions is unlikely to be a good use of scarce resources.

I. Transportation and storage

- 5.49 It is important to remember that the activity provided by transportation companies is the movement of people and goods. For an airline, what is important is the *payment* for transportation that constitutes a measure of output not the number of people flown, still less the number of seats flown. It is common nowadays for airlines to offer advance purchase tickets that are non-refundable. Some people will not in fact fly and will lose the money paid. However, the output of the airline company includes the total number of tickets sold regardless of the numbers of people flown; it is the amount of fares received that represents output. Similarly, some buses may be very crowded and carry many more passengers than seats. It is the number of fares paid that is important, not the seating capacity of the bus.

- 5.50 As far as the transport of goods is considered, it is recommended that the only enterprises to be included here are those that undertake the movement of goods for another party in return for a fee. The transportation of their own goods by enterprises in other industries should be left in those industries. If they charge customers separately for transport, this should be treated as a secondary activity.

- 5.51 Although the cost of moving goods is treated as a margin because it increases the ultimate cost of the good to the final purchaser, the margins are calculated only as the fees charged to those having the goods moved whether this is the producer of the goods or the purchaser of the goods. The carrier does not take ownership of the goods and has no inventories of goods being moved.

- 5.52 Storage is also a service that is provided in return for a fee without the storage company acquiring ownership of the items in store. The treatment of storage by marketing boards is a special example of storage. The boards should be included in wholesale and retail and not in storage. The treatment of the increase in value of some items while in store is discussed under agriculture.

- 5.53 The transport and storage industry is one that is characterised by a wide variety of enterprises some of which will be very large, many of which will be medium in scale with very many small-scale and informal enterprises. In particular many taxis will fall into this latter category. The measurement of the output of taxis is likely to be undertaken as part of the measurement of the informal sector.

J. Information and communication

- 5.54 Prior to the introduction of ISIC 4, communication was included with transport since a large part concerned the physical transport of letters and parcels by means of road, sea and air transport. This was often the preserve of a government ministry such as a ministry of communication or a public corporation, such as a post office, with monopoly powers. These units were also usually responsible for providing telephone services via land lines. The advent of electronic communication has meant that in many countries, including developing countries, not only has the physical aspect of communication given way in many cases to electronic communication, but the companies providing the services have been privatised and face competition from both small and large firms.

- 5.55 Fixed line telephones traditionally were only installed in buildings supplied with electricity, were often expensive and installed only after a considerable delay. Many

households were thus excluded from the acquisition of a telephone. Now many individuals acquire a mobile phone as their first telephone and not as a supplement to or replacement of a land line. Mobile phones have also led to the development of activity undertaken by informal enterprises in the industry. An individual may own a mobile phone but charge others without a phone a fee per call. This makes a phone service more widely available than possible under the fixed line regime and provides a source of income to the mobile phone owner.

- 5.56 Internet service providers (ISPs) represent a new form of activity and may operate internationally. It will almost certainly be useful to contact these individually to understand exactly how they work, what international transactions are involved, if any, as well as agreeing what information can be supplied regularly to the statistical office.

K. Hotels and restaurants

- 5.57 As noted in chapter 4, one reason for identifying hotels and restaurants is because of the role this industry plays in tourism. Both business visitors as well as those coming for pleasure will make use of hotels and restaurants and it is therefore interesting to identify the contribution of the industry to the economy. In addition, however, purchases by residents from hotels and particularly from restaurants can also be important and this will extend to the purchase of food and drinks from small stalls at sporting events and other similar activities.
- 5.58 Measurement of large hotels and restaurants should be fairly straightforward through business surveys but small-scale activities will need to be measured through the sort of techniques used for the informal sector.

L. Public services

- 5.59 Public administration, public health, public education and other activities undertaken by government cannot be measured in terms of the fees paid by consumers because these services are provided either completely, or largely, free. The convention adopted in the SNA therefore is that the value of the services should be estimated at cost. In order to compile this information it is necessary to study the government accounts and identify the sort of items that should be treated as intermediate consumption, values that should be treated as costs of employing labour and to include an estimate of consumption of fixed capital in relation to the assets used by government in the production of public services.
- 5.60 It may be the case that students or patients pay something towards the cost of their education or health care. These payments are ignored when calculating the value of output but are taken into account when measuring consumption expenditure. In calculating the value of output, the sum of all costs is used and is not reduced by the fact that some payment are made by those using the services. The difference between output and the value of expenditure by government is discussed further in chapter 7.
- 5.61 Working through the information available on the items purchased by government and allocating these to different categories suitable for use in the national accounts is somewhat tedious but not intrinsically difficult. The distinction between intermediate consumption and fixed capital on the one hand and between intermediate consumption and compensation of employees on the other is discussed below when discussing the measurement of intermediate consumption.
- 5.62 There is a good chance, however, that the national accountant will not have to undertake this analysis of the government accounts as other staff (possibly in the Ministry of Finance) may have already done a very similar exercise in compiling accounts according to the Government Finance Statistics Manual (GFSM). There are two version of the GFSM, one published in 1986 and one in 2001. A major difference between the two systems is that the earlier one was undertaken on a cash basis and the latter one on an accruals basis. For national accounts purposes (as well as for the analysis of government accounts more generally) the accruals basis is to be preferred. Because many government receipts and expenditures are recorded on a cash basis, however, many countries still use the 1986 GFSM. In such a case one of the important adjustments that should be made by the national accountant is to include values for transactions in kind which are not captured on a cash basis. More details on the links between the GFSM and the SNA can be found in chapter 22 of the 2008 SNA and in the GFSM manuals. (A revised version of GFSM that brings it into closer harmonisation with the 2008 SNA is due for publication in 2013.)
- 5.63 It should be remembered that public services are produced not only by central government also by state and local government and in some cases by extra-budgetary units.

M. Financial services

- 5.64 Many national accountants find the whole idea of dealing with financial institutions daunting. In part this may be because they are not sure they fully understand the way in which banks and other financial institutions work. In part it is because they know that within the national accounts the output of financial institutions in many cases is estimated using approximate methods involving imputation. The purpose of this section is first of all to explain how banks work in a simple way and then explain how the output of these banks is estimated. This is done by describing financial instruments which are the “products” that financial institutions make available, for a fee, and other services they provide that are not associated with individual financial instruments.
- 5.65 Although this section is long and seems to describe the intricacies of the financial industry in a great deal of detail, it is necessary to do so in order to fully appreciate the role the financial sector plays in the economy. Although it is possible to compile a production account for an industry such as petroleum refining without becoming familiar with

the exact technology by which crude petroleum is converted to a range of hydro-carbon products, or to compile an account for agriculture without detailed knowledge of horticulture, it is not easy to understand how to compile an account for the financial industry without a basic grasp of how the industry works. Moreover, once this understanding is achieved, the role of distribution of income through investment income, the importance of the financial account and the reason why the financial part of the balance of payments account is so important become much clearer. Further, an understanding of how financial institutions work explains why the role of financial services, which was described in the 1993 SNA as simply financial intermediation, has been changed in the 2008 SNA to include in addition liquidity transformation and risk management. For many developing countries, the new financial instruments that bring about these two additional functions may not exist and so the initial explanation sets these aside. However, for completeness a brief overview of these is given in chapter 15.

1. Currency

5.66 Every institutional unit has to handle currency in the form of notes and coins. Even those people living at a subsistence level still use currency from time to time to buy products that they cannot acquire by means of barter, for example. Currency is therefore one of the first types of financial instrument that is specified in the SNA. It happens to be the simplest financial instrument because there are no service charges connected with transactions in domestic currency. If one goes abroad, however, it is necessary to change from a currency one usually uses at home to the currency of the foreign country. Exchanging domestic currency for foreign currency needs the services of a financial institution and they make a charge for swapping between currencies. They may quote an average exchange rate and charge a fee for making the conversion but more usually they will quote a buying and selling rate. The difference between each of these rates and the mid-point exchange rate (the average of the buying and selling rate) at a single point in time represents a service charge which the institution takes for providing the service of exchanging currencies. This is not an imputation; it is an explicit margin identified exactly as the difference between the buying and selling rates and the mid-point rate. In addition, some money-changers may still also charge an explicit fee. Different financial institutions may quote different exchange rates. Some may charge less per unit of foreign currency if a large sum is being exchanged, for example. High-street banks may charge less than foreign exchange bureaux in places where there is a high density of tourists. Nevertheless the service charges associated with exchanging one form of currency for another are simple to understand and, in principle at least, easy to measure unambiguously. Given that all imports and exports are typically transactions that involve changing one form of currency for another, the total service charge associated with obtaining foreign currency across the whole economy can be quite significant.

2. Deposits and loans

5.67 It would be tedious if all transactions had to be conducted in terms of physical currency. An obvious service that

banks provide is to enable large transactions to be conducted without the buyer and the seller handling physical notes and coins. An individual places money on deposit in a bank. When a payment is due he arranges for some of his deposit to be transferred to the account of the person who is providing a good or a service that is being acquired. Sometimes banks charge for each transaction but usually they do not. On the other hand they have access to the money on deposit and they may earn interest on this without passing the interest on to the client whose money it is. Alternatively they may pass on some of the interest but not all of it. Within the SNA, this difference between the interest that the bank can earn on deposits and the interest that they may pay to the deposit holder is used as a measure of the service that the bank provides to the depositor.

5.68 As well as receiving deposits from customers, the bank will also make loans to other customers. Again they make an implicit charge for the service provided. They do this by charging the customers who borrow from them more than the bank would have to pay to borrow money. For example suppose one customer deposits 100 with the bank and the bank can earn 5 per cent on this over a period. The bank does not pay the whole of this to the customer but pays him only 1. The difference between 5 (5 per cent of 100) and the 1 is a service charge (of 4) taken by the bank on the deposit. The bank lends the 100 to another customer and charges that customer 7 per cent. The difference between 7 and the 5 that the bank would have to pay to borrow the money is also a service charge (of 2) taken by the bank. By accepting a deposit of 100 from one customer and lending it to another, the bank has earned a total of 6.

5.69 Within the SNA, the amount the bank can earn on a deposit (equal to 5 in this example) is called "SNA interest". The amount the bank actually pays depositors (1 in the example) or receives from borrowers (7 in the example) is called "bank interest".

5.70 The process of the bank making the money that is deposited by one set of customers available as loans given to another set of customers is called financial intermediation. It is for this reason that the service charges just described are most accurately described as financial intermediation service charges indirectly measured (FISIM). In the example, the value of FISIM is 6, derived as $(5-1) + (7-5)$. In general this is portrayed as SNA interest on deposits less bank interest on deposits plus bank interest on loans less SNA interest on loans.

5.71 It is sometimes suggested that FISIM can be calculated more simply as bank interest on loans less bank interest on deposits. In this example, the short-cut method would be $7-1$ and would be correct. This is only because it is assumed that the level of loans and deposits is equal and in general this is not true. Suppose the bank received deposits of 110 but lent only 90. Then FISIM would be $(0.5 \times 110 - 1) + (7 - 0.5 \times 90)$ or 7. If deposits were 90 and loans 110, FISIM would be 5. Thus the short-cut method should not be used.

5.72 FISIM applies to all loans and deposits made by and to financial institutions that act like banks. This includes, for example, the credit made available to individuals holding credit cards. It also includes loans made by moneylenders.

- However it does not apply to any other sorts of financial instruments.
- 5.73 Because there has been so much discussion about how FISIM should be calculated, it is sometimes thought that FISIM represents all or most of the output of financial institutions. However as can be seen from the example of the margins on foreign exchange, this is far from being the case.
- 5.74 It is increasingly the case that banks may also make a monthly charge for holding a deposit in a bank account. This charge represents an explicit fee that also needs to be included in the measurement of the output of financial institutions.
- 3. Bonds and bills**
- 5.75 Governments often need to borrow money. They can do that is by approaching a bank but more usually they will raise money by issuing what are called bills or bonds. A bond is simply a promise to pay a certain amount of money at a future date possibly with regular payments of interest in the interim. For example the government may offer to pay 100 one year from now. No one will pay 100 for it up front because they will forego the interest they could earn on the 100 in the meanwhile. However they may pay 95 now in order to receive 100 next year. The difference between the 95 paid now and the 100 received next year is treated in the SNA as interest payable by the government to the bondholder. Often bonds will be rather longer term, for example at government may offer to pay 100 in five years time rather than one year and will specify the amount of interest that they will pay in the intervening period. The interest is recorded continuously over the life of the bond, that is it is recorded on an accrual basis. The rate of interest payable by a bond is usually fixed when the bond is issued and may not be the same as the amount of interest that an individual could receive at points before the bond reaches maturity (becomes payable) if the bond holder still had the money available to lend.
- 5.76 Government sometimes needs money very urgently and will issue a promise to pay at the end of three or six months. Such short-term promises to pay are called bills rather than bonds but the difference in nature between bills and bonds is essentially only one of the timescale over which the money is to be made available.
- 5.77 Raising loans through the issuing of bonds is financial intermediation but the process is charged for differently from that described under loans and deposits. For bonds, the service charges consist of two explicit charges. One is the explicit fee paid by the issuer of the bond to any financial institution handling the issue of the bond. The other is a margin the bond holder pays to the intermediary making the bonds available on the market. for acquiring (or selling) the bond. This margin is determined as the difference between the buying or selling price of the bond at any time before the bond matures and the mid-point between these two prices at the time the bond is acquired or sold. It is not captured indirectly along with the interest payable on bills or bonds.
- 5.78 The difference between the amounts paid for the bond (excluding margins) and the face (or redemption) value of the bond is treated as interest within the SNA. As before, the interest is paid on an accrual basis, that is spread over the whole period of the bond. The interest received, corresponds to SNA interest not bank interest. because there is no embedded service charge payable by the bondholder to the bond issuer. While the charges are included in the measure of output of the financial industry, they are not part of FISIM.
- 5.79 It is usually supposed that there is no risk of government not honouring its promise to redeem bills and bonds at their full face value. This is why the rate of interest payable on government bonds is often taken as the reference rate for the calculation of FISIM on bank deposits and loans.
- 5.80 Companies can also issue bonds as a means of raising finance. The amount of interest that a company pays will typically be somewhat higher than the interest payable by government because (at least until recently) it was usually assumed that there was no question of a government defaulting but there is always some possibility of a company defaulting by going bankrupt before the bond matures. New companies without a long track record of economic performance may have to pay higher rates of interest than well established companies. As with government bonds, the service charges of the intermediary handling the bond are not determined as part of the interest flows but are the explicit fee charged to the issuer and the margins charged to the bond-holders, these margins being determined by the difference between buying and selling price. The difference between the amounts paid for the bond (excluding margins) and the face (or redemption) value of the bond is treated as interest within the SNA. As before, the interest is paid on an accrual basis, that is spread over the whole period of the bond.
- 5.81 Bonds are tradable throughout their life and the price of the bond depends on the length of time to maturity, the rate of interest associated with the bond and the rate of interest prevailing for new loans. For this reason the price of bonds can go up and down even though the amount that will be paid when the bond matures is fixed.
- 5.82 Bills and bonds are types of securities, that is they meet the general definition of a security in that they are evidence of a debt and are tradable. There are many other types of securities existing in developed countries but bills and bonds are the most common ones to be found in all countries.
- 4. Shares and equity**
- 5.83 A company does not have to issue a bond in order to raise money, though. A frequent way of raising money is to issue shares in the company. The person who buys a share, the shareholder, then owns part of the company. He does not receive interest on the share but expects to receive dividends. He also hopes that as the company prospers, the price of shares will increase, giving him a holding gain as well as the income from dividends. The amount of the dividends paid will depend on the profitability of the company. If the company does very well the amount of dividends paid may well exceed the interest that would

have been paid on a bond of the same amount as the value of the share but if the company does less well than the amount of dividend will be less than the amount of interest that would have been payable.

5.84 There are no service charges associated with dividends but there are service charges associated with buying and selling shares. This is done through a stock market or stock exchange. As with foreign currency exchanges and bond markets, the stock exchange quotes buying and selling prices for shares and the difference between the buying and selling price and the mid-price is a service charge levied by the dealer in the shares. If a share-holder asks a broker or dealer to sell shares on his behalf, the broker or dealer will usually make an explicit charge that may be a percentage of the value of the shares that are bought or sold or maybe a flat fee.

5.85 Stock markets do not exist in all countries. Some companies may have shares traded on an exchange in another country but for a country without a stock market, there may be minimal trading of shares of domestic companies within the domestic economy.

5.86 Shares are one form of equity. The owner of an unincorporated enterprise is also regarded as owning equity in the enterprise equal in value to the net worth of the unincorporated enterprise. Equally the net worth of a public corporation represents the equity of government in the corporation.

5. Accounts receivable/payable

5.87 It is usually the case that when goods and services are acquired in a shop they must be paid for immediately either in cash, by the use of a credit card or the issuing of a cheque. Sometimes, however, the shop may offer credit to the customer and not require payment until, say, the end of the month. In the case of gas and electricity for example the bill for the use of the fuel is often made monthly or quarterly even though the gas or electricity is consumed throughout the period. In such cases where the money is due from a customer to the provider of a good or service, it is necessary to record accounts receivable and payable. Obviously there must be a balance between accounts payable and accounts receivable. The amount that must eventually be paid is an account payable by the customer and an account receivable by the unit providing the good or service. Sometimes there may be interest payable on accounts receivable or payable. When this is so, ideally the accounts should be reclassified as loans but this may not always be possible. There is no service charge payable on interest on accounts receivable payable because the loans are not made by financial institutions nor are there any explicit fees payable on such accounts. (It may be the case that a shop that regularly makes credit available charges higher prices for the goods than one that requires immediate cash payments but this is not treated as payment for a financial service in the SNA.)

6. Monetary gold and SDRs

5.88 A further type of financial instrument that all countries hold consists of monetary gold and special drawing rights

(SDRs) on the IMF. These are reserve assets and are held only by the monetary authority. They exist in large measure to demonstrate to international markets that the currency is robust and foreign holders of the currency can have confidence that it can be convertible to another currency at will. There are few if any services associated with these instruments and full information about them is available from the monetary authority and included in the balance of payments account.

7. Summary of financial instruments and associated services

5.89 For all countries the following financial instruments can be distinguished:

- a. Currency
- b. Deposits placed with financial institutions
- c. Loans granted by financial institutions
- d. Securities in the form of bills and bonds issued by government and by corporations
- e. Equity including shares issued by corporations
- f. Accounts receivable and payable
- g. Monetary gold and SDRs

5.90 FISIM applies only to items b and c. Interest applies to items b, c, d and possibly f. Dividends are paid in relation to item e. Explicit fees are made in respect of item a when there is an exchange from domestic to foreign currency or vice versa and for items d and e in respect of buying and selling shares and bonds on the stock exchange. There may also be explicit fees for other services, including sometimes for simply having a bank account.

8. Other explicit fees

5.91 As well as service charges, both explicit and implicit, associated with acquiring and holding financial instruments, financial institutions may also make explicit charges for other services they provide. The most significant is the charge made to enterprises that accept credit or debit cards as a means of payment. Often the financial institution issuing the card will charge the enterprise that accepts the card as a means of payment 1 or 2 per cent of the value of the sale. As with margins on foreign currency, the payment on each transaction may be small but in total these charges are very considerable. These charges to the units accepting credit card payment are in addition to charges made to the card-holder for the right to have a card and the FISIM element of charges for extended credit.

5.92 Other examples of explicit fees include arranging a mortgage, managing an investment portfolio, providing financial advice, arranging to float a private company on the stock exchange. The list is not exhaustive; many kinds

of services may be provided by a financial institution in return for a fee.

9. Insurance

- 5.93 Insurance corporations are also financial institutions. For many developing countries, especially very small ones, the only insurance policies that will be available are those issued by non-resident financial institutions. There may be a local office but all premiums and claims are passed through to the head office in another country. Where this is the case all the information that is necessary to measure insurance can be taken from the balance of payments.

Non-life insurance

- 5.94 Insurance companies carry out two fundamentally different types of insurance. The first is called non-life insurance and relates primarily to accidents. Examples include accidents to cars or damage caused to buildings. When individuals or corporations take out an insurance policy they pay a relatively small sum to the insurance company so that if an accident happens to them, they will receive a payout large enough to cover all or most of the damage caused by the accident. The insurance company sets premiums so that the total of many small premiums from the large number of customers are enough to pay a relatively small number of large claims to the some of the same customers and leave enough for the insurance company to cover its costs, pay its workers and make a profit.
- 5.95 Some reserves have to be kept by the insurance company. These include premiums that have been paid but not yet earned. For example, suppose an annual premium of 120 is paid on January 1st. Each month premium of 10 is earned by the insurance company. If at the end of September the policy holder cancels the policy, he will receive only 30 back from the insurance company corresponding to the three months for which cover will not be provided. Until and unless the customer asks for the policy to be cancelled, this 30 will be held in what are called insurance technical reserves. Similarly if the customer makes a claim for 200 as the result of an accident in June but the insurance company does not pay the claim until October because of the time it takes to determine that the company is liable to meet the claim and that 200 is the correct value, between June and October the technical reserves must also include this 200.

Life insurance

- 5.96 The other type of insurance that insurance companies undertake is called life insurance. This is similar to non-life insurance in that many small premiums are paid and fewer large claims are made. (In the case of life insurance premiums are frequently called contributions and claims may be called benefits and but there is no difference in substance associated with this change of terminology.) However in the case of life insurance the same policy holder makes premiums and receives the claim but the premiums are made over a relatively long period and the claim is made at some point in the future that is pre-specified, often the point at which a person retires. In the meanwhile, the insurance company invests the premiums. Some of the investment income is used to top up the

premiums to meet the value of benefits payable and some is retained by the insurance company in order to cover their costs, pay the staff and make a profit.

- 5.97 The way that the output of insurance companies is measured is also indirect. Output (the amount that the companies retain) is calculated as equal to the sum of the premiums payable plus the investment earnings arising on the premiums (called premium supplements) less claims payable less changes in the insurance technical reserves (the amount put aside to meet future claims).
- 5.98 Some financial institutions arrange for pensions to be paid to the workers in particular companies. In effect this is a form of insurance and it is recorded in a similar way in the SNA. However, for most developing countries there will be little pension provision arranged by corporations and so the complex recording of pensions is not described in this publication. It is described at length in chapter 17 of the 2008 SNA.
- 5.99 In fact there is a third type of insurance called reinsurance whereby one insurance company takes out further insurance with another insurance company but few if any developing countries will have companies offering reinsurance services.
- 5.100 To the previous list of financial instruments in an economy, those economies with domestic insurance corporations need to add another, insurance technical reserves.

10. The output of financial services

- 5.101 Having completed a rather lengthy overview of how financial institutions provide services to their customers, and ignoring for the moment new financial instruments that are probably negligible for many developing countries, the value of the output of financial services can be calculated as the sum of four types of charges:
- Explicit margins charged on buying and selling different financial instruments including, but not confined to, foreign exchange, stocks and shares, securities such as bills and bonds issued by both government and companies. The value of output is equal to the difference between the average buying and selling price of the item and either the buying or selling price times the number of foreign currency units, number of shares or number of securities. As a cross-check on the values reported, consider a margin of only one per cent of value (and some margins are considerably higher than this) applied to half the entries in the flow accounts of the balance of payments (assuming that half of the costs are incurred in the country in question and half by the partner countries), and to the average number of shares and bonds transacted per day times the number of trading days in the year (information on these should be available via the central bank).
 - Implicit charges on loans and deposits involving financial institutions (FISIM). The value of output is calculated as the sum of:

- The interest receivable by the banks on loans (bank interest) less a reference rate (possibly the rate payable on government bonds) times the stock of loans (SNA interest),
 - *plus* the reference rate times the stock of deposits (SNA interest) less interest payable by the banks on deposits (bank interest).
 - The short-cut method of taking the value of output to be the difference between bank interest receivable on loans less the bank interest payable on deposits will be correct only if the stock of loans and deposits are exactly equal, which is seldom the case. Note that the figures used are the amounts payable/receivable and not those actually paid/received.
- c. Implicit charge on insurance policies calculated as:
- The value of premiums/contributions earned,
 - *plus* the value of investment income on the insurance technical reserves (this item applies mainly to life insurance and is also referred to as a premium supplement),
 - *less* the value of claims/benefits payable (in the case of non-life insurance, adjusted claims rather than actual claims are used),
 - *less* the change in insurance technical reserves.
- Note that it is not necessary to deduct holding gains and losses from any of these items since in some cases the funding for the payment of the fees charged may come from holding gains.
- d. Any explicit charges made by financial institutions for services rendered. These will include charges made to enterprises that accept credit cards as a means of payment, charges made to government and to enterprises for the issuing and sale of bonds and bills, charges for floating a company's shares on a stock exchange, investment advice given to enterprises and to individuals, fees to manage a portfolio or investment fund owned by another institutional unit and so on. In order to get an indication of the magnitude of credit card charges, consider what proportion of retail sales, travel and hotel costs will be paid by credit cards and apply a margin of one or two per cent to this.

N. Owner-occupied dwellings

- 5.102 For most households that own a house, its value will represent a significant proportion of the household's wealth. The house, whether it is let out or occupied by the owner, represents a stream of benefits extending into the future. For this reason the house represents an asset. If the house is let out, the stream of rentals represents output of the real estate industry. If the house is not let out but is occupied by the owners, it still represents a benefit to the owners even though the benefit is not monetary. Within the SNA, the convention is adopted that the value of an owner-occupied house is a form of imputed output with associated income and expenditure for the occupying households.
- 5.103 Ideally, the imputed rental would be calculated by taking the market value the rental of a comparable house that is let out. Unfortunately, however, this practice is often not available because many houses exist in situations where there are no comparable rental properties. This is true of many rural properties, including traditional shelters, and of many slum dwellings. It may also be true of houses built for employees of particular industries, possibly including government.
- 5.104 In the absence of comparable market rents, the most plausible approach is to calculate the cost of building a house of the same type and estimating how long it is before repairs mean that in effect the whole house has been rebuilt. For houses built using regular construction materials, the life length of the house may be considerable, maybe in excess of twenty years or even longer. For traditional and slum dwellings this period might be quite short, maybe only a few years. Taking the cost of the house and dividing by this period will give an acceptable (if still very imperfect) measure of the rental equivalent.
- 5.105 The construction and repair of houses, including traditional and slum dwellings, represent construction output. Suppose a dwelling costs 120 to construct and, if there are no repairs undertaken during the house's life, it is expected to last four years. For each of the next four years, the value of the house declines by 30. This is the value of the consumption of fixed capital. If there are neither major nor minor repairs to the house, this value of 30 is then the value of the imputed rent of owner occupiers.
- 5.106 Now suppose that the owner undertakes minor repairs of 10 each year and the effect of this is that the house now lasts six years instead of four. The decline in the value of the house is now 20 rather than 30 and this is the value of the consumption of fixed capital. The value of output, however, is now equal to the sum of intermediate consumption (10) plus the consumption of fixed capital (20) so is still 30. In addition, there will be construction output of 10 in each year.
- 5.107 Purists would argue that an allowance should be made for the fact that the house provides services that, over its life, exceed the costs. This excess is referred to as a return to capital. For traditional and slum dwellings, the degree of approximation is so great that this refinement could be ignored initially.

O. Domestic staff

- 5.108 By convention in the SNA, unpaid domestic services are not treated as production, though services produced by paid domestic staff are included. The value of the output of paid domestic staff is given by the value of their compensation of employees. Although use is made of items, such as household cleaning materials, these items are recorded as final consumption of households and not as intermediate consumption of domestic services. The total value of household consumption is not affected by this convention. Suppose the value of the wages paid to the domestic staff is 10 and the value of materials used is 2. Household consumption includes both the 10 and the 2. If the 2 were regarded as intermediate consumption of domestic services, then the value of domestic service output would rise from 10 to 12, household consumption on domestic service would rise from 10 to 12 but the expenditure on materials of 2 would no longer be part of household consumption.
- 5.109 The value of compensation of employees should include wages in kind as well as monetary wages. Wages in kind might include the value of accommodation and meals and even the cost of transport from the home location to the household and back.
- 5.110 Both the SNA and international labour force recommendations propose that domestic staff should be treated as separate households from the household of the family to whom they are providing services. Not all countries follow this recommendation, considering that staff that share meals with the family become part of that household. However, if this treatment is adopted, the provision of services by the staff concerned would become services produced within the household for own use and therefore should, strictly speaking, be excluded from the SNA production boundary.
- 5.111 Information on the number of household staff in a country should be available from labour force statistics. The amounts of wages paid, including payments in kind, is likely to be available either from household budget enquiries or some more specialised enquiry.

P. Other private services

- 5.112 As noted in chapter 4, it is important to determine whether there are any other private services that are particularly important to a country. The case of the making films in India (Bollywood) was given as an example. For a country operating as an off-shore banking centre, the provision of services by accountants and lawyers may be important in addition to financial services. The fact that electronic communication is cheaper, easier and more reliable than previously has led to the outsourcing of some call centres to countries where labour is cheaper than in the countries where the service is being delivered. These may be an important element of business services as may travel agents in a country with a large tourism industry. In both these cases the services may be important components of exports.
- 5.113 There are a wide range of other services that might be included here and it is difficult to give detailed information about their measurement because the range of activities to be covered will vary extensively from one country to another. It is likely however that on the whole they are of second order importance in most developing countries. Discretion should be used about how much attention should be paid to estimating the value of their activity. Remember, though, that an item should be ignored only if it is of no significant importance, not because it is difficult to measure.
- 5.114 In all cases, output will be measured by the amount paid for the service being provided. There will not usually be a problem with making adjustments for change in inventories since most services are delivered and due for payment at a single point in time. Examples are the price of admission to a cinema or football match, having a haircut or making a phone call. Some professions, such as accountants and lawyers, may deliver services over a period of time and submit invoices for payment intermittently but typically there is not sufficient delay that recording of inventories is needed.

Q. Intermediate consumption

- 5.115 The concept of intermediate consumption is simple; it is the value of all goods and services consumed as inputs by a process of production excluding fixed assets. However, there are boundary problems to be considered when it may be unclear whether some items should be considered as compensation of employees or fixed capital rather than intermediate consumption.
- 1. The boundary between intermediate consumption and compensation of employees**
- 5.116 The simplest way to clarify the basis for decision is to quote the relevant paragraphs of the SNA. These are paragraphs 6.220 to 6.223 inclusive, quoted below.

6.220 *Certain goods and services used by enterprises do not enter directly into the process of production itself but are consumed by employees working on that process. In such cases it is necessary to decide whether the goods and services are intermediate consumption or, alternatively, remuneration in kind of employees. In general, when the goods or services are used by employees in their own time and at their own discretion for the direct satisfaction of their needs or wants, they constitute remuneration in kind. However, when employees are obliged to use the goods or services in order to enable them to carry out their work, they constitute intermediate consumption.*

6.221 *It is immaterial to the employer whether they are treated as intermediate consumption or compensation of employees because they are both costs from the employer's viewpoint and the net operating surplus is the same. However, reclassifying such goods and services from remuneration in kind to intermediate consumption, or vice versa, changes value added and balance of primary incomes, and hence GDP as a whole.*

6.222 *The following types of goods and services provided to employees must be treated as part of intermediate consumption:*

a. Tools or equipment used exclusively, or mainly, at work;

b. Clothing or footwear of a kind that ordinary consumers do not choose to purchase or wear and which are worn exclusively, or mainly, at work; for example, protective clothing, overalls or uniforms;

c. Accommodation services at the place of work of a kind that cannot be used by the households to which the employees belong: barracks, cabins, dormitories, huts, etc.;

d. Special meals or drinks necessitated by exceptional working conditions, or meals or drinks provided to servicemen or others while on active duty;

e. Transportation and hotel services including allowances for meals provided while the employee is travelling on business;

f. Changing facilities, washrooms, showers, baths, etc. necessitated by the nature of the work;

g. First aid facilities, medical examinations or other health checks required because of the nature of the work.

Employees may sometimes be responsible for purchasing the kinds of goods or services listed above and be subsequently reimbursed in cash by the employer. Such cash reimbursements must be treated as intermediate expenditures by the employer and not as part of the employee's wages and salaries.

6.223 *The provision of other kinds of goods and services, such as ordinary housing services, the services of vehicles or other durable consumer goods used extensively away from work, transportation to and from work, etc. should be treated as remuneration in kind, as explained more fully in chapter 7.*

2. The boundary between intermediate consumption and gross fixed capital formation

5.117 *The relevant paragraphs of the SNA are 6.224 to 6.229, quoted below.*

6.224 *Intermediate consumption measures the value of goods and services that are transformed or entirely used up in the course of production during the accounting period. It does not cover the costs of using fixed assets owned by the enterprise nor expenditures on the acquisition of fixed assets. The boundary between these kinds of expenditures and intermediate consumption is explained in more detail below.*

Small tools

6.225 *Expenditures on durable producer goods that are small, inexpensive and used to perform relatively simple operations may be treated as intermediate consumption when such expenditures are made regularly and are very small compared with expenditures on machinery and equipment. Examples of such goods are hand tools such as saws, spades, knives, axes, hammers, screwdrivers, and so on. However, in countries where such tools account for a significant part of the stock of producers' durable goods, they may be treated as fixed assets.*

Maintenance and repairs

6.226 *The distinction between maintenance and repairs and gross fixed capital formation is not clear-cut. The ordinary, regular maintenance and repair of a fixed asset used in production constitute intermediate consumption. Ordinary maintenance and repair, including the replacement of defective parts, are typical ancillary activities but such services may also be provided by a separate establishment within the same enterprise or purchased from other enterprises.*

6.227 *The practical problem is to distinguish ordinary maintenance and repairs from major renovations, reconstructions or enlargements that go considerably beyond what is required simply to keep the fixed assets in good working order. Major renovations, reconstructions, or enlargements of existing fixed assets may enhance their efficiency or capacity or prolong their expected working lives. They must be treated as gross fixed capital formation as they add to the stock of fixed assets in existence.*

6.228 *Ordinary maintenance and repairs are distinguished by two features:*

a. *They are activities that owners or users of fixed assets are obliged to undertake periodically in order to be able to utilize such assets over their expected service lives. They are current costs that cannot be avoided if the fixed assets are to continue to be used. The owner or user cannot afford to neglect maintenance and repairs as the expected service life may be drastically shortened otherwise;*

b. *Maintenance and repairs do not change the fixed asset or its performance, but simply maintain it in good working order or restore it to its previous condition in the event of a breakdown. Defective parts are replaced by new parts of the same kind without changing the basic nature of the fixed asset.*

6.229 *On the other hand, major renovations or enlargements to fixed assets are distinguished by the following features:*

a. *The decision to renovate, reconstruct or enlarge a fixed asset is a deliberate investment decision that may be undertaken at any time and is not dictated by the condition of the asset. Major renovations of ships, buildings or other structures are frequently undertaken well before the end of their normal service lives;*

b. *Major renovations or enlargements increase the performance or capacity of existing fixed assets or significantly extend their previously expected service lives. Enlarging or extending an existing building or structure obviously constitutes a major change in this sense, but a complete refitting or restructuring of the interior of a building, or ship, also qualifies.*

R. Value added

5.122 Value added is a key aggregate in the SNA since it is so closely related to GDP but its estimation is simple; it is simply the value of output less the value of intermediate consumption. However, as the difference between two large figures, it will reflect any errors made in either of the two unless by extreme (and unlikely) good fortune the errors cancel one another out. For this reason it is important to calculate ratios of value added to output for each of the industries being considered (remembering the problem of goods being processed for another unit) and to compare the

1. Data sources

5.118 For large and medium sized enterprises, figures for intermediate consumption should be available from statistical surveys. In addition, for large companies, information may be available from commercial accounts.

5.119 For small-scale and informal enterprises, little information may be available on intermediate consumption. One possibility is to assume that the ratio of intermediate consumption to output for informal activities is similar to that reported for the smallest enterprises reporting to the business surveys. Such a proposal needs to be considered very carefully.

5.120 The ratio of intermediate consumption to output varies very considerably from one type of enterprise to another. It is high for much of manufacturing and low for most services, for example. The sort of activities that it is possible to undertake on an informal basis tend to be those where intermediate consumption is low. There are several reasons for this. The small-scale entrepreneur may have no capital with which to buy intermediate consumption goods ahead of receiving an order for the final product; he may have nowhere to store either inputs or outputs ready for sale; he may have no business premises separate from his home; he may have few costs such as advertising or even electricity. Quite often an informal worker will simply be providing labour, even if the activity is not classed as a service, for example repairing machinery or buildings, working within the construction or agricultural industries.

5.121 In fact, when estimating the output of informal and small-scale enterprises, two sorts of estimates are needed. One relates to the prices charged to the customer (output) and one to the value added retained by the entrepreneur (output less intermediate consumption). Making such estimates industry by industry will be more reliable than considering only the size of the enterprises concerned.

ratios industry by industry with the same ratios for earlier years.

5.123 Dividing value added into the elements representing compensation of employees, gross operating surplus, gross mixed income and taxes on production is discussed in chapter 6. However, the importance of determining value added is that it is the basis of the first estimate of GDP that can be made, that from the production side.

S. GDP measured from the production side

5.124 GDP is equal to the sum of value added for each industry or group of industries plus an adjustment for taxes on

products. Since the expenditure estimate of GDP is measured at purchasers' prices, it includes the value of all

taxes on products including those borne by the final purchaser. Therefore, in order that all measures of GDP should be equal, it is necessary to add to the sum of value added across all industries the value of taxes on products not already included. If output is measured at basic prices, it is necessary to add all taxes on products and deduct all subsidies on products.

- 5.125 Taxes on products consists of
- a. Value added type taxes
 - b. Taxes and duties on imports excluding VAT
 - c. Export taxes
 - d. Taxes on products excluding VAT, import and export taxes.
- 5.126 Subsidies on products consist of

- a. Import subsidies
- b. Export subsidies
- c. Other subsidies on products

5.127 The exact coverage of each of these headings is discussed in chapter 6. What is important to note here is that if output is measured at producer prices, instead of adding all taxes on products to, and deducting all subsidies on products from, total value added, only taxes and subsidies on imports and exports as well as non-deductible VAT (if any) need to be taken into account.

1. Example table

5.128 Table 5.3 shows how GDP may be estimated from the production side by deriving production accounts for a number of industry groups. The figures in this table are consistent with tables in later chapters except chapter 8.

Table 5.3: GDP from the production side

	Output	Intermediate consumption	Value added
Agriculture	78	17	61
Export crops	25	8	17
Subsistence agriculture	37	3	34
Other	16	6	10
Mining and quarrying	41	15	26
Manufacturing	78	20	58
Food manufacturing	18	5	13
Drink and tobacco products	10	3	7
Clothing and textiles	17	4	13
Building materials	13	3	10
Other manufacturing	20	5	15
Electricity and gas	30	14	16
Construction	45	15	30
Own account dwellings	5	1	4
Other buildings	18	3	15
Other construction	16	5	11
Wholesale and retail trade	41	4	37
Accommodation and food services	16	4	12
Imputed rent of owner-occupied dwellings	13	2	11
Public services	38	19	19
Financial services	41	8	33
Other services	8	2	6
Total	466	157	309
Taxes on products			9
GDP			318

Key points to remember

Changes in inventories for output (both work-in progress and finished goods), intermediate consumption (materials and supplies) and goods for resale should not be ignored.

Regularly review methodologies for wholesale and retail trade to ensure new developments are properly covered.

Financial services are more than FISIM; margins of foreign currency and charges to firms accepting payment by credit card are especially important.

Some services may be sufficiently insignificant to omit or merge with other services but this should be kept under review from year to year.

Chapter 6: GDP from the income side

A. Introduction

6.1 Value added covers the return to labour from production, called compensation of employees and the return to capital, described as gross operating surplus. In some small-scale enterprises where it is not possible to separate these, an item called gross mixed income covers both. GDP is derived from value added by adding such taxes on production that are not included in value added and

deducting any subsidies that have not already reduced value added. When compiling GDP from the income side, this distinction between taxes and subsidies included in value added and those not included can be ignored. All taxes on production, less all subsidies on production, must be added to compensation of employees, gross operating surplus and gross mixed income to derive GDP.

B. Disaggregating value added

6.2 It is usual when asking corporations for information on output and intermediate consumption, to ask also for information on compensation of employees and taxes on production. For large and medium-sized enterprises, it is possible to derive gross operating surplus as a residual. For small-scale and informal enterprises this may not be so easy because there may not be information available on compensation of employees or taxes on production.

from the Ministry of Finance about which enterprises are benefitting from subsidies and paying taxes on production.

6.3 Total taxes on production appearing in the production account must be equal to the figure coming from the government accounts. Taking care to treat taxes on products as necessary (depending on whether output is being valued at basic prices excluding taxes on products or at producer prices including them), it is possible to start with the government figure and deduct what is reported for large and medium enterprises. What is left should be the amount paid by small and informal enterprises. Consider whether the figure derived is plausible. How does the ratio of taxes on production to output for these small corporations compare to similar figures for large and medium enterprises? If it is about the same or smaller, it may be reasonable and failing any other information this residual figure may be used for small and informal enterprises. However, if the figure derived is a significant larger proportion of output than for larger enterprises, something is wrong and needs investigating.

6.5 Once the figure for taxes on production as in the production account agrees with the figure in the government accounts, this can be deducted from value added and subsidies on production added. From the result, compensation of employees as reported from all enterprises (including any reported by small and informal enterprises) and gross operating surplus for large and medium-sized enterprises should be deducted also. What remains is an estimate of gross mixed income for small and informal enterprises. Compare this figure, together with any compensation of employees reported by small-scale and informal enterprises, with the number of people employed (or self-employed) in this group of enterprises. If the resulting figure of income per head looks reasonable when compared with the corresponding figures for larger enterprises and with common knowledge about the likely size of earnings, it is safe to proceed.

6.4 The first thing to consider is the possibility of subsidies on production. It is quite unlikely that small and informal enterprises receive these. Subsidies on production are likely to be concentrated in particular industries or possibly for certain geographical regions, for example. Make sure that the figures used in the validation checks just described exclude subsidies, since the ratio of taxes less subsidies to output will of course be somewhat lower than taxes only to output. If this does not solve the problem, seek assistance

6.6 Even if the checks on earnings per head look reasonable it is advisable to collect information from other sources as a cross check. It is particularly important to make this cross-check if there are any doubts about the relative size of figures to hand at the end of compiling the production accounts. Broadly, information on compensation of employees comes from tax returns, labour force statistics and possibly household surveys; information on gross operating surplus comes mainly from the tax authorities and information on taxes and subsidies from the government accounts. Each of these is discussed in more detail below.

C. Labour income

1. Tax return information

6.7 Information from the tax authorities is of key policy interest and of major assistance in the compilation of national accounts but several adjustments are necessary before it can be used by national accountants. These adjustments are of interest in themselves, however, and some provide input to other parts of the accounts.

6.8 Tax authorities will consider tax paid by individuals on employment income and by companies on profits but will almost certainly not have a category corresponding to the SNA heading of mixed income. Discussion with the authorities should make clear whether income from small-scale activities are most likely to come under tax on employment income, under profit tax or be excluded from tax authority data.

6.9 Not all income from employment is subject to income tax. Usually there is a basic amount that is exempt from tax (often called an allowance). It may be that workers who are on a very low rate of pay, or who are employed only casually and not full time, may not earn enough to reach the threshold at which income tax becomes payable. Nevertheless, the tax authorities usually have reasonable estimates of how many people and how much income falls below the threshold because changing the tax threshold is a key policy instrument.

6.10 Income tax is often payable only on wages and salaries payable in cash and not on the other items that contribute to compensation of employees. For example, wages and salaries in kind may be exempt as well as some other allowances such as payments made while away from the normal place of work and so on.

6.11 Some individuals may receive interest and dividends on which income tax may also be payable. The tax authorities should be able to give an estimate of the amount of that has been declared to them. For many developing countries the amounts may not be significant.

6.12 It is also the case that those individuals who have to declare their earnings for income tax, may declare less than the full amount liable to tax. This may be due to a genuine misunderstanding, for example thinking some allowances are exempt from tax whereas they are not, or may be because the respondent has simply forgotten a source of income such as a one time earning early in the tax year. On the other hand, some individuals may deliberately attempt to avoid tax. Some may wish to avoid reporting to the tax authorities because they fear revealing their income may lay them open to prosecution or other legal action. One example is workers who are resident illegally; another is those who are engaged in illegal activities, for example those dealing in drugs. However, it should be remembered that prosecution for non-payment of taxes is often easier than prosecution for these other offences and so it is not automatically the case that those engaging in illegal activity may try to avoid paying income tax. Famously, the American gangster Al Capone was arrested for non-payment of taxes, not his other misdemeanours.

6.13 However, the question of tax avoidance is of major concern to tax authorities and they should have a reasonable estimate of the extent of this.

6.14 Taking all these considerations together, it should be possible to calculate a figure for income from employment as follows:

a. Employment income declared to the tax authorities before deducting allowances

b. Plus employment income not declared to the tax authorities

· Legally because the level of income is too low to be taxable

· Should have been declared but has not

c. Less income other than employment income subject to income tax

2. Labour force survey (LFS) data

6.15 One way to cross-check information from the tax authorities (and indeed from industrial surveys also) is to use information from a labour force survey. The advantage of LFS data is that the estimates should cover the whole working population, whether individuals are working in the informal sector for wages below the tax threshold or whether they should but do not make a return to the tax authorities. The number of employees coming from a LFS should be fairly reliable. The question then is whether appropriate wage rates can be applied to get to reliable figures for total compensation of employees.

6.16 There are, though, some disadvantages to LFS data. Often the data are based on one or a few points in time and are not continuous so that they may be subject to some seasonal variation. Further, the LFS may only try to capture wages and salaries in cash and may not cover payments in kind, one-off bonuses and similar payments.

3. Other employment surveys

6.17 Labour force surveys usually obtain information from individuals, asking them whether they are in work, what nature of work they do and so on. In addition surveys of employment and of wage and labour costs may exist directed at employees. These have similar advantages and disadvantage in terms of comprehensiveness as the business surveys asking for information on output described in chapter 5. (Indeed the same survey may ask for information on both output and employment.)

4. Household surveys

6.18 Household income and expenditure surveys may also be a source of information on employment income. Again, tax exempt workers should be covered but if the survey is

answered by the head of the household that person may not be fully aware of the necessary information for all other household members. Here too there may be some deliberate concealment of income because of fear of prosecution for illegal activities or expulsion for being an illegal immigrant or simply because the respondents fear their reported level of income will be passed to the tax authorities.

- 6.19 The national accountant may not have to undertake a complete reconciliation between tax data, LFS and household survey data alone, though. Various other parts of the statistics office and indeed other parts of government, including the tax authorities, may have a very strong interest in developing comprehensive estimates for use in a number of contexts.
- 6.20 Information from household surveys are a major source of information for estimates of income from the informal sector especially if reported income is contrasted with reported expenditure. Estimates of income from activity undertaken by informal enterprises may also be made by

D. Gross operating surplus

- 6.22 As noted, the main source of information on gross operating surplus, other than from the national accounts, is likely to come from the tax authorities. As with income from employment, some adjustments need to be made.
- 6.23 For corporations, income from interest and dividends may be significant and need to be removed from the taxable income. On the other hand, allowances for depreciation of capital should be removed (that is the taxable income should be increased by this amount) to come closer to the required national accounts figure. Other adjustments may also be needed, depending on the nature of the tax regime in a particular country but the tax authorities should be able to assist with this.

E. Taxes on production and imports

- 6.26 Taxes appear in a number of places in the SNA. The following extracts from the SNA describe both taxes and subsidies on production. These extracts contain the relevant GFSM codes for different taxes and to assist the reader, table 6.1 shows how each of the items is allocated between the four tax categories in the SNA, (taxes on products and imports, other taxes on production, taxes on income, wealth etc. and capital taxes). Chapter 5 of the GFSM describes the taxes according to its classification. (The SNA tax also includes reference to the codes in the OECD publication Revenue Statistics but this is likely to be less relevant for most developing countries.)

taking employment data from the LFS and multiplying by an appropriate wage rate. Finding the appropriate wage rate is not easy, though. For more guidance on this, reference should again be made to the handbooks on the informal sector and the not observed economy.

5. Numbers in employment

- 6.21 As well as deriving estimates of compensation of employees, it is very useful to have information on numbers employed (preferably on a person-hour or full-time equivalent basis) and present these numbers with information on compensation of employees by industry. This allows analysis of relative wage rates and leads to studies of labour productivity. Since the data will have been collected as part of the process of making reasonable estimates, adding it to the published tables makes the results much more interesting and useful analytically at almost no extra resource cost.

- 6.24 One set of corporations where information may be missing are those that operate in tax free zones or have some other special exemption from corporate tax.
- 6.25 Even when all the necessary adjustments to the tax authorities data have been made, two further adjustments are necessary to bring the data to a national accounts basis. These are the estimates of consumption of fixed capital for general government and the estimate of income deriving from the imputed rental from owner-occupied dwellings. The derivation of consumption of fixed capital is discussed in chapter 14. The figure for owner-occupied dwellings is the figure for output less intermediate consumption as described in chapter 5. Mortgage payments should not be treated as intermediate consumption and no allowance should be made for consumption of fixed capital or reported depreciation even though these may be allowed for tax purposes

2. Taxes on products

- 7.88 *A tax on a product is a tax that is payable per unit of some good or service. The tax may be a specific amount of money per unit of quantity of a good or service (the quantity units being measured either in terms of discrete units or continuous physical variables such as volume, weight, strength, distance, time, etc.), or it may be calculated ad valorem as a specified percentage of the price per unit or value of the goods or services transacted. A tax on a product usually becomes payable when it is produced, sold*

or imported, but it may also become payable in other circumstances, such as when a good is exported, leased, transferred, delivered, or used for own consumption or own capital formation. An enterprise may or may not itemize the amount of a tax on a product separately on the invoice or bill that it charges its customers.

Value added type taxes

- 7.89 A value added type tax (VAT) is a tax on goods or services collected in stages by enterprises but that is ultimately charged in full to the final purchasers. Such taxes have already been described in paragraphs 6.55 to 6.62. They are described as a “deductible” tax because producers are not usually required to pay to the government the full amount of the tax they invoice to their customers, being permitted to deduct the amount of tax they have been invoiced on their own purchases of goods or services intended for intermediate consumption or fixed capital formation. VAT is usually calculated on the price of the good or service including any other tax on the product. VAT is also payable on imports of goods or services in addition to any import duties or other taxes on the imports (GFSM2001 11411; OECD, 5111).

Taxes and duties on imports, excluding VAT

- 7.90 Taxes and duties on imports consist of taxes on goods and services that become payable at the moment when those goods cross the national or customs frontiers of the economic territory or when those services are delivered by non-resident producers to resident institutional units.
- 7.91 Imported goods on which all the required taxes on imports have been paid when they enter the economic territory may subsequently become subject to a further tax, or taxes, as they circulate within the economy. For example, excise duties or sales taxes may become due on goods as they pass through the chain of wholesale or retail distribution, such taxes being levied on all goods at the same point, whether those goods have been produced by resident enterprises or imported. Taxes payable subsequently on goods that have been already imported are not recorded as taxes on imports but as taxes on products, excluding VAT, import and export taxes.
- 7.92 Exceptionally, some taxes and duties may be payable on goods that physically enter the country but where there is no change of ownership so they are not treated as imports. Nevertheless, any such taxes and duties are still included in the heading of taxes and duties on imports.

Import duties

- 7.93 Import duties consist of customs duties, or other import charges, that are payable on goods of a particular type when they enter the economic territory. The duties are specified under customs tariff schedules. They may be intended as a means of raising revenue or discouraging

imports in order to protect resident goods producers (GFSM2001, 1151; OECD, 5123).

Taxes on imports, excluding VAT and duties

- 7.94 Taxes on imports, excluding VAT and duties consist of all taxes (except VAT and import duties) as defined in the GFSM/OECD classifications that become payable when goods enter the economic territory or services are delivered by non-residents to residents. They include the following:

a. General sales taxes: these consist of general sales taxes (excluding VAT) that are payable on imports of goods and services when the goods enter the economic territory or the services are delivered to residents (GFSM2001, 11412; OECD, 5110-5113);

b. Excise duties: excise duties are taxes levied on specific kinds of goods, typically alcoholic beverages, tobacco and fuels; they may be payable in addition to import duties when the goods enter the economic territory (GFSM2001, 1142; OECD, 5121);

c. Taxes on specific services: these may be payable when non-resident enterprises provide services to resident units within the economic territory (GFSM2001, 1156; OECD, 5126);

d. Profits of import monopolies: these consist of the profits transferred to governments of import marketing boards, or other public enterprises exercising a monopoly over the imports of some good or service. The justification for treating these profits as implicit taxes on products is the same as that shown in paragraph 7.96 (e) for fiscal monopolies (GFSM2001, 1153; OECD, 5127);

e. Taxes resulting from multiple exchange rates: these consist of implicit taxes resulting from the operation of multiple exchange rates by the central bank or other official agency (GFSM2001, 1154).

Export taxes

- 7.95 Export taxes consist of taxes on goods or services that become payable to government when the goods leave the economic territory or when the services are delivered to non-residents. They include the following:

a. Export duties: general or specific taxes or duties on exports (GFSM2001, 1152; OECD, 5124);

b. Profits of export monopolies: these consist of the profits transferred to governments of export marketing boards, or other public enterprises exercising a monopoly over the exports of some good or service. The justification for treating these profits as implicit taxes on products is the same as that shown in paragraph 7.96 (e) for fiscal monopolies (GFSM2001, 1153; OECD, 5124);

c. Taxes resulting from multiple exchange rates: these consist of implicit taxes on exports resulting from the operation of an official system of multiple exchange rates. (GFSM2001, 1154).

Taxes on products, excluding VAT, import and export taxes

7.96 *Taxes on products, excluding VAT, import and export taxes, consist of taxes on goods and services that become payable as a result of the production, sale, transfer, leasing or delivery of those goods or services, or as a result of their use for own consumption or own capital formation. They include the following commonly occurring taxes:*

a. General sales or turnover taxes: these include manufacturers', wholesale and retail sales taxes, purchase taxes, turnover taxes, and so on, but exclude VAT and other systems of deductible taxes (GFSM2001, 11412-11413; OECD, 5110-5113).

b. Excise duties: these consist of taxes levied on specific kinds of goods, typically alcoholic beverages, tobacco and fuels (GFSM2001, 1142; OECD, 5121).

c. Taxes on specific services: these include taxes on transportation, communications, insurance, advertising, hotels or lodging, restaurants, entertainments, gambling and lotteries, sporting events, etc. (GFSM2001, 1144; OECD, 5126).

d. Taxes on financial and capital transactions: these consist of taxes payable on the purchase or sale of non-financial and financial assets including foreign exchange. They become payable when the ownership of land or other assets changes, except as a result of capital transfers (mainly inheritances and gifts) (GFSM2001, 1134; OECD, 4400). They are treated as taxes on the services of the unit selling the asset.

e. Profits of fiscal monopolies: these consist of the profits of fiscal monopolies that are transferred to government. Fiscal monopolies are public corporations, public quasi-corporations, or government-owned unincorporated enterprises that have been granted a legal monopoly over the production or distribution of a particular kind of good or service in order to raise revenue and not in order to further the interests of public economic or social policy. Such monopolies are typically engaged in the production of goods or services that may be heavily taxed in other countries, for example, alcoholic beverages, tobacco, matches, petroleum products, salt, playing cards, etc. The exercise of monopoly powers is simply an alternative way for the government to raise revenue instead of the more overt procedure of taxing the private production of such products. In such cases the sales prices of the monopolies are deemed to include implicit taxes on the products sold. While in principle only the excess of the monopoly profits over some notional "normal" profits should be treated as taxes, it is difficult to estimate this amount and, in practice, the value of the taxes should be taken as equal to the

amount of the profits actually transferred from fiscal monopolies to government (GFSM2001, 1143; OECD, 5122). When a public enterprise is granted monopoly powers as a matter of deliberate economic or social policy because of the special nature of the good or service or the technology of production (for example, public utilities, post offices and telecommunications, railways, etc.) it should not be treated as a fiscal monopoly. As a general rule, fiscal monopolies tend to be confined to the production of consumer goods or fuels. As the profits of a fiscal monopoly are calculated for the enterprise as a whole, it is not possible to estimate the average amount of the tax per unit of good or service sold when the enterprise has more than one good or service as output without introducing an assumption about the rates of tax on the different products. Unless there is good reason otherwise, it should be assumed that the same ad valorem rate of tax is applied to all products, this rate being given by the ratio of the total value of the implicit taxes to the value of total sales less the total value of the implicit taxes. It is necessary to establish this rate in order to be able to calculate the basic prices of the products concerned.

f. Taxes resulting from the central bank imposing a higher rate of interest than the market rate: These taxes are described in paragraphs 7.122 to 7.126. (These taxes are not mentioned in GFSM2001.)

3. Other taxes on production

7.97 *Other taxes on production consist of all taxes except taxes on products that enterprises incur as a result of engaging in production. Such taxes do not include any taxes on the profits or other income received by the enterprise and are payable regardless of the profitability of the production. They may be payable on the land, fixed assets or labour employed in the production process or on certain activities or transactions. Other taxes on production include the following:*

a. Taxes on payroll or work force: these consist of taxes payable by enterprises assessed either as a proportion of the wages and salaries paid or as a fixed amount per person employed. They do not include compulsory social security contributions paid by employers or any taxes paid by the employees themselves out of their wages or salaries (GFSM2001, 112; OECD, 3000);

b. Recurrent taxes on land, buildings or other structures: these consist of taxes payable regularly, usually each year, in respect of the use or ownership of land, buildings or other structures utilized by enterprises in production, whether the enterprises own or rent such assets (GFSM2001, 1131; OECD, 4100);

c. Business and professional licences: these consist of taxes paid by enterprises in order to obtain a licence to carry on a particular kind of business or profession. Licences such as taxi and casino licences are included. In certain circumstances, licences to use a natural resource, however,

are treated not as a tax but as the sale of an asset. These circumstances are described in part 5 of chapter 17. However, if the government carries out checks on the suitability, or safety of the business premises, on the reliability, or safety, of the equipment employed, on the professional competence of the staff employed, or on the quality or standard of goods or services produced as a condition for granting such a licence, the payments are not unrequited and should be treated as payments for services rendered, unless the amounts charged for the licences are out of all proportion to the costs of the checks carried out by governments (GFSM2001, 11452; OECD, 5210). (See

also paragraph 8.64 (c) for the treatment of licences obtained by households for their own personal use.);

d. Taxes on the use of fixed assets or other activities: these include taxes levied periodically on the use of vehicles, ships, aircraft or other machinery or equipment used by enterprises for purposes of production, whether such assets are owned or rented. These taxes are often described as licences, and are usually fixed amounts that do not depend on the actual rate of usage (GFSM2001, 11451-11452 and 5.5.3; OECD, 5200);

Table 6.1: Allocation of taxes according to GFS codes to SNA categories

GFS code	GFS description	SNA categories of taxes on			
		Products	Production	Income	Capital
<i>111</i>	<i>Taxes on income, profits and capital gains</i>				
1111	Payable by individuals			x	
1112	Payable by corporations and other enterprises			x	
1113	Unallocable			x	
112	Taxes on payroll and workforce		x		
<i>113</i>	<i>Taxes on property</i>				
1131	Recurrent taxes on immovable property		x	x	
1132	Recurrent taxes on net worth			x	
1133	Estate, inheritance and gift taxes				x
1134	Taxes on financial and capital transactions	x			x
1135	Other non-recurrent taxes on property				x
1136	Other recurrent taxes on property			x	
<i>114</i>	<i>Taxes on goods and services</i>				
<i>1141</i>	<i>General taxes on goods and services</i>				
11411	Value added taxes	x			
11412	Sales taxes	x			
11413	Turnover and other general taxes on goods and services	x			
1142	Excises	x			
1143	Profits of fiscal monopolies	x			
1144	Taxes on specific services	x			
<i>1145</i>	<i>Taxes on use of goods and on permission to use goods to perform activities</i>				
11451	Motor vehicle taxes		x	x	
11452	Other taxes on use of goods and on permission to use goods to perform activities		x	x	
1146	Other taxes on goods and services		x		
<i>115</i>	<i>Taxes on international trade and transactions</i>				
1151	Customs and other import duties	x			
1152	Taxes on exports	x			
1153	Profits of export or import monopolies	x			
1154	Exchange profits	x			
1155	Exchange taxes			x	
1156	Other taxes on international trade and transactions	x	x		
<i>116</i>	<i>Other taxes</i>				
1161	Payable solely by business		x		
1162	Payable by other than business or unidentifiable			x	

e. Stamp taxes: these consist of stamp taxes that do not fall on particular classes of transactions already identified, for example, stamps on legal documents or cheques. These are treated as taxes on the production of business or financial services. However, stamp taxes on the sale of specific products, such as alcoholic beverages or tobacco, are treated as taxes on products (GFSM2001, 1161; OECD, 6200);

f. Taxes on pollution: these consist of taxes levied on the emission or discharge into the environment of noxious gases, liquids or other harmful substances. They do not include payments made for the collection and disposal of waste or noxious substances by public authorities, which constitute intermediate consumption of enterprises (GFSM2001, 11452; OECD, 5200);

g. Taxes on international transactions: these consist of taxes on travel abroad, foreign remittances or similar transactions with non-residents (GFSM2001, 1156; OECD, 5127).

6.27 Although the allocation of different taxes to different heading may require a little thought, the totals for each type of tax should be readily available from the Ministry of Finance and may already be classified according to the GFSM guidelines. Note, however, that occasionally GFS data may be compiled on a financial year basis that is different from the period used for national accounts in which case the GFS data will need to be adjusted before being incorporated into the national accounts.

F. Subsidies

6.28 There are only two categories of subsidies; those relating to products and those otherwise linked to production. The SNA text is reproduced below for convenience.

1. Subsidies on products

7.100 *A subsidy on a product is a subsidy payable per unit of a good or service. The subsidy may be a specific amount of money per unit of quantity of a good or service, or it may be calculated ad valorem as a specified percentage of the price per unit. A subsidy may also be calculated as the difference between a specified target price and the market price actually paid by a buyer. A subsidy on a product usually becomes payable when the good or service is produced, sold or imported, but it may also be payable in other circumstances such as when a good is transferred, leased, delivered or used for own consumption or own capital formation.*

Import subsidies

7.101 *Import subsidies consist of subsidies on goods and services that become payable when the goods cross the frontier of the economic territory or when the services are delivered to resident institutional units. They include implicit subsidies resulting from the operation of a system of official multiple exchange rates. They may also include losses incurred as a matter of deliberate government policy by government trading organizations whose function is to purchase products from non-residents and then sell them at lower prices to residents (see also export subsidies in paragraph 7.103).*

7.102 *As in the case of taxes on products, subsidies on imported goods do not include any subsidies that may become payable on such goods after they have crossed the frontier*

and entered into free circulation within the economic territory of the country.

Export subsidies

7.103 *Export subsidies consist of all subsidies on goods and services that become payable by government when the goods leave the economic territory or when the services are delivered to non-resident units. They include the following:*

a. Direct subsidies on exports payable directly to resident producers when the goods leave the economic territory or the services are delivered to non-residents;

b. Losses of government trading organizations: these consist of losses incurred as a matter of deliberate government policy by government trading organizations whose function is to buy the products of resident enterprises and then sell them at lower prices to non-residents. The difference between the buying and selling prices is an export subsidy (see also paragraph 7.105(b));

c. Subsidies resulting from multiple exchange rates: these consist of implicit subsidies resulting from the operation of an official system of multiple exchange rates.

Exclusions from export subsidies

7.104 *Export subsidies do not include the repayment at the customs frontier of taxes on products previously paid on goods or services while they were inside the economic territory. They also exclude the waiving of the taxes that would be due if the goods were to be sold or used inside the economic territory instead of being exported. General taxes on products such as sales or purchase taxes, VAT, excise taxes or other taxes on products are usually not payable on exports.*

Other subsidies on products

7.105 *Other subsidies on products consist of subsidies on goods or services produced as the outputs of resident enterprises, or on imports, that become payable as a result of the production, sale, transfer, leasing or delivery of those goods or services, or as a result of their use for own consumption or own capital formation. The most common types are the following:*

a. Subsidies on products used domestically: these consist of subsidies payable to resident enterprises in respect of their outputs that are used or consumed within the economic territory;

b. Losses of government trading organizations: these consist of the losses incurred by government trading organizations whose function is to buy and sell the products of resident enterprises. When such organizations incur losses as a matter of deliberate government economic or social policy by selling at lower prices than those at which they purchased the goods, the difference between the purchase and the selling prices should be treated as a subsidy. Entries to the inventories of goods held by such organizations are valued at the purchasers' prices paid by the trading organizations and the subsidies are recorded at the time the goods are sold;

c. Subsidies to public corporations and quasi-corporations: these consist of regular transfers paid to public corporations and quasi-corporations that are intended to compensate for persistent losses (that is, negative operating surpluses) incurred on their productive activities as a result of charging prices that are lower than their average costs of production as a matter of deliberate government economic and social policy. In order to calculate the basic prices of the outputs of such enterprises, it will usually be necessary to assume a uniform ad valorem implicit rate of subsidy on those outputs determined by the size of the subsidy as a percentage of the value of sales plus subsidy.

d. Subsidies resulting from the central bank accepting a lower rate of interest than the market rate: These subsidies are described in paragraphs 7.122 to 7.126. (These subsidies are not mentioned in GFSM2001.)

2. Other subsidies on production

7.106 *Other subsidies on production consist of subsidies except subsidies on products that resident enterprises may receive as a consequence of engaging in production. Examples of such subsidies are the following:*

a. Subsidies on payroll or workforce: these consist of subsidies payable on the total wage or salary bill, or total work force, or on the employment of particular types of persons such as physically handicapped persons or persons who have been unemployed for long periods. The subsidies may also be intended to cover some or all of the costs of training schemes organized or financed by enterprises;

b. Subsidies to reduce pollution: these consist of subsidies intended to cover some or all of the costs of additional processing undertaken to reduce or eliminate the discharge of pollutants into the environment.

6.29 Economists and other commentators may use the term “subsidy” in connection with payments that are not regarded as subsidies within the SNA. For example, payments to households that may sometimes be described as consumer subsidies are treated in the SNA as either tax credits or transfers. While annual payments to enterprises to allow them to sell products at artificially low prices are treated as subsidies, if such payments are not made annually but periodically to cover losses accumulated over several years, these are treated as capital transfers. Payments specifically intended to permit an enterprise to undertake capital formation are also treated as capital transfers and not subsidies.

1. Example table

6.30 Table 6.2 shows how GDP may be estimated from the income side. The figures in this table are consistent with tables in later chapters except chapter 8.

Table 6.2: GDP from the income side

Compensation of employees	165
Gross operating surplus	91
Gross mixed income	50
Taxes on products	9
Other taxes on producton	6
Subsidies on production	-3
GDP	318

Key points to remember

Taxes and subsidies in the production account must match those in government accounts.

Use as much information from other sources as possible for compensation of employees and gross operating surplus to cross check information collected from enterprises.

Remember to include consumption of fixed capital on government fixed assets and value added for the imputed rentals of owner-occupied dwellings in gross operating surplus.

Chapter 7: The expenditure estimate of GDP

A. Introduction

7.1 The goods and services account is fundamental to the idea that GDP can be determined in three distinct ways, according to how goods and services are produced, how income is generated in this process and how the goods and services available in the economy are purchased. The first of these is the production approach to GDP, discussed in chapter 5. The second is the income approach discussed in chapter 6. The third is the expenditure approach and is the subject of this chapter.

7.1 All goods and services available for use in the economy consist of either output from production or imports but exclude exports. They are used to make more goods and services or for final consumption. Those used to make more goods and services in the current period are described as intermediate consumption; those used to make goods and services in future are described as capital formation. Since the use of goods and services are normally valued at prices that include taxes on products as well as on production (and exclude subsidies) these adjustments must be made to the supply side. Taken together this means that:

Output
plus imports
less exports
plus taxes on products
less subsidies on products

is equal to
intermediate consumption
plus final consumption
plus capital formation.

7.2 Rearranging this gives

Output
less intermediate consumption
plus taxes on products
less subsidies on products

is equal to
final consumption
plus capital formation
plus exports of goods and services
less imports of goods and services

7.3 The first half of this equation yields both the production and the income estimates of GDP. The second part of the equation yields the expenditure definition of GDP.

7.4 The figures for imports and exports of goods and services come from the balance of payments. They are discussed in chapter 11. What remains to be discussed here, therefore, is the estimation of final consumption and capital formation. Capital formation is determined using similar data sources as those used for production and so is relatively easy to determine. Final consumption is more difficult to estimate, so much so that some countries regrettably derive it as the residual item necessary to balance the identity above. For this reason, the means of determining capital formation are discussed before those used for final consumption.

7.5 Chapter 8 discusses how the supply and use framework can be used to exploit the goods and services account to ensure the three estimates of GDP are consistent without resorting to deriving a major aggregate such as household final consumption as a residual. In many ways, therefore, the next chapter can be seen as the logical extension of the latter part of the present chapter.

B. Capital formation

7.6 Capital formation is the term given to items required for use in making other goods and services, but unlike intermediate consumption are not so converted in the accounting period under consideration. Capital formation has two main components, gross fixed capital formation and changes in inventories. (The third component acquisition less disposal of valuables, can probably be ignored in most developing countries.)

1. Changes in inventories

7.7 Changes in inventories are often seen as key indicators of the state of the economy because they show how much production is incomplete, or not yet sold, at the end of an accounting period. These changes in inventories fall under the heading of capital formation simply as an accident of timing. They have been acquired for use in production, are

intended for sale or resale but it happens that they have not been so used in the current period though it is intended they will be in future. This means that they need to be accounted for in a balance sheet compiled at the start and end of an accounting period. The four components of the changes in inventories are:

materials and supplies,

finished goods,

work-in-progress and

goods for resale.

All of these components are needed in the compilation of the production account and these values carry over directly to the expenditure estimate of GDP.

2. Gross fixed capital formation

7.8 Gross fixed capital formation is rather different. It covers items bought because they increase the value of output over several, possibly many, periods recognising that the combination of capital and labour can be more cost-effective and efficient than using labour alone. Information on fixed capital formation should be collected at the same time as information for the production account. Most fixed capital formation will be undertaken by large enterprises though some will be undertaken by medium-sized enterprises. It is one of the characteristics of small-scale and informal enterprises that they will have very little fixed capital. They frequently do not occupy dedicated premises but may operate from home or on the street and may have no capital other than small tools.

7.9 Fixed capital should be itemised by main product as follows:

dwellings,

other buildings and structures,

machinery and equipment other than vehicles,

vehicles, and

cultivated biological resources.

7.10 The figure for dwellings should include estimates for the construction of new dwellings even if these are traditional dwellings or shanty town dwellings constructed by the occupiers.

7.11 Cultivated biological resources includes herds of dairy animals, sheep or other animals kept for their fleece as well as plantations of trees for timber or perennial crops.

7.12 The 2008 SNA classification of fixed capital also includes weapons systems and intellectual property products such as the products of research and development and computer software. It is assumed that it will often be difficult in developing countries to have information on weapons systems and that there will often be no significant investment in intellectual property products. If either of these assumptions is false, the classification given should be extended to include them. If information on weapons systems is available but cannot be shown for reasons of confidentiality, it should be included with machinery and equipment.

C. Final consumption

7.13 Final consumption is undertaken by households on their own behalf and by government on behalf of individual households and for the community at large. The first two are described as individual consumption and the third as collective consumption.

7.14 Corporations do not undertake final consumption expenditure. NPISHs do but in a situation where they are not distinguished from households on a sectoral basis, their expenditure should be included in final consumption expenditure of households.

1. Final consumption expenditure of general government

7.15 Final consumption of general government is relatively easy to estimate. Most of it consists of most of the production by general government. This production will consist of public administration and defence, education, health services and so on. Those responsible for compiling accounts according to the GFSM may already have classified government

expenditure according to COFOG (the Classification Of Functions Of Government).

7.16 The paragraphs below from the SNA describe COFOG and the distinction between collective and individual services.

The classification of individual and collective government expenditures

9.99 *The classification of the functions of government (COFOG) is a classification of transactions designed to apply to general government and its subsectors. There are ten classes in the classification as follows:*

01 *General public services;*

02 *Defence;*

03 *Public order and safety;*

- 04 *Economic affairs;*
- 05 *Environmental protection;*
- 06 *Housing and community amenities;*
- 07 *Health;*
- 08 *Recreation, culture and religion;*
- 09 *Education;*
- 10 *Social protection.*
- 9.100 *All of classes 01 to 06 are collective services, as are section 07.5 and 07.6 of health, sections 08.3 to 08.6 of recreation, culture and religion, sections 09.7 and 09.8 of education, and sections 10.8 and 10.9 of social protection. These sections cover expenditures on general administration, regulation, research that is not recorded as capital formation and so on. The remaining sections of health, recreation, culture and religion, education and social protection (which dominate each of the classes) are individual services.*
- 7.17 In order to convert from production by government to final consumption expenditure by government, two sorts of adjustment are necessary.
- 7.18 The first is to deduct any production that is not treated as final consumption expenditure by government. This includes own account capital formation by government, such as capital expenditure on roads and infrastructures, and production that is paid for by other units. Examples are part payments by households for education or health services where the payments do not represent economically significant prices.
- 7.19 The second is to add any expenditures by government on goods and services for current use that are not included in production. Examples are payments made to households to reimburse them for the costs of medicines or other medical aids such as spectacles.
- 7.20 Suppose that government output is 54.7 but this includes 0.6 of own account capital formation. Further, households pay 0.7 for education fees. In addition government reimburses households 0.5 of the cost of medicines they buy. The value of government consumption expenditure is then $54.7 - 0.6 - 0.7 + 0.5 = 53.9$
- 7.21 The way in which part payments by households on items such as medicines are covered depends on institutional arrangements. For example, if all medicines are dispensed by government-run hospitals and clinics, the cost of these medicines will form part of intermediate consumption and output and any part payment by households will be deducted. In this case, government actually takes ownership of the medicines initially and then cedes this ownership to households. Government final consumption expenditure includes that part of the cost of the medicines that households do not pay. For example if the cost of the

medicines is 1.5 and households pay 0.5, government production will include the 1.5 but government consumption will include only 1.0 because the household contribution of 0.5 is deducted from this and included in household consumption expenditure. If, on the other hand, households acquire medicines directly from a chemist, government never has ownership of the medicines but government consumption still includes the part of the cost that households do not pay. In this example households initially pay 1.5 and then get reimbursement from government for 1.0, so household consumption expenditure is 0.5 and government consumption expenditure is 1.0.

- 7.22 The advantage of making the distinction between individual and collective consumption can be illustrated by means of this example. The part of the medicines paid for by government forms part of individual consumption. That is government bears the expense but individual households benefit. The concept of actual consumption for households includes individual consumption expenditure by government, so the actual consumption by households on medicines is 1.5. When making comparisons across countries where institutional arrangements can vary or over time when they may change, actual consumption gives a better measure of changes in household welfare than household consumption expenditure does.

2. Final consumption expenditure of households

- 7.23 By this point the only item in the expenditure identity for GDP not covered is final consumption expenditure of households, yet it is by far the largest, often accounting for about 80 per cent of GDP. Some items of household expenditure are available from the production estimates. These are the estimates for subsistence agriculture, production of goods for own final use and the estimates of the imputed rental for owner-occupied dwellings. Such items account for a significant proportion of household expenditure, especially where many of the population live at or close to the subsistence level, but the majority of expenditure must be presumed to be on marketed goods and services.
- 7.24 In the best of all possible worlds, there would be detailed information available on household expenditure from a recent household budget survey. Even when this is so, there are problems. Household surveys are just that, surveys, and so some sort of grossing up is necessary to reach a total for the population. Often very rich households are excluded from such surveys which means expenditures on luxuries may be understated. Institutional households are not normally included in such surveys and if NPISHs are not separately identified their expenditure also needs to be accounted for. In addition, goods received in kind, either as part of compensation of employees or as transfers need to be included in total consumption.
- 7.25 Very often, though, even this situation, qualified as it must be, is unrealistically optimistic. It may be a very long time since a household budget survey was conducted or there may be reservations about its adequacy. In such situations it is very tempting to throw up one's hands and simply allow household consumption expenditure to be derived as the residual that ensures that the production and expenditure

estimates of GDP are equal. Understandable as this reaction is, it is a retrograde step. It means that household consumption expenditure absorbs the net effect of all errors anywhere else in the estimates. Even if many are off-setting, the degree of off-setting will vary from year to year and so there will be apparent changes in the size of household consumption that may be interpreted as changes in the well-being of the population when in fact they mainly represent statistical fluctuations. Chapter 8 is concerned with how to come up with a more robust

alternative to estimating household consumption and verifying the accounts more generally.

3. Example table

7.26 Table 7.1 shows how GDP may be estimated from the expenditure side. The figures in this table are consistent with tables in later chapters except chapter 8.

Key points to remember

Government output and government consumption expenditure are close but not exactly equal.

Household consumption expenditure is a key macro-economic aggregate in its own right and should not be derived simply as a residual.

Table 7 1: GDP from the expenditure side

Household final consumption expenditure	217
Subsistence agriculture	37
Imputed rent of owner occupied dwellings	13
Marketed goods and services	167
General government consumption expenditure	38
Gross fixed capital formation	72
Changes in inventories	5
Exports	36
less Imports	50
GDP	318

Chapter 8: Reconciliation of GDP estimates in supply and use tables

A. Introduction

- 8.1 This chapter is probably the most important in this publication in terms of showing how to improve the quality of the accounts at a minimum resource cost. The goods and services account, which was used in the last chapter to explain the expenditure estimate of GDP, shows how the total amount of goods and services available in the economy from domestic production or imports is used for exports or within the domestic economy for intermediate consumption, final consumption or capital formation. However, this identity holds not only for total goods and services but for every type of good or service also. The total amount of any product available in the country must be exported, used by enterprises as intermediate consumption, used by households or government as final consumption, acquired as fixed capital formation or put into inventories. There are simply no other alternatives. So if the supply and use identity is used to create a product balance for each type of product (or more realistically for a group of products) they can be aggregated to reach the identity for the whole economy.
- 8.2 Supply and use tables are the first step on the way to compiling an input-output table. For many years input-output tables were seen as requiring a great deal of information, a lot of time and needing to be very accurate because the analysis of them would be in terms of analysing the importance of relatively small changes between one table and the next. In this chapter, however, the focus is on supply and use tables as a quality control instrument. Some input-output specialists may shudder at the approach described below, thinking the degree of detail suggested is too little and the techniques proposed too approximate. Such specialists, though, usually work in an environment with many more resources in terms of knowledgeable staff, time and basic data than is the case in many developing countries. As elsewhere in this publication, the emphasis here is to put a table together that is good enough to serve its immediate purpose and lay the ground work for an improved version in future if and when greater resources become available.
- 8.3 The first time a supply and use table along the lines suggested here is compiled, it may take five to ten person days to complete the initial version. Thereafter, it should be possible to complete a table for another period in about two to three person days. If it is taking longer, more approximations can be introduced. If it is taking much less time, some further refinements can be added. Once the first version of such a table is completed, it is almost certain that ways to improve the accounts will be revealed. If the table shows the accounts do not need any modification to meet the basic accounting constraints of the system, the exercise will at the very least have built up a much greater degree of confidence in the accuracy of the accounts so that their robustness can be better defended against any queries coming from users.
- 8.4 The tables in this chapter are based on a supply and use table for the Netherlands for 2007. The Netherlands has a long tradition of compiling supply and use tables (and indeed input-output tables) and their information was readily available in a suitable format for use in this chapter. The full data is available from http://epp.eurostat.ec.europa.eu/portal/page/portal/esa95_suupply_use_tables/data/workbooks where tables for other EU countries are also available.
- 8.5 The data in these tables are not consistent with the numeric tables in other chapters.

B. Total supply at basic prices

- 8.6 The first stage in the exercise is to compile a table like table 8.1. This contains three columns, one for domestic output, one for imports and a third that is the sum of them. This represents total supply at basic prices. Properly speaking, the rows relate to groups of products and not to industries. Initially the assumption is that the differences can be overlooked. The consequences of this approximation are discussed later in the chapter.
- 8.7 The figures for domestic output come from the exercise to determine GDP from the production side. The industries shown in table 8.1 are an aggregation of the Dutch table; this choice of industries is for illustration only and not an indication that these industry groups should necessarily be used. Rather the set of industries decided on for compilation and publication as described in chapter 4 should be used.

Table 8.1. Total supply at basic prices

Industry	Total domestic output	Imports	Total supply at basic prices
Agriculture, forestry and fishing	25 410	12 739	38 149
Mining and quarrying	20 462	33 440	53 902
Manufacturing industry	257 887	260 982	518 869
Gas, electricity and water	32 223	997	33 220
Construction work	85 535	988	86 523
Motor vehicles and fuel	13 494	17	13 511
Wholesale and retail margins etc.	94 938		94 938
Hotel and restaurant services	18 478		18 478
Transport services	49 820	6 494	56 314
Post and telecommunication services	24 283	2 518	26 801
Financial services	52 360	8 516	60 876
Real estate services	60 013		60 013
Business services	146 107	31 205	177 312
Public administration etc.	58 171	54	58 225
Education services	29 057		29 057
Health and social work services	59 009		59 009
Other miscellaneous services	56 171	11 388	67 559
Private households with employed persons	2 104		2 104
Total	1 085 522	369 338	1 454 860

8.8 For the column for imports, some work is needed to convert the information from the balance of payments to industry groups. For goods, a considerable amount of detail on imports of goods usually according to the SITC (standard international trade classification) is likely to be available from the government department responsible for the collection of customs duty. Making a conversion between

one classification and another can be done in one of two ways. It can be done in excruciating detail or in very broad terms. For this exercise, the broad terms approach is all that is needed. In addition to an analysis of goods, the information on imports of services has also to be allocated to the industry groups being used.

C. Total supply at purchasers' prices

8.9 Because the information on the use of goods and services in the economy uses market prices, the figures for total supply at basic prices have to be converted to total supply at purchasers' prices. This involves two steps; one is the allocation of trade and transport margins, the other is the allocation of taxes less subsidies on products.

one where exports are significant, remember that the margins on goods exported will be very small or non-existent.) Margins on services are very infrequent and can probably be ignored in the first instance.

1. Trade and transport margins

8.10 From the information used to estimate the production account for trade (that is, retail and wholesale) margins, information can be derived about the average level of margin on different types of goods. There are obviously no margins on subsistence agriculture. Margins on other agricultural products are usually fairly small as are margins on processed food products. Margins on consumer durables such as furniture and electric/electronic appliances are likely to be higher. Margins on goods bought by enterprises for intermediate consumption or for capital formation tend to be lower than goods bought by households.

8.12 The sum of all the positive entries should be equal to the level of output of the wholesale and retail industry. In order to ensure that for the economy as a whole all margins are included but reallocated to the products where they fall, the positive entries in the column are balanced by a negative entry in the row for wholesale and retail margins equal to the value for output of margins. Add up the entries in the column. The total should be exactly zero but probably will not be at the first try. If the total is more than 10 to 15 per cent of margin output (whether positive or negative), go back and revise some of the estimates to bring the total closer to zero. At this stage it is a waste of time to get it to be exactly zero.

8.11 Table 8.2 shows how margins are entered in the supply and use table. For most goods items, there is a positive entry. This is first estimated by applying the appropriate margin rate to the level of total supply at basic prices. (If the item is

8.13 For the table for the Netherlands, there are margins other than trade margins that are significant. Wholesale and retail margins are approximately 95 billion Euro. Margins on vehicle fuels are approximately another 5 billion Euro and other transport margins are approximately 10 billion Euro. Consider whether it is possible to identify these other items separately and whether the size of the margins makes it

Table 8.2. Margins and taxes on total supply

Industry	Total supply at basic prices	Trade and transport margins	Margins as % of total supply	Taxes less subsidies on products	Taxes as % of total supply at basic prices
Agriculture, forestry and fishing	38 149	8 898	23.3	561	1.5
Mining and quarrying	53 902	1 384	2.6	44	0.1
Manufacturing industry	518 869	99 688	19.2	33 009	6.4
Gas, electricity and water	33 220			5 846	17.6
Construction work	86 523			8 514	9.8
Motor vehicles and fuel	13 511	- 4 907	-36.3	866	6.4
Wholesale and retail margins etc.	94 938	- 94 938	-100.0		
Hotel and restaurant services	18 478			1 292	7.0
Transport services	56 314	- 10 330	-18.3	- 1 223	-2.2
Post and telecommunication services	26 801			2 229	8.3
Financial services	60 876			886	1.5
Real estate services	60 013			1 480	2.5
Business services	177 312	18	0.0	9 539	5.4
Public administration etc.	58 225				0.0
Education services	29 057			163	0.6
Health and social work services	59 009			- 70	-0.1
Other miscellaneous services	67 559	187	0.3	987	1.5
Private households with employed persons	2 104				
Total	1 454 860			64 123	

worthwhile to do so. It is possible, for example, that sales of fuel are covered by the enterprises included in wholesale and retail trade. It may also be the case that though there are some transport margins included in the estimates of transport service output it is not possible to identify these.

- 8.14 Table 8.2 also shows the percentage of total supply at basic prices represented by margins. Most of it falls on manufacturing industry representing just less than 20 per cent of total manufacturing output. For agricultural products the percentage is higher, at close to a quarter, but the absolute level is less than one tenth of the margins on manufacturing industry.
- 8.15 These proportions are not necessarily good guides for developing countries especially for agricultural products. As noted above, subsistence agriculture will have no trade margin. Marketed agricultural products in a developing country will probably have smaller margins than in a country like the Netherlands, because the goods may be sold closer to where they are produced and the labour costs associated with margins will be lower, relative to the cost of the products, than in a developed country.

2. Taxes less subsidies on products

- 8.16 Some taxes and most if not all subsidies can be allocated directly to product or industry groups. For example, there are often specific taxes on fuel, and on alcohol and tobacco that can be allocated directly to the appropriate groups. There may be special taxes applied to hotel accommodation aimed at tourists. If there are subsidies on agricultural products, these too can also be directly allocated.
- 8.17 There may be some more general taxes, such as a sales tax, VAT type tax or a general tax in imports. Allocating these to product or industry groups is more difficult because not all uses of the products will necessarily incur taxes. Exports is one case where taxes are usually not payable but use as capital formation or intermediate consumption is often exempt from tax in whole or in part also. Initially make a reasonable estimate of the allocation bearing in mind the total from the global goods and services identity.
- 8.18 Table 8.2 also shows the allocation of taxes less subsidies for the Netherlands table. Note that although the rate of VAT in the Netherlands in 2007 was 19 per cent for most products, the average tax rate on total supply is much lower than this reflecting the extent to which some uses of products do not have to bear the tax. (The very high figure for gas and electricity reflects the imposition of environmental taxes on these products.)

D. Domestic use

- 8.19 Adding together total supply at basic prices, the trade and transport margins and taxes less subsidies on products gives total supply at purchasers' prices for all product groups. These have to be allocated between intermediate consumption, final consumption, capital formation and

exports. The allocation of exports to product groups is done in the same way as the allocation of imports. The conversion process from SITC to product groups will be identical. Given the concentration of exports in many developing countries, this should be less time consuming

Table 8.3. Total domestic use

Industry	Total supply at basic prices	Trade and transport margins	Taxes less subsidies on products	Total supply at purchasers' prices	Exports	Total supply available for domestic use
Agriculture, forestry and fishing	38 149	8 898	561	47 608	19 306	28 302
Mining and quarrying	53 902	1 384	44	55 330	14 991	40 339
Manufacturing industry	518 869	99 688	33 009	651 566	306 507	345 059
Gas, electricity and water	33 220		5 846	39 066	463	38 603
Construction work	86 523		8 514	95 037	1 853	93 184
Motor vehicles and fuel	13 511	- 4 907	866	9 470		9 470
Wholesale and retail margins etc.	94 938	- 94 938				
Hotel and restaurant services	18 478		1 292	19 770		19 770
Transport services	56 314	- 10 330	- 1 223	44 761	19 814	24 947
Post and telecommunication services	26 801		2 229	29 030	3 045	25 985
Financial services	60 876		886	61 762	6 803	54 959
Real estate services	60 013		1 480	61 493		61 493
Business services	177 312	18	9 539	186 869	33 571	153 298
Public administration etc.	58 225			58 225	627	57 598
Education services	29 057		163	29 220		29 220
Health and social work services	59 009		- 70	58 939		58 939
Other miscellaneous services	67 559	187	987	68 733	9 492	59 241
Private households with employed persons	2 104			2 104		2 104
Total	1 454 860		64 123	1 518 983	416 472	1 102 511

that making the conversion for imports. Once the allocation is made, the results can be deducted from total supply at purchaser's prices to derive total domestic use as in table 8.3

1. Capital formation

8.20 Most of capital formation is accounted for by gross fixed capital formation and for this a first categorization by product should exist. Most fixed capital is produced by agriculture (dairy cattle, plantations etc.), construction (housing, other buildings and other construction works) and manufacturing (machinery and vehicles). Note that the valuation of capital formation includes costs of ownership transfer and these are the output of service industries so a relatively small part of the fixed capital valuation need to be allocated to this industry.

8.21 Allocation of changes in inventories to industry or product groups has an easy part and a more complicated part. Changes in inventories of work-in-progress and of finished goods are allocated to the industry reporting them. Inventories of materials and of goods for resale are reported by the industry that holds the inventories, with no automatic indications of the nature of the products held. Sometimes this may be evident; for example, raw materials held by petroleum refineries are likely to be the output of mining and quarrying. Usually there will be little indication, though the presumption is that many will be the output of manufacturing industry.

8.22 A further complication is that while the total level of changes in inventories is available from the expenditure estimate of GDP, this can be made up of a number of increases in inventories offset by some decreases. Realistically, once the obvious entries for changes in inventories is made, the rest should temporarily be put on one side along with the discrepancies in margins and taxes already covered.

2. Intermediate and final consumption

8.23 When statistical resources are abundant, sources of the product composition of intermediate and final consumption are likely to exist. For household consumption expenditure, the information will be based on the details from a household budget survey augmented by the sort of information the survey does not cover; imputed rental of owner-occupied dwellings, subsistence agriculture, other goods produced for own use and items received in kind. For intermediate consumption, the information is likely to be derived initially by using a previous supply and use table or input-output table applied to the values of industry output and then amending this in the light of information on the levels (and possibly composition) of intermediate consumption and specific information such as, for instance, information on electricity usage.

8.24 A more common situation in developing countries is that neither of these possibilities exist. What follows is a procedure that shows how it is still possible to use the supply and use framework to investigate the quality of the GDP estimates. It will not give exactly accurate entries for the tables and purists may be appalled at the method suggested. But it will give reasonable approximations that allow a judgement to be made about how robust the estimates are. The point is that the identities of the SNA have to be observed and it is surprising difficult to come up with a set of estimates that obey these rules and are wildly wrong. The more firm information that is available, the surer it is that the remaining figures are reasonable estimates.

8.25 The first step is to allocate the figures for total domestic demand among three categories, intermediate consumption, final consumption and capital formation, based on common sense and local knowledge, industry by industry. Consider first agricultural output.

- 8.26 Food crops, cannot be fixed capital formation and though some may enter (or be drawn from) inventories, this should be ignored at first. Food crops go either to intermediate consumption, for example into food processing or to hotels and restaurants, or are used by households. In table 8.4 it can be seen that in the Dutch table this split is approximately 75:25. This is higher than is likely for a developing country because people in richer countries eat more processed food and eat out more often than in poorer countries. Local knowledge can suggest whether the split might be 40:60 or whether less or more than 40 per cent goes to intermediate consumption. The task will be easier if subsistence agriculture is first separated out and allocated entirely to households. Export crops will have been largely accounted for by exports; some may be used for either intermediate or final consumption. Any difference can be ascribed to changes in inventories. For dairy cattle and plantations, increases in the value of the stock of animals and plants will be treated as fixed capital formation.
- 8.27 For mining and quarrying, what is not accounted for by exports will be almost all intermediate consumption.
- 8.28 For construction most output will go to capital formation and there will be separate estimates for this from work-in-progress in the industry and reported investment in construction projects including housing and other buildings. Remember that some repairs and maintenance will be included in construction. Major repairs are treated as capital formation but the remainder are treated as intermediate consumption. This distinction applies to repairs carried out by owner-occupiers also.
- 8.29 For public services, most will go to general government and a firm estimate for this will exist. The whole of the imputed rental on owner-occupied dwellings goes to private final consumption. In this way several of the product rows can be allocated without much difficulty.

Table 8.4. Shares of supply for domestic use to three categories of demand

Industry	Total supply available for domestic use	% Intermediate consumption	% Final consumption	% Capital formation
Agriculture, forestry and fishing	28 302	76	23	1
Mining and quarrying	40 339	99		1
Food products and beverages	54 220	48	52	
Tobacco products	4 701	3	98	
Textiles	6 593	32	61	6
Wearing apparel; furs	10 427	6	93	
Leather and leather products	3 133	12	87	
Wood and products of wood and cork (except furniture); articles of straw and plaiting materials	7 432	75	21	4
Pulp, paper and paper products	10 320	82	18	
Printed matter and recorded media	15 136	64	35	
Coke, refined petroleum products and nuclear fuels	31 695	67	33	
Chemicals, chemical products and man-made fibres	42 678	73	26	
Rubber and plastic products	10 319	78	18	4
Other non-metallic mineral products	10 838	86	11	2
Basic metals	11 953	100		
Fabricated metal products, except machinery and equipment	20 489	84	6	9
Machinery and equipment n.e.c.	23 195	47	11	41
Office machinery and computers	8 748	31	7	62
Electrical machinery and apparatus n.e.c.	7 705	80	12	7
Radio, television and communication equipment and apparatus	7 177	41	45	12
Medical, precision and optical instruments, watches and clocks	9 358	41	36	20
Motor vehicles, trailers and semi-trailers	24 297	25	36	37
Other transport equipment	10 303	61	22	16
Furniture; other manufactured goods n.e.c.	13 758	10	63	27
Secondary raw materials	584	100		
Manufacturing industry	345 059	56	33	10
Gas, electricity and water	38 603	67	33	
Construction work	93 184	44	1	54
Trade and repair of motor vehicles, retail sale of fuel	9 470	48	52	
Wholesale and retail margins etc.				
Hotel and restaurant services	19 770	30	70	
Transport services	24 947	61	39	
Post and telecommunication services	25 985	57	43	
Financial services	54 959	55	45	
Real estate services	61 493	28	67	5
Business services	153 298	81	7	12
Public administration etc.	57 598	5	94	1
Education services	29 220	10	90	
Health and social work services	58 939	5	95	
Other miscellaneous services	59 241	60	32	9
Private households with employed persons	2 104		100	
Total	1 102 511	52	37	10

- 8.30 Manufacturing is more difficult since manufactured goods may be used for any of the three purposes. However, a partial disaggregation by type of good will help. Some products such as processed food and clothing will be dominated by final consumption. Some such as bricks and building materials will be mainly intermediate consumption. Some types of machinery may be clearly investment goods. In a country where such goods are not manufactured locally, they can be picked out from import data.
- 8.31 For gas and electricity it may be possible to get an idea of the split between private households and commercial premises from the gas and electricity companies. The same may be true for water companies, remembering that any small-scale water carrying will be used mainly by households.
- 8.32 Business services will be mainly used as intermediate consumption; other services may contain a number of services such as entertainment used by households.
- 8.33 Table 8.4 shows the split across the three categories of use for the Netherlands. These splits should not be used automatically for another country. They have characteristics that are not necessarily appropriate in other countries. For example, there is a relatively large allocation of business services to capital formation; this represents research and development treated as fixed capital formation. The case of agricultural products was discussed above. The point of including the table is to illustrate that the proportions vary quite markedly from one industry to another and rough splits of 50:50:0 or 30:0:70 may give reasonable starting points. Note also that in the Dutch case presented here, the total of intermediate consumption is very approximately the same size as the sum of final consumption and capital formation. This is a characteristic of a highly developed economy with a lot of cross-industry integration. In many developing countries the sum of final consumption and capital formation may greatly exceed that of intermediate consumption. The greater the dependence on exports of agricultural and mining products to fund consumption and investment, the more likely this is.

3. Cross-checking capital formation

- 8.34 One of the industries where measuring output is particularly difficult is construction. One reason is the

treatment of sub-contracting as explained in the section on construction in chapter 5. Beyond this, difficulties arise because of the presence of many small scale enterprises and because some other industries undertake construction activities on their own behalf. Suppose, as in the example in chapter 7 when discussing the measurement of government consumption, government undertakes construction on its own behalf. Suppose this is 0.5 and the estimate of capital formation in construction is 50.5. Then only 50 must come from the construction industry. This figure will be further reduced if own account construction has been identified in any other industry. Suppose the estimate for construction output is 60. Is it reasonable that only 10 is available for intermediate consumption? This is doubtful and suggests that maybe the value of construction has been underestimated. Suppose that a reasonable estimate is that one third of the output goes to intermediate consumption and two thirds to capital formation. Then, if the figure of 50 for capital formation is fairly reliable, the figure of 10 for intermediate consumption needs to be increased to 25 and the level of output thus needs to be increased from 60 to 75. (The one third two thirds split is not a given, simply a suggestion to illustrate how to proceed. In the Dutch example it is closer to half and half, for example.)

- 8.35 Some large machines may be imported and can be identified in the customs data. If the reported capital formation does not seem large enough to include these, a judgement must be made about whether the figures reported for capital formation have been understated and should be increased. This may also be so for vehicles, for example, where some enterprises may forget that they bought a new truck in the year or wrongly classify it as intermediate consumption.

4. Cross-checking final consumption

- 8.36 If there is no product information for final consumption, surely it is impossible to cross-check the results? The fact that it is possible to carry out a good assessment of final consumption is perhaps the most important lesson of this chapter, just as this chapter may be the most important lesson the whole publication.
- 8.37 In any economy it is possible to check that two important components of final consumption match supply. These are subsistence agriculture and imputed rental of owner-occupied dwellings. Both of these are likely to be

Table 8.5. Proportions of household expenditure on food across a number of countries

	Average	Bottom decile	Top decile
Albania	64.3	66.8	56.4
Argentina(1996-1997)	60.3	50.4	21.8
India - rural (2003)	53.9	63.6	41.6
Niger (1990)	50.2	82.7	36.4
Sri Lanka (2002)	44.5	68.0	25.3
India - urban (2003)	42.0	61.4	28.3
Uganda (2003)	41.3	55.1	28.4
Turkey (2003)	27.1	44.9	15.5
Mexico (2002)	22.9	36.4	15.4
France (2001)	18.7	24.9	11.9
Hong Kong, China (1999-2000)	9.8	20.5	6.8
United States (2003)	8.6	20.6	4.2

- significant proportions of the total. If there is significant production of other goods for own final consumption these should be allocated to private consumption also.
- 8.38 The first step is validating the results for final consumption is to remove the estimates for government consumption discussed in chapter 7. What is left must cover households and NPISHs. If it is possible to make estimates for the NPISHs, this should be done. For example much of the output of health and education not accounted for by government may be due to NPISHs.
- 8.39 When it is no longer possible to eliminate consumption due to government and NPISHs, what is left must represent households final consumption expenditure. Then calculate the proportions of total household expenditure represented by each industry product group. These should resemble the weights used for a consumer price index. They will not be exact, partly because the classification system is different and partly because the reference period may be different but they should be recognisably similar.
- 8.40 One of the most important proportions to examine is the proportion of household expenditure spent on food. There is a strong correlation with this proportion and the degree of affluence of a country. In a very poor country like Niger, the proportion is reported to be 80 per cent. In the richest OECD countries it is less than 20 per cent. Some of these proportions are contained in table 8.5. The source of this information can be found at <http://laborsta.ilo.org> under household income and expenditure statistics.
- 8.41 Make a decision about where on the continuum of proportions you would expect results for your country to lie. If the proportion you have is much too low, either there is an underestimate of food supply (perhaps the subsistence figures are too low?) or some other categories have been significantly overstated. If the proportion is too high, maybe the subsistence estimates do not adequately allow for wastage or some other categories are understated.
- 8.42 Not only is checking this proportion an absolutely vital means of validating the overall level of household consumption within a year, the changes from year to year convey crucial information about how the economy is developing and in particular how household welfare is changing. As a country develops, the proportion tends to slowly but steadily decline. If food prices increase dramatically, however, the proportion may increase. This illustrates the need to consider volume measures as well as nominal measures of GDP and its components; this is the subject of the next chapter.
- 8.43 Important as the subject of food is, it is not the only aspect of cross-checking final consumption that is important. Weights for a consumer price index usually come from a household budget survey and comparison with the most recent survey, even if it is somewhat out of date, can be useful also.
- 8.44 It is probably true to say that every household survey ever conducted has resulted in under-recording of expenditure on alcohol and tobacco. The supply and use table can give a better estimate of the actual levels of expenditure once the levels of production and import are examined. In some circumstances there may be illegal imports (either because importation is illegal or subject to high levels of duty) and even illegal production (for similar reasons). It may be that illegal production can be detected by noting that household purchases of some products are too high for normal consumption. It may be widely believed that illegal imports are widely available and an assessment of purchases may give an idea of the extent of this illegal trade.
- 8.45 It is not always the case that information from a household survey is inferior to other information; often the results of a household budget survey can be assumed to be fairly robust, except for notoriously difficult areas such as alcohol and tobacco. One example is the use of taxis. Many of these operate informally and may not be well recorded in the production account. But there is little reason for households to overstate their use of them, indeed they may understate them, and so information on the use of taxi services from a household survey may help to improve the production estimates.
- 8.46 If the proportions for a group of products seem out of line with the weights from the consumer price index or from a survey a number of possibilities are open. If the differences are not great, one option is to change the proportion of domestic supply going to final consumption and intermediate consumption. There is more on this when discussing cross-checking intermediate consumption below. The other is to consider whether the level of output may be in need of adjusting but there should be a good reason to justify changing the level of output beyond the need to get the desired result for final consumption. The third option is to consider whether the levels of imports and exports are really secure. If there are doubts over these, the balance of payments compilers need consulting though as it is important that the SNA and BOP figures remain consistent. If none of these solutions is obviously appropriate, it may be necessary to consider some further disaggregation of the product groups but this should be done selectively, concentrating on those where the problem is greatest.
- 8.47 Using a supply and use table to give a product breakdown of household consumption year by year is not only key to carrying out a quality control exercise on the estimates of GDP. It is one of the most helpful tools that can be made available to analysts interested in how the well-being of the population is changing over time.

5. Cross-checking intermediate consumption

- 8.48 The ideal way to cross-check intermediate consumption is to compile the whole product by industry part of the supply and use table but this is resource intensive and therefore not considered in detail here. More information on how to compile these tables in detail is given in *Eurostat Manual of Supply, Use and Input-Output Tables*. This publication is available from: http://epp.eurostat.ec.europa.eu/portal/page/portal/product_details/publication?p_product_code=KS-RA-07-013

- 8.49 It is useful to recall that the figures shown in the rows of a supply and use table for intermediate consumption represent the amounts of the type of goods or services produced by that industry that are used as intermediate

consumption by all industries. They are quite different in coverage and value from the figures of intermediate consumption in the production accounts by industries that show the amount of all goods and services used within a single industry. For example, the intermediate consumption of the agricultural industry is made up of animal feed, fertiliser, tractor parts and so on whereas the use of agricultural products as intermediate products consists of sugar cane going to sugar refineries, vegetables to the restaurant industry and wool to textile factories and so on. Obviously the total of intermediate consumption for all industries is the same whether the sum is of the items in the supply and use table or from the production account but no identity for one row with one column can be established.

8.50 Even without compiling a complete inter-industry table, some key intermediate inputs may be established. For example, if electricity is generated by burning coal, there must be large enough amounts of coal within the supply

and use row containing coal mining to provide the coal used as intermediate input within the electricity industry. Similar comparisons can be made for building materials such as bricks and cement and for inputs to any textile industry and input of textiles into any clothing industry. Selective verification of large items is worth while but this exercise can quickly consume a lot of time for little return.

8.51 The cross-check on final consumption will suggest where adjustments to the allocation between final consumption and intermediate consumption may be desirable to make the figures for final consumption more realistic. If such an adjustment brings the intermediate consumption in the supply and use tables closer to the total of intermediate consumption from the production accounts this is helpful. If it makes the discrepancy greater, this may be evidence that the production account figure may need re-examining. Remember, though, that any change to the level of output will affect the level of intermediate consumption also.

E. Balancing the table

8.52 It is perfectly possible to get to a version of the supply and use table where the totals for imports, exports, fixed capital formation, government consumption, intermediate consumption and output match those in the production and expenditure estimates of GDP and the estimate for final consumption looks plausible but the table is not completely balanced. Whether it is worth actually balancing the table is a judgement call. If the table is to be published (which could be useful) then it should be balanced. If not and resources are really scarce, it may be left unbalanced.

worry about getting the column to come exactly to zero), the exact allocation of general taxes and the entries for changes in inventories. None of these should be altered to the point where they are implausible but changes in the last digits of numbers to reach the desired totals are perfectly acceptable. However sophisticated a national accounts system is, some very minor adjustments of this type to make tables balance is always inevitable at the very last stage.

8.53 Bringing the table into exact balance once the main messages from the exercise have been attended to is a matter of arithmetic and judgement with relatively little economic meaning. The items that can be manipulated are the margins on goods (remember the advice above not to

8.54 Table 8.6 shows a balanced supply and use table for the Dutch example. In order to appreciate the value of such a table, it is instructive to try to make a large change to one of the items and follow the consequences through the table. Almost inevitably some nonsensical entry will emerge pointing out that inconsistent data is present in the table.

Table 8.6. The complete use table

Industry	Total supply at basic prices	Trade and transport margins	Taxes less subsidies on products	Total supply at purchasers' prices	Exports	Total supply available for domestic use	Total intermediate consumption	Final consumption expenditure	Gross capital formation	Exports	Total use at purchasers' prices	Total supply available for domestic use
Agriculture, forestry and fishing	38 149	8 898	561	47 608	19 306	28 302	21 545	6 648	109	19 306	47 608	28 302
Mining and quarrying	53 902	1 384	44	55 330	14 991	40 339	39 847	66	426	14 991	55 330	40 339
Manufacturing industry	518 869	99 688	33 009	651 566	306 507	345 059	193 169	113 805	38 085	306 507	651 566	345 059
Gas, electricity and water	33 220		5 846	39 066	463	38 603	25 681	12 777	145	463	39 066	38 603
Construction work	86 523		8 514	95 037	1 853	93 184	41 275	1 391	50 518	1 853	95 037	93 184
Motor vehicles and fuel	13 511	- 4 907	866	9 470		9 470	4 525	4 945			9 470	9 470
Wholesale and retail margins etc.	94 938	- 94 938										
Hotel and restaurant services	18 478		1 292	19 770		19 770	5 901	13 869			19 770	19 770
Transport services	56 314	- 10 330	- 1 223	44 761	19 814	24 947	15 219	9 728		19 814	44 761	24 947
Post and telecommunication services	26 801		2 229	29 030	3 045	25 985	14 830	11 155		3 045	29 030	25 985
Financial services	60 876		886	61 762	6 803	54 959	29 968	24 760		6 803	61 762	54 959
Real estate services	60 013		1 480	61 493		61 493	17 455	41 063	2 975		61 493	61 493
Business services	177 312	18	9 539	186 869	33 571	153 298	124 154	10 517	18 627	33 571	186 869	153 298
Public administration etc.	58 225			58 225	627	57 598	2 917	54 074	607	627	58 225	57 598
Education services	29 057		163	29 220		29 220	2 850	26 370			29 220	29 220
Health and social work services	59 009		- 70	58 939		58 939	3 140	55 798	1		58 939	58 939
Other miscellaneous services	67 559	187	987	68 733	9 492	59 241	35 396	18 762	5 083	9 492	68 733	59 241
Private households with employed persons	2 104			2 104		2 104		2 104			2 104	2 104
Total	1 454 860		64 123	1 518 983	416 472	1 102 511	577 872	407 832	116 807	416 472	1 518 983	1 102 511

F. Is this the SNA?

- 8.55 The production of supply and use tables is central to the advice given in the 2008 SNA. Some of the advice given here is very pragmatic and, as noted, some purists may be reluctant to follow it. There is however one piece of advice that contradicts the SNA and this is the advice to initially ignore the difference between product groups and industries.
- 8.56 In chapter 3 it is suggested that it is not necessary to distinguish between establishments and enterprises when collecting production account data but it is desirable to collect an itemisation of the products made. If this is done, it is possible, at least conceptually, to draw up a table like table 8.7. This shows product groups along the rows and industries in the columns. It is arranged to have as many rows as columns (though this is not strictly necessary) and so it is dominated by the diagonal entries.
- 8.57 In fact since table 8.7 is taken from the Dutch example, it is in fact drawn up on an establishment basis. The output of construction by government, for example, does not appear under the column for public administration but in the column for construction. If it were as simple to identify establishments producing only one kind of product as the SNA recommends, there would be no off-diagonal elements in table 8.7. Although many of the off-diagonal entries are zero or so small that they appear to be zero when the entries are rounded from millions to billions as here, there are quite a number of off-diagonal items. These are secondary products. The most frequent of these concern services of one sort or another.
- 8.58 Working with enterprises instead of establishments it is possible to compile a table like table 8.7 but there may be more off-diagonal items. In particular there are likely to be significant entries for wholesale and retail margins and for construction undertaken by other industries. If such a table can be produced, it is the final column, showing the row totals, that should be used in the supply and use table and not the final row, showing the column totals. It is worth a little consideration to decide whether it is both possible and worthwhile to compile such a table.
- 8.59 It may well be possible to compile information from large enterprises about the product composition of their output but in developing countries many of these may concentrate on single products. Mining companies are not very likely to engage in other activities, for example. Getting information about the products of small-scale enterprises presents different sorts of problems. Suppose an individual works part-time in the building industry, sometimes works as a taxi driver and sometimes helps in a shop. Are the sources of the size and composition of the informal economy adequate to capture this distinction? If not it may be a waste of time to try to refine the product industry distinction for large and medium sized enterprises since this improvement may be swamped by inexactness concerning small scale enterprises.
- 8.60 It is important, though, to worry about the distinction in a few cases, most notably for construction. Suppose we know, as suggested above that public administration output includes 0.5 of own-account construction. Suppose, further, that the level of output is 54.7 as in chapter 6. Then in the supply and use table we can still use the industry total of 54.7 but show 0.5 of it as being attributed to capital formation. It would be helpful to introduce a separate column for capital formation in construction so that it is clear which industry is producing the capital formation. In our simplified example, this column would show 50.0 from construction and 0.5 from public administration. However, if it turns out that a mining company has 0.8 of own account capital formation, this could be treated in a similar way.
- 8.61 If there are significant levels of wholesale and retail margins coming from other industries, they can be treated in the same way as before, with negative entry for the margins in the supply of that industry offset by increased positive entries for other rows. By reducing the supply, however, the use of the products of the industry will be restricted to other products.

Table 8.7. Industry output and product groups

	Agriculture, forestry and fishing	Mining and quarrying	Manufacturing industry	Gas, electricity and water	Construction	Motor vehicles and fuel	Wholesale and retail margins etc.	Transport services	Post and telecommunications	Financial services	Real estate activities	Business services	Public administration etc.	Education	Health and social work	Other miscellaneous services	Private households with employed persons	Total domestic output by product group	Total domestic output by industry	Industry total less product total	Industry total as % of product total	
Columns are industry groups Rows are product groups																						
Agriculture, forestry and fishing	25.0		0.3															25.4	27.1	1.7	106.7	
Mining and quarrying	0.4	20.1	0.2				0.1											20.5	20.7	0.2	101.2	
Manufacturing industry			248.8				5.7	0.4				1.0	0.2			0.3		257.9	278.1	20.2	107.8	
Gas, electricity and water	0.2		0.3	31.5												0.3		32.2	34.9	2.7	108.3	
Construction	0.3	0.2			76.4			0.1				1.9	0.5					85.5	78.2	-7.3	91.4	
Motor vehicles and fuel						12.9	0.4	0.1								0.1		13.5	16.0	2.5	118.6	
Wholesale and retail margins etc.	0.5		6.8		0.4		85.3	0.2				1.1			0.2	0.1		94.9	101.7	6.8	107.1	
Hotel and restaurant services	0.1						0.1					0.1	0.1	0.2	1.1			18.5	18.5	0.0	100.1	
Transport services							0.2	48.4				0.7	0.5					49.8	52.7	2.9	105.8	
Post and telecommunication services				0.1					24.1									24.3	25.3	1.0	104.2	
Financial services								0.1		51.9	0.3							52.4	61.6	9.2	117.6	
Real estate services			0.7	0.0		0.1	0.6	0.2		2.9	53.2	0.8	0.4	0.1	0.1	0.2		60.0	59.5	-0.5	99.1	
Business services	0.3	0.3	9.8	1.7	0.3	1.9	3.0	1.4	0.5	5.9	113.8	1.7	2.9	0.1	2.4			146.1	121.6	-24.5	83.2	
Public administration etc.	0.1		2.2					1.4		0.1			54.2	0.2				58.2	61.6	3.4	105.9	
Education services												1.7	0.3	24.7	0.5	1.8		29.1	27.9	-1.2	96.0	
Health and social work services												0.1	0.2	58.7				59.0	59.8	0.8	101.3	
Other miscellaneous services	0.2	0.1	8.8	1.7	0.2	1.1	6.3	0.3	0.4	0.9		0.4	3.4			31.8		56.2	38.1	-18.1	67.8	
Private households with employed persons																	2.1	2.1	2.1	0.0	99.8	
Total	27.1	20.7	278.1	34.9	78.2	16.0	101.7	52.7	25.3	61.6	59.5	121.6	61.6	27.9	59.8	38.1	2.1	1085.5	1085.5	0.0	100.0	

Key points to remember

Compiling a supply and use table is the most cost effective step possible to improve the quality of national accounts estimates; the resource cost is very modest, the power of the resulting analysis can hardly be overstated.

Producing a product analysis of household consumption is a very powerful analytical tool.

With every succeeding year, the act of compiling the table will become easier, the possibilities for refinement greater and the analysis more useful.

Chapter 9: Information in volume terms

A. Introduction

- 9.1 It is obvious that if the value of GDP increases from year to year simply because of price increases, then there is no real improvement in the level of economic activity. For this reason producing measures of GDP in volume terms is given high priority. (The expression “in volume terms” is now preferred to “in constant prices” because of the preference for chain-linking described below.) The idea of GDP in volume terms is straightforward. If all the items of a balanced supply and use table could be expressed in volume terms, except the row for gross operating surplus, then this could be derived as a residual and the whole table would balance to give equal production and expenditure measures of GDP in volume terms.
- 9.2 Simple as the concept is, putting it into practice is more difficult. It is always necessary to work at some level of aggregation and the fewer the resources available, the greater the level of aggregation will be. Price indices appropriate for aggregates are composite indices made up of individual price quotations that have been combined into a single index using a set of weights. In real life, the economic flows that the weights represent change all the time but price statisticians cannot always keep up with this. Section B discusses the need for rebasing and the various approaches that may be adopted.
- 9.3 The following sections look at the question of deriving production and expenditure estimates of GDP in volume terms. In considering the production estimate, four different types of cases need to be examined, the case of goods and three types of services. These are margin services, public services and other private services. The question of taxes in volume terms also need to be considered. For the expenditure estimate, each major component is discussed separately.
- 9.4 The subject of compiling price indices is extensive. Many publications exist describing one or another set of price indices. Chapter 15 of the 2008 SNA gives an overview of the conceptual questions that may be raised and includes references to many other publications on the subject. There are recent publications on the compilation of consumer price indices, producer price indices and export and import price indices.
- International Labour Organization, International Monetary Fund, Organisation for Economic and Co-operation and Development, Eurostat, United Nations Economic Commission for Europe and World Bank (2004): *Consumer Price Index Manual: Theory and Practice*, Geneva, International Labour Organisation.
Also available from: <http://www.ilo.org/public/english/bureau/stat/guides/cpi/index.htm>
- International Labour Organization, International Monetary Fund, Organisation for Economic Co-operation and Development, United Nations, Economic Commission for Europe and the World Bank (2004): *Producer Price Index Manual: Theory and Practice*, Washington, International Monetary Fund.
Also available from: <http://www.imf.org/external/np/sta/tegeppi/index.htm>
- International Labour Organization, International Monetary Fund, Organisation for Economic Co-operation and Development, United Nations Economic Commission for Europe and World Bank (2009): *Export and Import Price Index Manual. Theory and Practice*. Washington, International Monetary Fund.
Also available from: <http://www.imf.org/external/np/sta/tegeipi/index.htm>

B. Rebasing issues

- 9.5 Many national accountants dread rebasing because of the amount of work involved and may therefore postpone it for far too many years. The goal of producing accounts in volume terms is to be able to look at growth rates within the economy that abstract from purely price effects. Why then does the particular base year matter? It is a characteristic of inflation that the prices of different items increase at different rates. While prices seldom decrease, the fact that the prices of some items increase hardly at all or only very little compared with other items leads to a markedly different pattern of prices throughout the economy and this

- in turn leads to changes in demand and thus to a different pattern of activity.
- 9.6 Consider a large increases in the price of petroleum products. If a country is a significant producer and exporter of petroleum, as the price increases, the share of petroleum extraction in production and in exports will increase as compared with the situation before the price increase. If a base year is chosen that pre-dates the increase in petroleum products, the share of petroleum in production and exports will be at the lower proportion characteristic of this earlier year. Growth rates based on the earlier year will be lower than growth rates based on a year following significant increases in the price of petroleum.
- 9.7 Figures in volume terms answer the question of “what would the pattern of growth have been like if prices had remained at the prices of year x?” When there has been an important change in the relative price of a key commodity, the answer to this particular question may no longer be very interesting. Asking the question with a different base year, however, may give very interesting answers.
- 9.8 As long as a single base year is used for a time series, different rates of growth will emerge when different base years are chosen. The fact that growth rates change when rebasing happens is very disconcerting to users who often believe the changes mean that the earlier figures were wrong whereas in fact they are not wrong, simply answers to a different question.
- 9.9 Largely in response to the fact that rebasing intermittently changes growth rates, the recommendation in the 2008 SNA is that rather than using a single base year for a time series, a system of chain linking should be used. Chain linking means linking year 1 to year 2 with year 1 weights then linking year 2 to year 3 with year 2 weights and computing the implicit change from year 1 to year 3 as the product of these two links rather than using year 1 weights for year 3. While the theoretical advantages of this approach are clear, it may not always be possible to follow this advice directly, usually because the detailed information needed for current weights may not be available.
- 9.10 In such a case, the use of single base years will have to be continued. However, it is possible to have a compromise position where series are linked but not annually. For example, series from 2005 onwards may use 2005 as base year but series from 2000 to 2005 use 2000, series from 1995 to 2000 use 1995 and so. With one year’s overlap, the series can be linked to form long time series that go some way to cope with the impact that the changing pattern of prices that result from inflation has on the pattern of economic activity.
- 9.11 For many years, it has been recommended that choosing years ending in 0 or 5 as the base year aids in international comparability but this is not mandatory. It is however, important to realise that going for more than five years without rebasing is likely to provide users with increasingly inappropriate growth rates.

C. Production measures of goods

1. Output in volume terms

- 9.12 The idea of measuring the production of goods in volume terms seems straightforward. Goods can be measured in physical units and so surely it is possible to see how many physical units were produced this year compared with last? Problems are not hard to find. Exactly the same goods are seldom produced for many years. Modifications are introduced and where these represent quality improvements, this year’s unit is considered to be “more” output than last year’s units even if the physical dimensions are similar. Price statisticians grapple with the question of quality change regularly and all price indices are derived on the basis of constant quality. For example if production last year was of 100 units valued at 1, production this year was still 100 units but their value was 1.2 and the whole of this increase in value was treated as quality change, the volume measure this year would be 120. If half of the increase in value were taken to be a quality improvement and half a price rise, the volume measure for this year would be given by the value (120) divided by the constant quality price index of 1.1 or 109.1. This concept of constant quality is especially important when there is an apparent price decline, as with computers, when a decline from 100 to 90 may actually represent an improvement in quality of 15 per cent and a pure price decrease to 78.3 (90/115). So if there were 1,000 units made last year, value 100,000 and 1,100 units made this year, value 99,000 this is portrayed in the national accounts as output in volume terms of 126,437 (99,000/0.783). This figure can be seen to be a combination of a 10 per cent increase in physical terms, from 1,000 to 1,100, compounded by the 15 per cent quality improvement.
- 9.13 Rather confusingly, what price statisticians call producer prices usually correspond to what national accountants call basic prices and so are suitable for use with production accounts compiled at basic prices. It is fairly easy to see whether a producer price index corresponds to basic or producer prices by considering taxes on products. If the price index does not change as taxes on products change, it is in fact an index of basic prices. When there are producer prices that correspond in coverage, industry by industry, to measures of output, the output measure can be converted to volume terms by simple division.

2. Intermediate consumption in volume terms

- 9.14 Intermediate consumption includes imported goods as well as domestically produced ones. Further, the coverage of intermediate consumption varies very considerably from one industry to another. Crude petroleum is a major intermediate input into the petroleum refining industry but occurs almost nowhere else. Textiles are major inputs into

clothing, and so on. Sometimes, price statisticians will compile both output producer price indices (covering domestic production only) and input producer prices (covering both domestic and imported products with a coverage deemed to be representative of the inputs into an industry not the outputs of it) but this is not likely to be the case in many developing countries and even when it is, there are still problems with using them to deflate intermediate consumption. One problem is that the weights may not be updated frequently enough. Another is the question of allowing adequately for quality change in inputs.

3. Double deflation

- 9.15 The expression “double deflation” is the name given to the method of deriving estimates of value added by industry by deducting a measure of intermediate consumption in volume terms from one of output in volume terms. This method is conceptually correct and simple to understand. However, experience shows it tends to give rather volatile results. This is because it is difficult to be sure that the deflators used, especially those for intermediate consumption, are correct. Because both output and intermediate consumption are relatively large items, errors which are reasonable for each of them are much less reasonable for value added, the relatively small difference between them. Further, since value added is the difference between two numbers, it may contain a compounding of two errors rather than the difference between them.

- 9.16 For some industries, double deflation works well. Agriculture may be such a case. However, in all cases it is recommended that the results of double deflation should be compared with the results of a single indicator method to ensure no major distortion results. Even when double deflation can be used satisfactorily, it should be done for a limited number of years with the results chain linked.

4. Single indicator methods

- 9.17 A single indicator method is one that projects value added in line with a single indicator. It is not, strictly speaking, a means of deflating value added. As a residual item, value added cannot theoretically have a price and volume component.
- 9.18 The choice of single indicator varies and may be different for different industries. The indicator may relate to output or inputs and may relate to an item in volume terms or a physical measure. The problem with single indicator methods is that they necessarily show that the share of value added as a proportion of output is unchanged between the two years being compared. This essentially contradicts the whole purpose of the exercise since the object is to find out whether output prices rose faster than input prices (allowing value added to increase) or whether value added decreased as a share of output because output prices did not keep pace with input prices.

D. Production measures of services

1. Margin services

- 9.19 At first sight, the idea of a margin in volume terms may not be intuitive. However, the situation becomes clearer if the price of an item is thought of as being made up of two elements, the basic price and the margin. Increases in prices are then also composed of two elements, the increase in the basic price and the increase in the margin. If a margin rises from five per cent of the basic price to six per cent, this is an increase in the margin of twenty per cent. In order to measure margins in volume terms, it is easiest to think of first estimating the basic price element in volume terms and then multiplying by the proportion of the margin in the base year as in the following example.

Retail and wholesale trade

- 9.20 In order to calculate a figure for the volume measure of margins, a three stage process should be followed. The figures from table 9.1 are used as illustrations. Suppose in the first year 80 items with a basic price of 100 are sold for a total value of 8 400. This is a margin of 400 over the basic price value of 8 000 or 5 per cent. In the second year, 90 items are sold for a total value of 10 494. This is a margin of 594 or 6 per cent of the basic value of 9 900. The increase in the margin from 5 to 6 per cent represents a 20 per cent increase in the margin where the increase in the basic price of the item has increased by only 10 per cent.
- 9.21 Normally we do not so much information but we can derive the figure we want as follows.

Table 9.1: Example of the impact of margins on prices

	Year 1	Year 2	Price
Basic item	100	110	1.1
Number of items	80	90	
Value	8 000	9 900	
Item plus margin	8 400	10 494	
Margin value	400	594	
Margin%	5	6	1.2

- a. Remove the margin from the current value for year 2 (10 494) using the appropriate percentage (6%) to get the value of the items at basic prices of 9 900.
- b. Deflate this figure by the basic price index (1.1) to get the figure of 9 000, year 2's production valued at year 1 prices
- c. Apply the base year margin rate (5%) to the resulting figure to get 450. This is the volume measure of margins in year 2 at year 1's prices.

9.22 In practice some simplifications will have to be used. A reasonable approximation to total wholesale and retail margins may be to use the total supply of goods and services available for domestic use, less margins, in the current year; deflate by a general wholesale or producer price index, then apply the average margin rate from the base year.

Foreign exchange margins

9.23 Suppose an importer buys 500 items for \$2 each in the first year and 600 items for \$2.25 in the second year. In the first year the exchange rates are 1.20 to buy dollars and 1.10 to sell them. In the second year these exchange rates are 1.50 and 1.30.

9.24 In the first year the importer has to pay 500 times 2 times 1.20 (or 1200) in local currency but within the SNA we treat this as being a payment of 1150 for the items and 50 for the financial service associated with converting foreign currency. (Remember that we use the mid-point between buying and selling exchange rates to value the items and the difference between the midpoint and either the buying or selling rate as a financial service charge. Here we have 2.15 for the items and 0.05 for the service margin.) In the second year the cost of the item is 600 times 2.25 times 1.40 or 1890 and the financial service charge is 135.

9.25 How do we calculate the financial service margin in volume terms? In order to deflate the price of the items, we need to take account of both the movement of the price expressed in dollars (2.0 to 2.25) and the change in the exchange rate (1.15 to 1.40). Take the amount of local currency required in year 2 and convert by the year 1 exchange rate so 1890 times 2.00/2.25 and times 1.15/1.40 or 1380. Now apply the service margin from year 1, 50/1150 to get the service margin for year 2 in volume terms, or 60. Note that the implicit price index for the margin (135/75) is larger than for the items alone because the margin has increased from 0.05/1.15 to 0.10/1.40, and this too is a price effect.

FISIM

9.26 Suppose in year 1 the value of loans is 10,000, bank interest is 7 per cent and the reference rate is 5 per cent. In year 2, the value of loans is 15,000, bank interest is 5 per cent and the reference rate is 3.5 per cent. In the first year the value of FISIM (on loans only, we are ignoring deposits for the sake of simplicity) is 2 per cent of 10,000 or 200. In year 2 FISIM has the value of 1.5 per cent of 15,000 or 225.

9.27 Following the example for retailers and foreign exchange margins, it looks as if we need a deflator for loans. Loans do not have a price as such, because they are expressed in local currency (in this example we are ignoring any loans denominated in foreign currency). However, the level of loans tends to increase in line with general levels of inflation. Consider credit card debt, for example; as prices rise, the amounts charged to a credit card tend to rise in line with this. Therefore we use a general inflation index as the appropriate deflator to use in the case of loans and deposits denominated in local currency. Suppose in our example, the general rate of inflation between the two years is 5 per cent. Then the level of FISIM for the second year in volume terms is the level of loans, 15,000, deflated by the general inflation index (1.05) times the year 1 difference between the bank interest rate and the reference rate (2 per cent), or 286.

2. Public services

9.28 The value of government output is estimated by the sum of costs, intermediate consumption, compensation of employees and consumption of fixed capital. To calculate the value in volume terms it is usual to deflate each of these and then aggregate the results.

9.29 The most difficult item to deflate is compensation of employees. For this it is desirable to have numbers of staff in different grades and the average rates of pay for each grade. This year's volume terms figure is obtained by multiplying the number in each grade in this year by the average pay in the base year. In this way, the effect of any major restructuring of the civil service is taken into account.

9.30 For intermediate consumption a general deflator may have to be used. In general, government does not pay taxes and pays very small margins so that a wholesale or producer price index is to be preferred to a consumer price index.

9.31 For consumption of fixed capital, the deflator for gross capital formation can be used.

3. Other private services

9.32 Although private services are becoming important in all economies, the tradition of compiling price indices for them lags a long way behind price indices for goods. It is possible that there may be no service price indices to use in the compilation of the services part of the production estimate of GDP. In such cases, some sort of single indicator must be used.

9.33 Transport is always an important service. Traditionally, prices used to be based on the cost to transport a tonne of material a kilometre or a person a kilometre. However, these are increasingly unrealistic metrics since often passenger fares, for instance, depend on the popularity of the route such that it is often cheaper to fly from one continent to another on a popular route than to make a journey within a country to a less frequented airport. In addition there is often a variety of discount fares available with different conditions so that assessing quality

- differences is extremely difficult even within a year and almost impossible from one year to the next.
- 9.34 Freight rates also may depend crucially on the popularity of the route in question. Sometimes the cost of moving goods from A to B may be much higher than moving a similar weight or volume from B to A because there is much more traffic in the A to B direction than the other way round.
- 9.35 In such circumstances there may be little alternative but to contact the enterprises and ask their assessment of the increase (or decrease) in traffic in volume terms.
- 9.36 For some sorts of services, for example, film admissions or entry to sporting events, it is possible to think of using the number of attendees times the average price in the base year but it would be unrealistic to think of doing this at a great degree of detail.
- 9.37 For many professional services, such as the services provided by lawyers or accountants, charges may be made on the basis of the number of hours the work takes. Here, and more generally for services, the largest cost item to the enterprise providing the service is likely to be compensation of employees and so a measure of changes in wage rates may be the best way to derive a volume measure.

E. Taxes less subsidies in volume terms

- 9.38 The idea of taxes in volume terms often gives pause for thought. In fact, however, if the idea of margins in volume terms is understood, then the idea of taxes should follow naturally. Taxes can be viewed as just another margin applying to the basic price, the difference with retail and wholesale margins being that the recipient of the margin coming from taxes is the government. Subsidies can be viewed in a similar way but as a negative margin that reduces a price rather than increasing it.
- 9.39 The methods to be used for calculating taxes and subsidies in volume terms follow exactly the same processes as described above for margins.

F. Volume measures of the expenditure estimate of GDP

- 9.40 Each of the components of the expenditure estimate of GDP should be expressed in volume terms. The main approaches to deriving these estimates are described in turn below.
- figures use market rental rates, then an index of market rentals can be used for deflation.

1. Household final consumption expenditure

- 9.41 Household consumption expenditure should be deflated at as detailed a degree as possible. In general this will involve making use of CPIs though care is needed to ensure that the coverage of the CPI being used matches the category of consumption expenditure being deflated. Even where detailed estimates of consumption expenditure are not compiled from household surveys and other primary sources, having an estimate of household consumption expenditure by type of product from a supply and use table for deflation will significantly improve the estimate of consumption expenditure in volume terms as compared with the single deflation of a total figure only.

- 9.42 A major component where CPIs are unlikely to be available is the measure of the rental services of owner-occupied dwellings. The means of deflating the estimates depends directly on the methods used to estimate the current value figures. For traditional construction, price indices based on the costs of materials, or a general construction index may be used. For more substantial dwellings, if the current value

- 9.43 For subsistence production, the same deflators should be used as have been used on the production side.

2. Final consumption expenditure by government and NPISHs

- 9.44 As explained in chapter 7, although the value of government final consumption is not exactly equal to government output, there is a very large overlap between them. The same deflator should be used for that part of government output attributed to government final consumption. If possible, separate deflators should be used for the other elements of government consumption, such as own account construction and the purchases of items for onwards transmission to households. If the proportion of the price paid by government alters from one year to another, this is seen as a volume change in expenditure on the part of general government and households.

3. Gross fixed capital formation

- 9.45 The availability of appropriate price indices for gross fixed capital formation varies considerably between different types of asset.

9.46 There are often CPIs for new dwellings and PPIs for new buildings and structures. For standard products used as capital formation, PPIs may be available but much capital formation is specific to the purchaser and appropriate indices may have to be developed using the best information available. Further, in many developing countries, many pieces of specialist equipment used as capital formation may have been imported which means that domestic based PPIs are not appropriate.

9.47 Price indices for equipment vary considerably in their growth rates. For example, price indices for computer equipment have fallen rapidly year after year while price indices for transport equipment have tended to increase. It is important in such cases that the different types of equipment are deflated separately using the matching price indices.

4. Changes in inventories

9.48 Although changes in inventories may be small relative to other components of GDP, the fact that their relative size might change quite significantly from one period to the next means that they can make a significant contribution to changes in the size of GDP particularly in the quarterly national accounts. For this reason, the calculation of changes in inventories in volume terms is particularly important. However, it is also a challenging task. Because changes in inventories can take positive, negative or zero values, a chain index should not be derived directly. Chain volume estimates of changes in inventories should be derived by first deriving chain volume estimates of the opening and closing stocks of inventories, if possible quarter by quarter, and then differencing them.

9.49 Volume estimation should be undertaken for the different types of inventories. For work-in-progress and finished goods, the deflator used for the output of the industry concerned is appropriate. For materials and supplies, and

for goods for resale, deflation should be related to the composition of those inventories in terms of products rather than to the industry holding those inventories but there may be little if any information in this and a general wholesale or producer price index may have to be used. Note, however, that since these inventories may include imported goods, purely domestic deflators can only be approximate and if there have been major exchange rate changes, some adjustment for this may be desirable.

5. Exports and imports

9.50 Exports and imports consist of both goods and services. For both exports and imports, goods and services are expressed in volume terms using quite different deflators because of the very different sources available for goods and services.

9.51 For most developing countries (and actually for some others) the only indices to deflate imports and exports of goods may be unit value indices compiled from detailed import and export merchandise trade data derived from administrative customs documents. However, unit value indices are not good price indices since the data used depends on the particular goods imported in a period, not a specified basket of goods (as is normally the case for price indices). Thus changes in prices are not easily distinguished from a change in composition in the heading.

9.52 At present, data sources for price indices for international trade in services are less comprehensive than in other areas. As a result, volume estimates of exports of services are mostly derived using an assortment of PPIs and CPIs. For example, volume estimates of freight transport services could be derived using PPIs according to the form of transport, while volume estimates of accommodation services could be derived using the appropriate CPIs. If prices are not available for imports of services then price indices of the countries exporting the services, adjusted for changes in the exchange rate, may have to be used.

Key points to remember

Work at as great a degree of detail as possible, subject to resource constraints.

As far as possible use chain linking to derive time series for volume figures.

If chain linking is not possible every year, rebase at least every five years and link at an overlap year.

Recognise that double deflation methods may give very volatile results and therefore have to be rejected but choose single deflation methods with care.

Chapter 10: Identifying sectors

A. Introduction

- 10.1 As explained in chapter 2, the rationale for including a sectoral disaggregation in the national accounts is because corporations, government and households behave quite differently from one another. Both corporations and households pay taxes; government uses tax receipts to provide services to the community as a whole and to some households in particular. Households and government engage in final consumption, that is expenditure designed to satisfy human wants, but corporations do not. All employees belong to households and compensation of employees is the major source of household income. Only corporations produce goods and services to sell on the market at economically significant prices and this is their major source of income. Being able to see how these different perspectives interact is at the heart of analysis leading to policy advice on how to adjust government behaviour in order to encourage particular reactions from corporations and households.
- 10.2 The SNA recommends identifying five sectors of the economy. These are non-financial corporations, financial corporations, general government, non-profit institutions serving households, and households. In addition the rest of the world may be seen as a de facto sixth sector. For all countries the impact of globalisation makes the interaction between the domestic economy and the rest of the world something to be closely monitored. In addition for most developing countries, international assistance and other flows from the rest of the world continue to have important consequences for the domestic economy. In order to start producing sector accounts, and to allow users to see the benefits of these, some simplification of the five SNA sectors is proposed here.
- 10.3 It should be stressed that this is proposed not as a change to the theoretical construct of the SNA but as a practical expedient in order to start compiling sector accounts. As and when more resources are available, steps should be taken to move progressively closer to the ideal SNA position.

B. Corporations

- 10.4 It was noted in chapter 5 that the separation of productive activities in households from small enterprises is very difficult. The recommendation as far as sectors concerned is to restrict non-financial corporations and financial corporations to large enterprises. This would leave medium sized as well as small scale enterprises included in a sector with households. What is the rationale for this recommendation? Overwhelmingly most of the flows in sectoral accounts concerning corporations will be accounted for by the large corporations. In particular, it is true for property income flows, for taxes and for capital formation. Whereas it may be reasonable to assume that medium and even small sized corporations use the same intermediate inputs in more or less the same proportions to make the same sorts of goods, it is not the case that flows in the sectoral accounts will be similarly proportionate. Deriving figures for the whole sector is therefore more complicated than deriving figures for all production of the same type.
- 10.5 Large non-financial company corporations have been identified when compiling the production account. These are corporations where returns are essential and where commercial accounts are also available. Further, this means that estimates are also available for the items that are needed for sector accounts. These large corporations can be further split into three groups.
- 10.6 Oddly enough, developing countries are in a position to implement elements of sub-sectors that few developed countries do routinely and this can be helpful to both compilers and users.
- 10.7 The first group consists of public corporations, those where general government can exercise control over the day to day operations of the corporation. Information on these corporations should be available from the parent ministries. They may include marketing boards for agricultural products, transport companies and utilities as well as possibly others.
- 10.8 The second group covers large enterprises that are foreign controlled, that is to say those corporations where non-residents hold more than 50 per cent of the shares or otherwise exert control over the enterprise. In practice

almost all foreign controlled enterprises are going to be large and will therefore fall into this sector.

- 10.9 The third group consists of those non-financial corporations that are large but are controlled domestically by the private sector.
- 10.10 For Financial Corporations the same breakdown should be applied.
- 10.11 Under public corporations and publicly controlled banks the central bank will certainly appear and possibly other banks.
- 10.12 Foreign controlled financial institutions will include branches of foreign corporations including insurance companies as well as banks.
- 10.13 The third group will be other large financial corporations that are controlled neither from abroad nor by government.
- 10.14 It should be noted that it is likely that almost all financial corporations will be included in one of these three sub-sectors because there are very few small enterprises involved in the financial sector. Money lenders may be the biggest exception and there may be some small foreign exchange bureaux.

1. Control

- 10.15 The question of deciding whether an enterprise is controlled by government or by the rest of the world is described in detail in the SNA in paragraphs 4.77 to 4.82. For convenience, these are reproduced below.

Government control of corporations

- 4.77 *A corporation is a public corporation if a government unit, another public corporation, or some combination of government units and public corporations controls the entity, where control is defined as the ability to determine the general corporate policy of the corporation. The expression "general corporate policy" as used here is understood in a broad sense to mean the key financial and operating policies relating to the corporation's strategic objectives as a market producer.*
- 4.78 *Because governments exercise sovereign powers through legislation, regulations, orders and the like, care needs to be applied in determining whether the exercise of such powers amounts to a determination of the general corporate policy of a particular corporation and therefore control of the corporation. Laws and regulations applicable to all units as a class or to a particular industry should not be viewed as amounting to control of these units.*
- 4.79 *The ability to determine general corporate policy does not necessarily include the direct control of the day-to-day activities or operations of a particular corporation. The officers of such corporations would normally be expected to manage these in a manner consistent with and in support*

of the overall objectives of the particular corporation. Nor does the ability to determine the general corporate policy of a corporation include the direct control over any professional, technical or scientific judgments, as these would normally be viewed as part of the core competence of the corporation itself. For example, the professional or technical judgments exercised by a corporation set up to certify aircraft airworthiness would not be considered controlled in respect of individual approvals and disapprovals, though its broader operating and financial policies, including the airworthiness criteria, may well be determined by a government unit as part of the corporation's corporate policy.

4.80 *Because the arrangements for the control of corporations can vary considerably, it is neither desirable nor feasible to prescribe a definitive list of factors to be taken into account. The following eight indicators, however, will normally be the most important and likely factors to consider:*

a. Ownership of the majority of the voting interest. Owning a majority of shares will normally constitute control when decisions are made on a one-share one-vote basis. The shares may be held directly or indirectly, and the shares owned by all other public entities should be aggregated. If decisions are not made on a one-share one-vote basis, the classification should be based on whether the shares owned by other public entities provide a majority voice.

b. Control of the board or other governing body. The ability to appoint or remove a majority of the board or other governing body as a result of existing legislation, regulation, contractual, or other arrangements will likely constitute control. Even the right to veto proposed appointments can be seen as a form of control if it influences the choices that can be made. If another body is responsible for appointing the directors, it is necessary to examine its composition for public influence. If a government appoints the first set of directors but does not control the appointment of replacement directors, the body would then be part of the public sector until the initial appointments had expired.

c. Control of the appointment and removal of key personnel. If control of the board or other governing body is weak, the appointment of key executives, such as the chief executive, chairperson and finance director, may be decisive. Non-executive directors may also be relevant if they sit on key committees such as the remuneration committee determining the pay of senior staff.

d. Control of key committees of the entity. Subcommittees of the board or other governing body could determine the key operating and financial policies of the entity. Majority public sector membership on these subcommittees could constitute control. Such membership can be established under the constitution or other enabling instrument of the corporation.

e. Golden shares and options. A government may own a “golden share,” particularly in a corporation that has been privatized. In some cases, this share gives the government some residual rights to protect the interests of the public by, for example, preventing the company selling off some categories of assets or appointing a special director who has strong powers in certain circumstances. A golden share is not of itself indicative of control. If, however, the powers covered by the golden share do confer on the government the ability to determine the general corporate policy of the entity in particular circumstances and those circumstances currently existed, then the entity should be in the public sector from the date in question. The existence of a share purchase option available to a government unit or a public corporation in certain circumstances may also be similar in concept to the golden share arrangement discussed above. It is necessary to consider whether, if the circumstance in which the option may be exercised exists, the volume of shares that may be purchased under the option and the consequences of such exercise means that the government has “the ability to determine the general corporate policy of the entity” by exercising that option. An entity’s status in general should be based on the government’s existing ability to determine corporate policy exercised under normal conditions rather than in exceptional economic or other circumstances such as wars, civil disorders or natural disasters.

f. Regulation and control. The borderline between regulation that applies to all entities within a class or industry group and the control of an individual corporation can be difficult to judge. There are many examples of government involvement through regulation, particularly in areas such as monopolies and privatized utilities. It is possible for regulatory involvement to exist in important areas, such as in price setting, without the entity ceding control of its general corporate policy. Choosing to enter into or continue to operate in a highly regulated environment suggests that the entity is not subject to control. When regulation is so tight as to effectively dictate how the entity performs its business, then it could be a form of control. If an entity retains unilateral discretion as to whether it will take funding from, interact commercially with, or otherwise deal with a public sector entity, the entity has the ultimate ability to determine its own corporate policy and is not controlled by the public sector entity.

g. Control by a dominant customer. If all of the sales of a corporation are to a single public sector customer or a group of public sector customers, there is clear scope for dominant influence. The presence of a minority private

sector customer usually implies an element of independent decision-making by the corporation so that the entity would not be considered controlled. In general, if there is clear evidence that the corporation could not choose to deal with non-public sector clients because of the public sector influence, then public control is implied.

h. Control attached to borrowing from the government. Lenders often impose controls as conditions of making loans. If the government imposed controls through lending or issuing guarantees that are more than would be typical when a healthy private sector entity borrows from a bank, control may be indicated. Similarly, control may be implied if only the government was prepared to lend.

Although a single indicator could be sufficient to establish control, in other cases, a number of separate indicators may collectively indicate control. A decision based on the totality of all indicators must necessarily be judgmental in nature but clearly similar judgements must be made in similar cases.

Control by a non-resident unit

4.81 In general, a non-resident unit controls a resident corporation if the non-resident unit owns more than 50 per cent of the equity of the corporation. Branches of non-resident corporations are by their nature always under foreign control. However, control may also be possible with a holding of less than half the equity if the non-resident unit can exercise some of the powers just described as indicating possible control by government, for example the control of the board or other governing body, control of the appointment and removal of key personnel, control of key committees of the corporations and so on.

4.82 Within the balance of payments, a distinction is made between corporations where over 50 per cent of the equity is held by non-residents and those corporations where between 10 and 50 per cent of the equity is held abroad. All corporations with foreign holdings of 10 per cent or more are described as foreign direct investment enterprises and special treatment of their earnings is applied. Further details on this are given in chapters 7 and 26. It is important to note, however, that while all foreign controlled corporations are foreign direct investment enterprises, the reverse is not true, for example even a publicly controlled corporation may be a foreign direct investment enterprise if, in addition to government controlling half of the equity, a further 10 per cent is owned by a non-resident.

C. General government

10.16 As far as general government is concerned, there should be no difference from the guidance for the sector in the SNA.

Information for central government should be readily available. Information from local government and state

government (if this level of government exists) may be more difficult to come by but the problem must be addressed in dealing with output of general government. The sources that lead to information on output will almost certainly provide the extra information needed for sectoral accounts. There may be extra-budgetary organisations that

need to be included in general government. For general government issues it will be useful to have contact with those, probably in the Ministry of Finance, responsible for compiling data according to the GFSM. Such compilers will also have had to deal with the problem of finding data for local government and extra-budgetary organisations.

D. Households and other

10.17 All other resident units will then be left in a residual sector, which may be called households and other. This will include medium sized and small scale enterprises, households, and non-profit institutions serving households. At first sight this looks to be too heterogeneous to be useful. However it should be remembered that large enterprises almost certainly dominate corporate activity and these are treated separately. Further, the borderline between small and medium sized enterprises that can be treated as quasi-corporations and those that must remain on the household sector is always a difficult borderline to establish; many of these will always remain in the household sector.

10.18 The fact that such a “residual” sector is suggested as part of the compilation process does not necessarily mean this “sector” should appear in the publication of national accounts. The published accounts, though, should show the

links to the rest of the world (described in the next chapter), to general government and to large financial and non-financial corporations. This is a major step towards demonstrating the interlinkage of different sets of macro-economic statistics and already allows more analysis of how the economy functions and how it is changing.

10.19 Although the SNA recommends treating NPISHs as a separate sector, many countries do not do so. Instead they include these institutions in the households sector. In some circumstances, for example immediately after a major natural disaster, there may be a large number of non-profit institutions funded from abroad that come into the country and provide many of the services that might otherwise be provided by government. If it is possible to identify these separately and to have information for them without excessive resource cost, then it may be useful to show these separately.

Keys points to remember

All countries have problems at the boundary between small enterprises and households. Making the household sector larger and enterprise sectors smaller allows sectoral work to start.

Because large corporations are dominant, a very large proportion of the value of total flows is captured by these corporations even though they are small in number.

Identifying control by government and by the rest of the world is especially important for developing countries.

Chapter 11: The relationship with the rest of the world

A. Introduction

11.1 Within the SNA, the rest of the world is treated in much the same way as a sector. That is, transactions between each of government, corporations, households and NPISHs with units in the rest of the world are identified and grouped together. This is directly comparable with the balance of payments but with one significant difference. When a unit within the domestic economy deals with one in the rest of the world for example, by the export of goods, the SNA regards this as the use of domestic resources by the rest of the world (an outflow of products) while imports of goods are resources coming from the rest of the world. Within the balance of payments, exports represent a credit item (indicating an inflow to the domestic economy) and imports a debit or an outflow. That is the BOP and the rest of the world account in the SNA are exact mirror images of one another. Apart from that, all accounting conventions,

rules on time of recording, valuation and so on are identical between the two systems. Both manuals were updated at the same time and key text is identical in both manuals

11.2 Two major principles are important to determine whether an entry in the rest of the world account of the balance of payments is necessary. The first is whether the unit involved is resident in the domestic economy or not. The second is whether the transaction involving goods, services, assets or liabilities involves a change of ownership, from a resident unit to a non-resident unit or vice versa. Note that the currency in which a transaction is conducted does not in itself determine whether an entry in the BOP or rest of the world account is necessary.

B. Residence

11.3 Within both the SNA and BOP, a unit must be allocated to one and only one economy. This is done by determining the centre of predominant economic interest. This often involves physical presence and usually involves being subject to the taxation system of the country in question. The following text from the BPM6 enlarges on the principle of residence.

(a) The residence of individual persons is determined by that of the household of which they are a part and not by their place of work. All members of the same household have the same residence as the household itself, even though they may cross borders to work or otherwise spend periods of time abroad. If they work and reside abroad so that they acquire a centre of predominant economic interest abroad, they cease to be members of their original households.

4.114 An institutional unit is resident in an economic territory when there exists, within the economic territory, some location, dwelling, place of production, or other premises on which or from which the unit engages and intends to continue engaging, either indefinitely or over a finite but long period of time, in economic activities and transactions on a significant scale. The location need not be fixed so long as it remains within the economic territory. Actual or intended location for one year or more is used as an operational definition; although the choice of one year as a specific period is somewhat arbitrary, it is adopted to avoid uncertainty and facilitate international consistency.

(b) Unincorporated enterprises that are not quasicorporations are not separate institutional units from their owners and, therefore, have the same residence as their owners. (However, the criteria for recognizing a branch in paragraph 4.27 mean that significant cross-border businesses will almost always be recognized as quasicorporations.)

4.115 In overview, residence of selected entities is as follows, subject to the more detailed elaboration in paragraphs 4.116-4.144:

(c) Corporations and nonprofit institutions normally may be expected to have a centre of economic interest in the economy in which they are legally constituted and registered. Corporations may be resident in economies different from their shareholders and subsidiaries may be resident in different economies from their parent corporations. When a corporation, or unincorporated enterprise, maintains a branch, office, or production site in

another territory to engage in a significant amount of production over a long period of time (usually one year or more) but without creating a corporation for the purpose, the branch, office, or site is considered to be a quasi-corporation (i.e., a separate institutional unit) resident in the territory in which it is located.

(d) For entities, such as many SPEs, that have few if any attributes of location, the residence is determined by their place of incorporation.

(e) When a nonresident has ownership of land and buildings, and natural resources other than land, the assets are deemed to be owned by a notional resident institutional unit in the economy of location, even if they do not engage in other economic activities or transactions in the economy. All land, buildings, and natural resources other than land are therefore owned by residents.

11.4 Chapter 4 of BPM6 also includes some useful tables showing the effect on the classification of transactions when one party to a transaction is non-resident.

C. Change of ownership

11.5 The physical movement of goods often coincides with a change of ownership but not always. Goods accompanying travellers are simple examples where there is no change of ownership. Goods for processing may be another.

11.6 Only if the unit receiving the goods for processing accepts all risks associated with the processing (for example loss due to obsolescence or theft) and benefits (for example the degree of profit to be realised when the processing is complete) is change of ownership deemed to take place.

11.7 This treatment of goods for processing was introduced into the 2008 SNA and BPM6. It reduces the size of both imports and exports of those countries undertaking processing for non-residents and also of the countries owning the goods being processed. This has consequences for the production accounts in the processing country where both intermediate consumption and output are reduced in magnitude but value added still reflects the amount the processor retains from the processing fee after he has met the costs he is liable for that are associated with the processing. Transfer of ownership of financial assets and liabilities is often not associated with any physical movement.

D. Foreign control of enterprises

11.8 Another concern in relation to the rest of the world is the extent to which non-residents control units operating in the domestic economy. This was discussed briefly in the previous chapter. Basically there are three sorts of circumstances where units operating domestically may be subject to some degree of foreign control.

11.9 The first is these is where a domestic unit is a subsidiary of a foreign enterprise or is operating as if it were without being technically incorporated. Such situations are not uncommon. The SNA normally recommends treating a unit as unincorporated unless there is sufficient information, including information about the balance sheet, to treat the unit as a quasi-corporation. However, an exception is made for unincorporated enterprises that are wholly owned by non-residents. These are described as branches and are always treated as quasi-corporations even if there is not sufficient information to complete a balance sheet, for

example. More information on branches can be found in BPM6 paragraphs 4.25 to 4.52.

11.10 The second type of enterprise subject to foreign control is one which is formally incorporated but non-residents can exercise significant control over the unit, usually by holding at least half of the voting power. These are the units that are described as being foreign controlled enterprises.

11.11 The third type of enterprise is one where a significant degree of control can be exercised by non-residents but not full control. These are described as foreign direct investment enterprises. By convention, a significant degree of control is taken to be 10 per cent of voting power.

11.12 All three types of enterprises just described are regarded as foreign direct investment enterprises in the BPM sense but only the first two are foreign controlled in the SNA sense.

E. The balance of payments accounts

- 11.13 The balance of payments accounts are usually compiled within the central bank. The fact that these accounts exist and are usually well maintained is of major assistance to national accountants and the knowledge of the balance of payments compilers can be a useful resource for the compilers of national accounts and vice versa.
- 1. Goods and services**
- 11.14 Most of the entries in the BOP are of exactly the same type as in the SNA, the only difference being that one party to the transaction is non-resident. The exceptions are the entries for exports and imports. The BOP does not have an account corresponding to the production account but imports resemble production is so far as they are a source of supply of goods and services to the domestic economy. Exports are analogous to final consumption or capital formation in that they are a source of reduction in goods and services available to the domestic economy but do not serve the wants of the resident population. Both imports and exports form a part of the goods and services account to be discussed in following chapters. Note that in both the SNA and BOP, goods that leave one economy and enter another illegally, for example by smuggling, should be treated in exactly the same way as those items declared to customs authorities.
- 11.15 The balance of payments compilers will have estimates for imports and exports of goods and services that can be used by the national accountant. There are some useful considerations to keep in mind, however.
- 11.16 For all entries in the BOP, what should be recorded is an estimate of total actual flows associated with the change of ownership from resident to non-resident (or vice versa) of a good, service or asset. Many of these will be recorded via the banking system but not all. The extent to which flows do not pass through the banking system will vary from country to country but increasing efforts are being made at the global level to try to ensure that more and more flows are tracked. (The reason for the increased surveillance is due to concern about trafficking in people, drugs or arms and funding terrorism.)
- 11.17 Most imports and exports of goods are recorded by customs departments who are responsible for ensuring that the value declared for the goods is realistic. Often they are more cautious about imports than exports because typically import duties raise more revenue than export duties. With much trade taking place in containers, the task of physically checking goods has become more difficult and this may impact the quality of the values recorded.
- 11.18 Some items are not captured by customs. These include small items such as parcel post and hand carried items, for example. The latter may be significant in the case where there are many nationals working abroad who return home periodically bringing items with them for the family at home. Some large items will also not appear in customs data. Examples include ships and aircraft.
- 11.19 Care needs to be taken that customs do not include goods for processing, whether on entry to or departure from a country or goods sent abroad for repair and then returned.
- 11.20 Placing a value on imports and exports of services is more difficult than for goods. Sometimes it is assumed that international trade in services is not very important for developing countries but this is by no means always true.
- 11.21 Transport of people and goods is almost always significant and if non-residents travel on ships and aircraft operated by resident units or resident units move goods for non-residents, there will be significant exports of transportation services. Equally there will be imports of transportation services when resident individuals use non-resident carriers and when goods owned by residents are moved by non-residents.
- 11.22 Expenditure by non-resident tourists will appear as exports of services and will be significant if the country is a major tourist destination.
- 11.23 Communication charges between resident and non-resident units including telephone and postal services will appear as both imports and exports of services.
- 11.24 Banking services are almost certain to be significant.
- 11.25 Receipts of aid and technical assistance, even when received in kind, should be included in the balance of payments accounts.
- 11.26 The national accountant should not have to verify that these items are correctly recorded since that is the responsibility of those compiling the balance of payments accounts but if a question arises in respect of particular goods or services, it is helpful if the national accountant has some knowledge of the problems in this area.
- 2. GDP and GNI**
- 11.27 GDP shows how much income is earned in an economy but not all of it is receivable by residents and, conversely, some income receivable by residents is earned in another economy. Gross national income (GNI) is the result of making these adjustments to GDP. The data necessary to make this adjustment are found in the balance of payments.
- 11.28 The first item relates to compensation of employees. The balance of payments items cover border and seasonal workers. Border workers are resident in one economy but work in another on a daily basis, crossing the border every day. Seasonal workers do not cross the border every day but are present in the economy for only part of the year. This may be associated with some activity that takes place according to the season, for example fruit picking or activities associated with pilgrimages.
- 11.29 The other item that is needed to move from GDP to GNI is investment income. This reflects how much of gross operating surplus is due abroad (and is receivable from

abroad) because financial capital owned by non-residents is used to finance production within the economy in question. In return the enterprises so financed must pay interest and dividends to the non-resident owners. These figures appear in the balance of payments also.

- 11.30 In the SNA, investment income is shown as interest and dividends. In the balance of payments a functional classification is used. Flows are shown divided between direct investment, portfolio investment, financial derivatives, reserve assets and other investment. For many developing countries, it may be sufficient to show only direct, portfolio and other investment. Direct investment flows show interest and dividends due to multinationals by enterprises in the economy that are part of the multinational group. Portfolio investment shows interest and dividends that are due to investors that have no interest in controlling the activity of the enterprise using the financial capital. The main flows under other investment are interest payments on loans. Balance of payments compilers must have information on the breakdown of direct investment, portfolio investment and the other functional headings split between interest, dividends etc. even if these are not shown in their publications.
- 11.31 In some specific situations there may also be rent paid abroad, but these are uncommon.
- 11.32 Even before sector accounts are attempted, it is both simple and useful to calculate GNI as illustrated in table 11.1. The data values in this table are consistent with numeric tables in other chapters except chapter 8.

3. Transfers and disposable income

- 11.33 GNI reflects the amount of income earned by residents from involvement in production. In addition, residents may receive current transfers from non-residents. The major items cover technical assistance payments not linked to the acquisition of fixed capital, emergency relief after a natural disaster and, perhaps most importantly, payments from individuals abroad who have family or cultural ties with the country or make donations simply for philanthropic reasons.
- 11.34 These data also are available from the balance of payments so GNI can be adjusted by adding transfers receivable from abroad and deducting transfers payable abroad to reach gross national disposable income as in table 11.2.

4. Capital and financial transactions

- 11.35 The balance of payments also records capital and financial transactions. There are few capital transactions other than capital transfers (the payments linked to the acquisition of capital for example).
- 11.36 The itemisation of financial transactions is particularly important when looking at the degree to which an economy is financially dependent on others. This is discussed in more detail in chapter 15.

Table 11 1: GDP and GNI

GDP	318
Plus primary income from the rest of the world	
Compensation of employees	10
Interest	3
Dividends	1
Rent	
Less primary income to the rest of the world	
Compensation of employees	8
Interest	9
Dividends	4
Rent	
GNI	311

Table 11 2: GNI and national disposable income

GNI	311
Plus current transfers from the rest of the world	
International cooperation	5
Transfers involving NPISHs	6
Personal remittances	7
Less current transfers to the rest of the world	
International cooperation	1
Transfers involving NPISHs	
Personal remittances	1
Gross national disposable income	327

Key points to remember

BOP compilers can provide information relating to the rest of the world.

Their detailed knowledge, especially in relation to financial transactions can be a valuable resource for national accountants.

Change of ownership and involvement of a non-resident are deciding factors; physical movement and currency of a transaction are not.

Even before contemplating sector accounts, figures for GNI and gross national disposable income can be derived and should be made available as a standard part of the national accounts presentations

Chapter 12: Getting to gross national income

A. Introduction

12.1 Gross domestic product, GDP, is a key macro-economic indicator. It shows how much income is generated in an economy by the activity of production. However, it does not necessarily show how much income is available to that economy to spend on goods and services or to invest because some non-residents have claims on some of the income generated in production and some residents in the economy may have claims on income from production generated in another economy. Once GDP is adjusted for these flows to and from other economies, the result is gross national income, GNI. This is another key macro-economic indicator of major policy interest. The purpose of this

chapter is to show how GNI can be derived. It also lays down the pattern for compiling sector accounts to be used in the following chapters.

12.2 In chapter 6, the composition of GDP as the sum of compensation of employees, gross operating surplus, gross mixed income, taxes on production (including taxes on products and imports) less subsidies on production (including subsidies on products) was explained. The first step in analysing income is to consider which sector first receives each of these elements of income.

B. Allocating the income components of GDP to sectors

1. Compensation of employees

12.3 All compensation of employees paid by large non-financial corporations, financial corporations, general government and those medium-sized and small enterprises included in the residual sector of households and other are paid to households. It is possible, though, that some of these households are resident in other economies (the rest of the world). This will be the case for border and seasonal workers, for example. The amount of compensation of employees payable to households in the rest of the world is available from the balance of payments. Payments of compensation of employees paid by resident enterprises to resident households can be calculated as total compensation of employees paid by resident units (the item in GDP) less compensation of employees paid to non-resident households in the ROW.

12.4 Most tables throughout this chapter show schematically how the sector accounts record where payments come from and where they go to. For convenience in this and following tables contractions are used to denote the sectors as follows:

Large NFC: Large non-financial corporations,

FC: Large financial corporations (the contraction assumes the contribution of small financial corporations is negligible),

GG: general government,

Hh and others: Households, medium and small scale enterprises and non-profit institutional serving households

ROW: Rest of the world

Table 12.1: Allocation of compensation of employees by sectors

Item	Comes from						Goes to					
	Large NFC	FC	GG	Hh and other	ROW	Total	Large NFC	FC	GG	Hh and other	ROW	Total
Compensation of employees												
From domestic enterprises	X	X	X	X		X				R	X	X
From the rest of the world					X	X				X		X

12.5 Table 12.1 includes a breakdown of compensation of employees according to the sector that pays them. This is easy to produce. The large corporations are those that were identified in deciding how to compile production accounts. Out of these large financial corporations are easily identified. Government payments of compensation of employees are also readily available from the process of compiling GDP. All other compensation of employees shown in GDP is allocated to the group of households and others. These entries account for the first four columns in the table, shown as X. The item R is derived as a residual since total payments must equal total receipts and this is the only cell with an unknown value (the cells for corporations and government on the right hand side of the table must be zero since these units do not receive compensation of employees.)

2. Gross operating surplus and gross mixed income

12.6 The entries for these items are very straightforward. They are shown as coming from and going to the same sectors. Note that there is an entry for general government. This is equal to the figure for consumption of fixed capital for government. The derivation of estimates of consumption of fixed capital is discussed in chapter 14.

12.7 Gross mixed income is only applicable to the household and other sector and, like gross operating surplus, is recorded as coming from and going to the same sector.

3. Taxes on production

12.8 Each of the corporations sectors and the residual sector may pay taxes on production and these taxes are shown as going to general government.

4. Subsidies on production

12.9 For historical reasons, instead of subsidies being shown as coming from government and going to corporations, they are shown flowing in the reverse direction but with a negative sign. This allows composite items for taxes less subsidies to be computed easily.

5. Taxes on products

12.10 In order for GDP from the production side to be equal to the measurement from the expenditure side, taxes on products need to be included. This is the only item that appears in the flow accounts on one side of the account only. It appears as going to general government but with no entry on the comes from side.

12.11 Table 12.2 shows the allocation of these other components of GDP. The table also includes a sub-total row that relates to the entries in both tables 12.1 and 12.2. It shows the amount of GDP initially earned by each of the domestic sectors and the rest of the world. The total of the five entries shown is equal to GDP.

6. Subsidies on products

12.12 These are much less common than subsidies on production. If they occur, they are recorded in the same way as taxes on products but with a negative sign.

Table 12.2: Allocation of other components of GDP by sectors

Item	Comes from						Goes to					
	Large NFC	FC	GG	Hh and other	ROW	Total	Large NFC	FC	GG	Hh and other	ROW	Total
Gross operating surplus	X					X	X					X
		X				X		X				X
			X			X			X			X
				X		X				X		X
Gross mixed income				X		X				X		X
Taxes on products									X			X
Taxes on production	X	X		R		X			X			X
Subsidies on production	-X	-X		-R		-X			-X			-X
Allocation of GDP generated by sector							X	X	X	X	X	X

C. Property income

12.13 The next stage in deriving gross national income is to consider payments and receipts of property income. These consist of investment income (interest and dividends) and rent. For each item, a row will be created in a table similar to tables 12.1 and 12.2

1. Interest

12.14 As explained in describing the working of the financial industry in chapter 5, interest is paid in respect of government bills and bonds, corporate bonds, bank loans and bank deposits. Total interest payable on loans by, and deposits with, domestic banks must have been calculated during the process of deriving FISIM, as described in chapter 5. These amounts need to be allocated to sectors. Unlike the case of bonds, the interest rates may be quite different from one sector to another and even within a sector according to the purpose of the loan or nature of the deposit.

Bonds

12.15 For both government and corporate bonds, there are two sorts of interest payable. The first of these is an explicit payment of amounts promised at the time the bond (or a government bill) is issued. (These amounts are often described as “coupons”.) The amount payable does not vary according to who holds the bond though different bonds may offer different rates of interest. As will be seen in chapter 15, the unit issuing the bond will know both the

amounts of interest payable and which sector the bond holder is in. Thus the flows to each sector can be calculated by simple allocation.

12.16 Some bonds are issued at a discount, that is the amount paid when the bond is acquired is less than the face value of the bond, the amount that will be paid when the bond matures. The market price of the bond gradually increases over its life until immediately before maturity it is equal to the face value. The increase in value from one period to the next is treated as implicit interest. Further discussion on calculating these implicit flows is given in chapter 15.

12.17 The implicit interest by sector should be allocated by sector in the same way as the explicit interest is allocated.

Payable to non-residents

12.18 Many developing countries receive loans from international agencies such as the World Bank and must pay interest on these. (These institutions act functionally as non-resident banks in respect of their lending operations.) Figures for these amounts are available from the government accounts and are included in the balance of payments.

12.19 It is possible that some large corporations may also borrow from non-resident banks or other sources, especially branches of non-resident enterprises. Figures for these flows should be available from the compilers of the balance of payments.

Table 12.3: Allocation by sector of interest flows

Item	Comes from						Goes to					
	Large NFC	FC	GG	Hh and other	ROW	Total	Large NFC	FC	GG	Hh and other	ROW	Total
Interest on government bills and bonds												
Explicit			X			X	X	X		R	X	X
Implicit			X			X	X	X		R	X	X
Interest on corporate bonds												
NFC												
Explicit	X					X	X	X	X	R	X	X
Implicit	X					X	X	X	X	R	X	X
FC												
Explicit		X				X	X	X	X	R	X	X
Implicit		X				X	X	X	X	R	X	X
Interest on World Bank etc. loans			X			X					X	X
Interest paid by corporations to foreign banks and by branches to head offices	X	X				X					X	X
SNA interest on domestic bank loans	X		X	R	X	X		X				X
SNA interest on domestic bank deposits		X				X	X		X	R	X	X
Total interest flows	X	X	X	X	X	X	X	X	X	X	X	X

Receivable from non-residents

- 12.20 Interest will be receivable from abroad in respect of any bills and bonds issued by non-resident and held by residents. The central bank is likely to know whether any such payments are due; it is very possible that there are none. Any remaining amount of interest received from abroad is taken to be interest on bank loans granted by domestic banks to non-residents. For many countries, this figure may be negligible and in consultation with the balance of payments compilers, it may be agreed to ignore it.

Payable to resident banks

- 12.21 Interest on loans by domestic banks that is not payable from abroad must be payable by one of the four domestic sectors. For large corporations information on interest payable is available from their commercial accounts. For government the information is available from the government accounts. From these total amounts, interest payable to units in the domestic economy on bonds must be subtracted. What is left is interest payable by the large corporations and government to domestic banks. At this point we know the total receivable by banks on loans (from the FISIM calculations) as well as any amount due from non-residents, from large corporations and from government. What is not accounted for by these items must be the amount payable to domestic banks by the residual households and other sector.

Receivable from resident banks

- 12.22 The process is similar for interest receivable on deposits with domestic banks remembering that amounts of interest receivable by bond holders need to be excluded from total receipts of interest to derive receipts of interest from deposits with domestic banks. The balance of payments compilers should be able to advise whether allowance

should also be made for any interest received from deposits with non-resident banks.

Money-lenders

- 12.23 The discussion of the output of financial services covered money-lenders. It was noted that the services associated with these services may be very large relative to the level of loans made. In addition to the services, the SNA interest flows should also be recorded. Few if any money lenders will be large enough to be included in the financial corporations sector, as used in this publication to cover large corporations only. When money-lenders are incorporated but relatively small, or when they are informal, payments of SNA interest will be made from the household and other sector and received by the same sector so may be ignored. (This is not the same as ignoring the service charges, however.).
- 12.24 Bringing all these considerations together allows Table 12.3 to be compiled. An entry of X means that an entry is possible but this does not necessarily mean that there will be a significant flow in the cell. For example, there may be little if any interest payable to the household and other sector on corporate bonds. As before, an entry of R means this item is derived as the residual used to make the sum of all the “comes from” entries equal to the sum of the “goes to” entries in the same row.
- 12.25 At the bottom of the table there is a total row showing total interest flows for each sector.

2. Dividends

- 12.26 Large private corporations tend to be incorporated and have share holders. It is possible but not very probable that some of the enterprises in the household and other sector may also have shareholders but given the dominance of the large enterprises, any dividends associated with smaller

Table 12.4: Allocation by sector of dividends and rent

Item	Comes from						Goes to					
	Large NFC	FC	GG	Hh and other	ROW	Total	Large NFC	FC	GG	Hh and other	ROW	Total
Dividends												
NFC	X				X	X	X	X		R	X	X
FC		X			X	X	X	X		R	X	X
Reinvested earnings												
NFC	X					X					X	X
FC		X				X					X	X
Withdrawals from public corporations	X	X							X			
Rent												
On land	X			X					X			
On sub-soil resources	X								X			
Total dividends and rent	X	X		X		X	X	X	X	X	X	X

- incorporated enterprises can probably be ignored in the first instance. Only corporations pay dividends and these may be received by any sector though it is unlikely that government will have significant dividend income. From commercial and government accounts the receipts of dividends for these sectors will be shown in their accounts.
- 12.27 A special case of dividends is that of reinvested earnings. This applies only to foreign controlled enterprises, including branches, and to foreign direct investment enterprises. The SNA and BOP treat control of these enterprises as being equivalent to withdrawing some or all of the distributable earnings to the parent companies. This amount is then shown as being reinvested in the financial account.
- 12.28 Distributable earnings is the excess over what is needed to meet local requirements, including income tax. It is the amount that an enterprise could distribute as dividends without liquidating some assets or adding to them. The amount of distributable earnings that is treated as redistributed to the ROW depends on the extent of foreign ownership. For a wholly owned enterprise such as a branch, 100 per cent is redistributed. If a company is 80 per cent owned by a non-resident unit, 80 per cent of its distributable earnings is redistributed abroad and so on. As long as a non-resident unit owns at least 10 per cent of the voting shares, that proportion of the distributable income is treated as being redistributed. (Note that every single investor must own at least 10 per cent of the voting shares for this to be direct investment. In the unlikely case that six non-resident units each owned not be a direct investment enterprise even though over half of its shares were owned by non-residents.)
- 12.29 If a non-resident owns less than 10 per cent of shares, it is treated as portfolio investment and dividend payments are recorded in the same way as for resident share-holders, at the amounts actually paid.
- 12.30 The figures for dividends paid abroad (and received from abroad) will be available from the balance of payments accounts, distinguished between direct investment (control at least 10 per cent) and portfolio investment (control less than 10 per cent).
- 12.31 A third possible entry under dividends relates to withdrawals of income from quasi-corporations. In the case of public corporations, if they make a loss and the government covers the loss on a year by year basis, this is recorded as a subsidy on production. If the public corporation makes a profit each year and some is handed over to government, this is recorded as a withdrawal of income analogous to dividends in the case of an incorporated company. (If either the government payments to a public corporation or withdrawals from it are significantly in excess of an average year's loss or profit these are treated as injections or withdrawals of capital recorded in the financial account.)
- 12.32 In principle, withdrawals of income from other quasi-corporations should also be recorded as a form of dividends. However, in the simplified sectoral breakdown suggested in this publication, the withdrawals and receipts would both fall in the same sector, and so the residual for households and other so may be ignored.
- 12.33 As before, the figure for the receipts of dividends by the households and other sector is determined as a residual.

Table 12.5: Derivation of Gross National Income

Item	Comes from						Goes to					
	Large NFC	FC	GG	Hh and other	ROW	Total	Large NFC	FC	GG	Hh and other	ROW	Total
Compensation of employment												
From domestic enterprises	115	20	10	20		165				157	8	165
Gross operating surplus	55	12	-10	15		72	55	12	9	15		91
Gross mixed income				50		50				50		50
Taxes on production	4	1		1		6			6			6
Subsidies on production	-3					-3			-3			-3
Taxes on products									9			9
Allocation of GDP generated by sector							55	12	21	222	8	318
Compensation of employees from abroad					10	10				10		10
Total interest flows	5	15	12	8	3	43	2	19	3	10	9	43
Total dividends and rent	8	5			1	14	2	6	2		4	14
Balance of primary income	46	17	14	234	7	318						
Gross National Income (GNI)	46	17	14	234		311						
External balance of primary income					7	7						

3. Rent

12.34 The SNA makes a clear distinction between rent and rental. Rental is the amount paid for the service of making an asset available to another unit. Hire cars are one example, rented houses are another. The renter not only owns the asset but also takes responsibility for keeping it in working order and making it available on demand. Rent, on the other hand, is the payment made to the owner of an asset when the owner does not have a productive activity associated with the asset.

12.35 Land is the classic example. The landowner makes land available to the farmer and receives a payment in return either in cash or in kind. The landowner is not involved in the farming at all. Many farmers farm land they own themselves and in this case no rent is recorded in the accounts. The only entries for rent on land are those that are actually payable. Sometimes rents may be paid to government for the use of land, sometimes to private landlords but this may not be common.

12.36 The other instance when rent may be payable is in respect of mineral or other subsoil resources. A company with a permit to extract these resources must make a payment to the owner for doing so. In many countries, the owner will be government. The payment due may be a flat rate but is frequently a payment per unit of material extracted, a barrel of oil, a tonne of metallic ore or so on. These payments are often described as royalties. Sometimes they may be included in government accounts as taxes on production but in the SNA they are treated as rents.

12.37 If a government issues an annual permit to fish in national waters, this payment is also treated as rent. It is receivable by government and payable by the unit undertaking the fishing; in most cases where the item is significant, the fishing unit is likely to be non-resident

12.38 Table 12.4 shows entries connected with dividends and rents and contains another total row.

D. Gross National Income

12.39 It is now possible to put together table 12.5 leading to the derivation of gross national income (GNI). It contains the total rows from tables 12.2, 12.3 and 12.4. In addition there is one other entry.

12.40 In table 12.1, an entry was made for compensation of employees paid by resident enterprises to non-resident households. Equally any members of resident households who work in another economy will receive compensation of employees from the rest of the world. This figure is also available from the BOP.

12.41 Unlike earlier tables, table 12.5 contains numerical entries to facilitate the discussion that follows. The figures on the first row show the value of GDP, equal to 318. The second row shows compensation of employees from abroad as 10 coming from the rest of the world and going to household and other. The third row shows total interest flows of 43; the fourth row shows flows of 14 for dividends and rent. The figures for the balance of primary income are derived by adding the amounts going to each sector to the figures for GDP generated by the sector and deducting the figures for the amounts of property income coming from each sector. The figure for GNI is the sum of the resulting entries for the four domestic sectors, or 311. In order to show the complete balance of the table, the entry from the rest of the world account (value 7) is also included in the table.

12.42 There are two ways in which GNI can be derived, The simplest is to consider GDP (318), add in flows coming

from the rest of the world (14) and deduct the flows going to the rest of the world (21) and so reach 311. In order to do this, it is necessary only to have access to the balance of payments entries. The alternative is to proceed as described in this chapter and derive figures for the balance of primary incomes for each of the four sectors of 46, 17, 14 and 234 as shown, totalling 311.

12.43 Why is it worth undertaking this more extensive calculation? interest that must be paid on borrowing and dividends to shareholders and other owners of an enterprise are in effect costs of doing business. The table shows that the initial figure of 55 for non-financial corporations is augmented by property income of 4 but diminished by 13 to reach the figure of 46. It is normal that non-financial corporations pay out more property income than they receive. For financial corporations, the position is reversed. They receive 25 and pay out 20, changing the original figure of 12 to 17, a very large change in proportionate terms. For general government it is probable that the large interest payment is associated with past borrowing to fund consumption and capital formation. In this example, households receive rather more investment income than they pay out.

12.44 Apart from this greater understanding about how the flows of property income affect the resources available to the sectors, the other reason to undertake this analysis is to be able to proceed to look at disposable income and saving. This is the subject of the next chapter.

E. Is this the SNA?

- 12.45 The tables above give a picture of income as generated by production and redistributed by means of property income that is recognisably the same as in the SNA except for two simplifications. The first is the allocation of medium sized enterprises to the residual sector, households and other. While it is possible to consider asking for information on interest and property from these enterprises at the same time as production information, there will not be complete coverage of these, they will be sampled. Grossing up for non-response (or firms not sampled) and validating the results is most robust for figures such as output and intermediate consumption than it would be for property income flows. These flows are smaller and not necessarily stable from year to year. Nor are they necessarily similar for enterprises of similar size and other characteristics. Pursuing this path is not likely to be a good use of resources.
- 12.46 The second simplification concerns financial activities that result in redistribution among units or between different time periods for the same unit. These are insurance, pension funds and investment funds. For all of these the SNA recommends imputing income flows to the policy holder, future pensioner or investment fund share holder. For non-life insurance even the SNA advocates ignoring the imputed property income, all imputed property income is attributed to life insurance. In all three cases, the imputed income is used to pay service fees and the rest is necessarily invested in the same type of instrument in the financial account. In some economies the sums involved can be very large but unless there is a lot of activity in these areas, ignoring the imputed income saves a significant amount of effort at probably little cost to the quality of the results. If the activities are significant and if resources are available to treat these fully, detailed guidance on how to do this is given in chapter 17 of the 2008 SNA.

Key points to remember

This is not as difficult as it looks at first; most of the numbers needed are available from other statistical systems and the rest can be derived using accounting constraints.

Do not worry about the simplifications introduced initially; learn to walk before trying to run.

Take time to explain to users how they can exploit the results.

Chapter 13: Redistribution by government and consumption

A. Introduction

- 13.1 Before the balance of primary income by sector, as compiled in the previous chapter, is available to units to use for consumption, saving or investment another redistributive process is necessary; that associated with transfers. The most significant transfers in almost all economies are the taxes levied by government. Taxes related to production are covered in the production account so what remains to be covered are taxes on income and wealth.
- 13.1 After transfers have been taken into account, the amounts available to each sector are described as disposable income. It is disposable income that must be used for final consumption or saved.

B. Current transfers

1. Transfers involving government

- 13.2 As just noted, the most important type of redistribution is undertaken by government. This takes the form of payments to government by corporations and households of taxes on income and other recurrent taxes and payments by government to households of social assistance. The paragraphs from the SNA describing taxes on income, wealth etc. (the formal name for recurrent taxes other than taxes on production) are included below. Table 6.1 in chapter 6 where taxes on production are discussed, also shows how these taxes relate to the classifications in the GFS.
2. *Taxes on income*
- 8.61 *Taxes on income consist of taxes on incomes, profits and capital gains. They are assessed on the actual or presumed incomes of individuals, households, NPISHs or corporations. They include taxes assessed on holdings of property, land or real estate when these holdings are used as a basis for estimating the income of their owners. In some cases the liability to pay income taxes can only be determined in a later accounting period than that in which the income accrues. Some flexibility is therefore needed in the time at which such taxes are recorded. Income taxes deducted at source, such as pay-as-you-earn taxes and regular prepayments of income taxes, may be recorded in the periods in which they are paid and any final tax liability on income can be recorded in the period in which the liability is determined. Taxes on income include the following types of taxes:*
- a. Taxes on individual or household income: These consist of personal income taxes, including those deducted by employers (pay-as-you-earn taxes), and surtaxes. Such taxes are usually levied on the total declared or presumed income from all sources of the person concerned: compensation of employees, property income, pensions, etc., after deducting certain agreed allowances. Taxes on the income of owners of unincorporated enterprises are included here (GFSM2001, 1111; OECD, 1110);*
- b. Taxes on the income of corporations: These consist of corporate income taxes, corporate profits taxes, corporate surtaxes, etc. Such taxes are usually assessed on the total incomes of corporations from all sources and not simply profits generated by production (GFSM2001, 1112; OECD, 1210);*
- c. Taxes on capital gains: These consist of taxes on the capital gains (described as holding gains in the SNA) of persons or corporations that become due for payment during the current accounting period, irrespective of the periods over which the gains have accrued. They are usually payable on nominal, rather than real, capital gains and on realized, rather than unrealized, capital gains (GFSM2001, 1111-1113; OECD, 1120, 1220);*
- d. Taxes on winnings from lotteries or gambling: These are taxes payable on the amounts received by winners as distinct from taxes on the turnover of producers that organize gambling or lotteries, which are treated as taxes on products (GFSM2001, 1111-1113; OECD, 1120).*

8.62 *The calculation of taxes due on income frequently exempts some part of income from taxes; such exemptions being described as tax allowances. In addition, or as an alternative, a government may determine an amount that is treated as if it is tax already paid; such an amount is called a tax credit. In some cases, if the tax due is less than the tax credit, the balance may be payable to the beneficiary; this is called a payable tax credit. There is more discussion on tax credits in chapter 22.*

3. Other current taxes

Current taxes on capital

8.63 *Current taxes on capital consist of taxes that are payable periodically, usually annually, on the property or net wealth of institutional units, excluding taxes on land or other assets owned or rented by enterprises and used by them for production, such taxes being treated as other taxes on production. They also exclude taxes on property or wealth levied infrequently and at irregular intervals, or in exceptional circumstances (for example, death duties), such taxes being treated as capital taxes. They also exclude income taxes assessed on the basis of the value of the property owned by institutional units when their incomes cannot be estimated satisfactorily, such taxes being recorded under the previous heading, taxes on income. Current taxes on capital include the following:*

a. Current taxes on land and buildings: These consist of taxes payable periodically, in most cases annually, on the ownership of land or buildings excluding taxes on land or buildings rented or owned by enterprises and used by them in production including use for owner-occupied dwelling services (GFSM2001, 1131; OECD, 4100);

b. Current taxes on net wealth: These consist of taxes payable periodically, in most cases annually, on the value of land or fixed assets less any debt incurred on those assets, excluding taxes on assets owned by enterprises and used by them in production (GFSM2001, 1132; OECD, 4200);

c. Current taxes on other assets: These include taxes payable periodically, usually annually, on assets such as jewellery or other external signs of wealth (GFSM2001, 1136; OECD, 4600).

Miscellaneous current taxes

8.64 *Miscellaneous current taxes consist of various different kinds of taxes payable periodically, usually annually, of which the most common are the following:*

a. Poll taxes: These are taxes levied as specific amounts of money per adult person, or per household, independently of actual or presumed income or wealth. The amounts levied may vary, however, according to the circumstances of the person or household (GFSM2001, 1162; OECD, 6000);

b. Expenditure taxes: These are taxes payable on the total expenditures of persons or households instead of on their incomes. Expenditure taxes are alternatives to income taxes and may be levied at progressively higher rates in the same way as personal income taxes, depending upon the total level of expenditure. They are uncommon in practice (GFSM2001, 1162; OECD, 6000);

c. Payments by households to obtain certain licences: Payments by persons or households for licences to own or use vehicles, boats or aircraft and for licences for recreational hunting, shooting or fishing are treated as current taxes. Payments for all other kinds of licences (for example, driving or pilot's licences, television or radio licences, firearm licences, etc.) or fees to government (for example, payments for passports, airport fees, court fees, etc.) are treated as purchases of services rendered by governments. The boundary between taxes and purchases of services is based on the practices actually followed in the majority of countries in their own accounts (GFSM2001, 11451 and 11452; OECD, 5200);

d. Taxes on international transactions: These consist of taxes on travel abroad, foreign remittances, foreign investments, etc. except those payable by producers (GFSM2001, 1155 and 1156; OECD, 5127).

13.3 Another transfer that is important for many developing countries is international aid. This aid may be in the form of current or capital grants. Capital grants are those conditional on the acquisition of a fixed asset for example a building or a road system. These are discussed in chapter 15. Grants that can be used to fund recurrent expenditure are treated as current transfers and are usually referred to as current international cooperation.

13.4 One form of current international cooperation is in the form of technical assistance. The appropriate recording this can be rather complicated and is described in box 10.6 of the balance of payments manual reproduced below.

13.5 Even developing countries mainly in receipt of current international cooperation make annual contributions to international organisations such as the UN. These are recorded as transfers paid by government.

2. Other transfers involving government

13.6 Not all transfers payable to government are classified as taxes. For example, fines imposed for breaking the law from relatively small items such as parking or speeding fines through to significant payments to government for financial embezzlement, say, are included here.

13.7 Government may also make transfer payments to households, especially those treated as social assistance, for example to those who are disabled or otherwise unable to work.

13.8 The SNA treats social insurance also as transfers. These are payments resulting from the operation of insurance schemes whereby employees and their employers make

Box 10.6. Technical Assistance

Who provides technical assistance?

Technical assistance is provided by the entity that employs the personnel delivering the services (technical assistance personnel), which could include a non-government entity. The provider is not necessarily the same as the party that provides the funding.

What is the residence of the technical assistance provider?

Technical assistance provided by an entity resident in the donor economy should be recorded as an export of a service by the donor economy to the recipient economy.

How is technical assistance classified?

Technical assistance covers a wide variety of different services, including computing and business services, and should be classified by the nature of the service provided to specific services, if possible. Technical assistance provided by government, or an international organization, is classified as government services only when not classified to a specific service, and where the technical assistance personnel are employed by the donor government or an international organization.

How is technical assistance funded?

Technical assistance may be subject to payment by the recipient, or funded by a current or capital transfer from the donor.

When cross-border technical assistance is provided without a fee being charged to the recipient, a current or capital transfer for the value of the services provided is recorded. If a third party funds the costs of technical assistance, then the funds provided are routed through the recipient economy to the service (or technical assistance) providing economy.

In principle the value of the services provided is estimated by the costs incurred by the donor government (including any costs in the donor economy, recipient economy, or a third

economy) in providing technical assistance. In the absence of detailed information the value could be estimated by the salary paid to the technical assistance personnel plus any other identifiable costs (such as travel costs).

How are payments to technical assistance personnel classified?

If the technical assistance personnel are resident in the donor economy and employed by the donor government, payments to these technical assistance personnel are only recorded in the domestic accounts of the donor economy.

If the technical assistance personnel are resident in the recipient economy (or any economy other than the donor economy) but employed by the donor government, compensation of employees payable by the donor economy is recorded in the international accounts (paragraph 11.15).

If the technical assistance personnel are resident in the recipient economy, considered employed by the recipient government, but their salaries are paid by the donor government, a current transfer from the donor to the recipient economy (paragraph 12.47) is recorded in the international accounts, with the recipient government imputed as paying compensation to the resident technical assistance personnel in the domestic accounts of the recipient economy. In this case, the output of the technical assistance is attributed to the recipient economy.

If the technical assistance personnel are resident in the recipient economy but are not considered to be in an employer-employee relationship with the donor or the recipient entity (see paragraphs 11.11–11.12) then payments to them are classified as payments for services, not the compensation of employees.

If the technical assistance activities in the recipient economy are such that a branch is recognized (paragraphs 4.26–4.28) and the technical assistance personnel are employed by the branch, payment of compensation by the donor economy is rerouted through the branch as equity.

Source: BPM6

contributions which are intended to create funds that are used to pay pensions in retirement and possibly health care costs. This is a very complex part of the full SNA and because many small countries may not have such schemes it is omitted from this publication. Full details can be found in the 2008 SNA in chapter 17.

- 13.9 Inspection of the government accounts will show whether there are significant transfers other than taxes receivable and payable by government that should be included in the accounts.

3. Transfers involving NPISHs

- 13.10 In some countries transfers from abroad received by non-profit institutions serving households maybe significant. If these are established in response to natural disasters, they may be sufficiently important to be treated as a separate

sector. In such cases non-profit institution serving households carry out the sort of functions that might be undertaken and government in more affluent countries.

4. Transfers involving households and non-residents

- 13.11 A further important transfer to and from households are those of personal remittances. Often when family members work abroad for a longish period of time, they may send money home on a regular basis. They may also send goods or bring goods with them when they visit. These are also included in personal remittances. The sender may not be a family member, but could be somebody with cultural ties to the country or simply someone motivated by charitable intentions. It also the case that flows may be made from developing countries, for example from some countries in West Africa and in the Middle East.

Table 13.1: Deriving disposable income

Item	Comes from						Goes to					
	Large NFC	FC	GG	Hh and other	ROW	Total	Large NFC	FC	GG	Hh and other	ROW	Total
Gross National Income (GNI)							46	17	14	234		311
Taxes on income	4	2		8		14			14			14
Social assistance			3			3				3		3
Current international cooperation												0
Receivable					5	5			5			5
Payable			1			1					1	1
Transfers involving NPISHs					6	6				6		6
Personal remittances						0						0
Receivable					7	7				7		7
Payable				1		1					1	1
Total transfers	4	2	4	9	18	37			19	16	2	37
Disposable income	42	15	29	241	-16	311						
National disposable income	42	15	29	241		327						
External balance of secondary income					-16	-16						

5. Other transfers between residents

non-profit institutions, omitting them will not affect other figures in the accounts.

13.12 There may be other transfers within the economy. For example, households may make donations to charities or religious institutions or to other households. As long as both the institutions concerned in each transaction are within the “residual sector” encompassing households and

13.13 It is also possible that government or large corporations may make payments to NPISHs. If they do so, information on them is available and they should be recorded here. Usually any such items will have attracted publicity and so the compiler of the accounts should know to look for them.

C. Disposable income

13.14 Table 13.1 shows how the balance of primary income is converted to disposable income. Information on the totals for all the foregoing types of transfers and many of the sectoral entries are available from GFS or the balance of

payments. This allows the figures for the residual household and other sector to be calculated. Disposable income is calculated as the sum of the balance of primary income (moved from the left hand side of table 12.5 to the

Table 13.2: Derivation of saving by sector

Item	Uses						Resources					
	Large NFC	FC	GG	Hh and other	ROW	Total	Large NFC	FC	GG	Hh and other	ROW	Total
National disposable income							42	15	29	241		327
Final consumption expenditure									38	217		255
Saving	42	15	-9	24		72						
Current external balance					5							
External balance of goods and services					14							
External balance of primary income					7							
External balance of secondary income					-16							

right hand side of table 13.1) plus transfers received less transfers paid. The sum of disposable income across all the domestic sectors is referred to as national disposable income. In addition, the item for the external balance of secondary income from the rest of the world is also shown.

- 13.15 Note that normally corporations do not pay transfers other than taxes though they may on occasion make contributions to NPISHs. They do not receive transfers.

- 13.16 Transfers within households are not recorded because both payments from one household and receipts by another would be recorded and the net effect cancels. As long as NPISHs are included in the same sector as households, this is true of contributions to them by households and payments by them to households. If it were possible to disaggregate the household sector, for example to show urban and rural household separately, such transfers should be shown and could be important for policy analysis.

D. Final consumption

- 13.17 As noted previously, disposable income can only be spent on final consumption or saved. Only general government and households undertake final consumption, so for corporations saving is equal to disposable income. The figures for final consumption appearing in table 13.2 are exactly the same as those appearing in the expenditure estimate of GDP described in earlier chapters.

- 13.18 Although the SNA shows final consumption expenditure as a single item it is useful to give a breakdown by type of expenditure as explained in chapter 6. Another way of presenting the information is to break down government consumption into individual and collective consumption. Since all household final consumption expenditure is individual by nature, the total of individual consumption can be calculated as the sum of individual consumption by government plus that of households. The advantage of doing this is to help in international comparisons where the degree of involvement of government in providing health and education services, for example, varies from country to country and possibly within a country over time.

- 13.19 Table 13.2 shows the derivation of saving by sector. This table uses the more familiar SNA terms of resources and uses in place of “goes to” and “comes from” but the principal of deriving saving is the same; it is the difference between items on the right had side (in this case only disposable income) and those on the left (in this case only final consumption expenditure and that only for general government and households.)

- 13.20 Looking at which sectors save, and how much, gives a key insight into how the economy is operating. Of particular importance is the figure for government, which is often negative. The proportion of saving to household disposable income (the savings ratio for households) is also widely used by analysts.

- 13.21 The figure from the rest of the world account that corresponds to domestic saving is the current account balance. It is the sum of three items; the external balance of goods and services, the external balance of primary income and the external balance of secondary income.

E. Is this the SNA?

- 13.22 There are some transfers described in the SNA that have been omitted here. One case is that of non-life insurance premiums and claims. If these are paid to and received from the rest of the world, there will be data for them in the balance of payments and they should be included as an extra line. Otherwise it may be possible to ignore them. The method of determining the value of the service charge levied by insurance corporations means that total premiums paid are normally equal to total claims. They will only have an impact on saving by sector if the balance of premiums and claims, sector by sector, is very unequal. It may not be easy to allocate premiums and claims by sector, so assuming that the effect on saving by sector is negligible may be a reasonable first position.

- 13.23 It was noted in the previous chapter that the suggestion here is to ignore the complications of pension schemes. This simplifies the derivation of saving as compared with the full SNA. An intermediate position, especially if pensions are only paid by government, is to include pension contributions payable by households to government and pension benefits as payable by government to households in table 13.1

- 13.24 The SNA also describes the recording of lotteries and gambling. This mainly concerns transfers within households though it is possible that there are transfers with the rest of the world when residents participate in lotteries run by non-residents and vice versa. Again, if this is significant there will be data in the balance of payments that can be used to augment table 3.1.

Key points to remember

All the information necessary to record transfers can be derived from what is readily available from either GFS or BOP.

Remember that total transfers receivable must be equal to total transfers payable.

The ratio of saving to disposable income for households and government is of key policy interest.

Chapter 14: Capital formation and natural resources

A. Introduction

- 14.1 There are four accounts that are relevant for the recording of non-financial assets. The first is the capital account. It shows how saving is used to finance the acquisition of non-financial assets. It would be unduly restrictive if a unit could only undertake capital formation if it had sufficient savings and would leave units with savings and no desire to undertake capital formation in an unsatisfactory position. Two other entries in the account explain how financial resources are redistributed between sectors. These items show sources and uses of funding for capital formation. They are capital transfers and net lending or borrowing.
- 14.2 The second account to consider is the balance sheet, which shows the stock of assets at the beginning and end of the period. This shows the net worth of a unit, sector or the economy as a whole. Net worth is defined as the total value of assets less the total value of liabilities. It measures wealth rather than income.
- 14.3 In addition to the capital account and balance sheet two further accounts are necessary; the other changes in the volume of assets and the revaluation account. The first of these accounts contains any changes that are not the result of transactions or of changes in price. An example is of losses due to natural disasters. Another is the value of natural resources extracted in the course of production in the period. The revaluation account captures holding gains and losses on assets, which arise due to changes in prices.
- 14.4 Once these two accounts are in place, it is possible to check that the values of the non-financial assets in the opening balance sheet plus the changes in the capital account plus the changes in the other volume changes account plus those in the revaluation account produce the figures for the closing balance sheet. This is thus another, and very powerful, way of checking that the values of capital formation are plausible. Each of these accounts is discussed in turn.

B. The capital account

- 14.5 The structure of the capital account is simple and is shown in table 14.1. It contains saving, entries for capital transfers, acquisition less disposals of capital formation, acquisition less disposal of non-financial assets that are not themselves the result of production, and net lending or borrowing.

1. Capital transfers

- 14.6 Capital transfers are unrequited transfers from a unit in one sector to a unit in another or between a resident unit and a unit in the rest of the world. They are distinguished from current transfers because they are conditional on the fact that they are dependent on either the acquisition or disposal of an asset. Two main sorts of capital transfers are capital taxes and investment grants. A third type of capital transfer may be especially important for developing countries. This is the cancellation of debt by mutual agreement. The relevant paragraphs from the SNA describing these forms of capital transfers are shown below.

3. Capital taxes

10.207 *Capital taxes consist of taxes levied at irregular and infrequent intervals on the values of the assets or net worth*

owned by institutional units or on the values of assets transferred between institutional units as a result of legacies, gifts inter vivos or other transfers. They include capital levies and taxes on capital transfers:

a. Capital levies consist of taxes on the values of the assets or net worth owned by institutional units levied at irregular, and very infrequent, intervals of time. Capital levies are treated as exceptional both by units concerned and by the government. They may be payable by households or enterprises. They include betterment levies: that is, taxes on the increase in the value of agricultural land due to planning permission being given by government units to develop the land for commercial or residential purposes (GFSM2001 tax code 1133; OECD 4500));

b. Taxes on capital transfers consist of taxes on the values of assets transferred between institutional units. They consist mainly of inheritance taxes, or death duties, and gift taxes, including gifts inter vivos made between members of the same family to avoid, or minimize, the payment of inheritance taxes. They do not include taxes on

sales of assets as these are not transfers (GFSM2001 tax code 1134; OECD 4300).

4. Investment grants

10.208 *Investment grants consist of capital transfers made by governments to other resident or non-resident institutional units to finance all or part of the costs of their acquiring fixed assets. The recipients are obliged to use investment grants for purposes of gross fixed capital formation, and the grants are often tied to specific investment projects, such as large construction projects. If the investment project continues over a long period of time, an investment grant in cash may be paid in instalments. Payments of instalments continue to be classified as capital transfers even though they may be recorded in a succession of different accounting periods.*

10.209 *Investment grants in kind consist of transfers of transport equipment, machinery and other equipment by governments to other resident or non-resident units and also the direct provision of buildings or other structures for resident or non-resident units. These may be constructed by enterprises owned by the donor government or by other enterprises that are paid directly by the donor government. In such cases, a capital transfer in cash is usually recorded followed by purchase of the items actually transferred in kind. Exceptionally, if the transfer is of an existing asset, and the recipient is resident, the transfer of ownership of the asset may be recorded as negative capital formation by government and positive capital formation by the recipient, but a capital transfer is still also recorded so that the balance sheet of both parties correctly reflects the change in net worth that has taken place.*

5. Other capital transfers

10.210 *Other capital transfers consist of all capital transfers except capital taxes and investment grants. One notable category included here is the cancellation of debt by mutual agreement between the creditor and the debtor. Such a cancellation is treated as a capital transfer from the creditor to the debtor equal to the value of the outstanding debt at the time of cancellation. It includes, but is not confined to, the cancellation of debt owed by non-residents to residents, and vice versa.*

10.211 *However, the unilateral writing off of debt is not a transaction between institutional units and therefore does not appear either in the capital account or the financial account of the SNA. If the creditor accepts such a write off or default, it should be recorded in the other changes in the volume of assets account of the creditor and the debtor. Provisions for bad debt are treated as bookkeeping entries that are internal to the enterprise and do not appear in the SNA except in the case of expected losses on non-performing loans, which appear as memorandum items in the balance sheets. The unilateral repudiation of debt by a debtor is also not a transaction and is not recognized in the SNA*

2. Capital formation

Fixed capital formation

14.7 In previous discussion, fixed capital formation was considered only as a positive entry. However, it is possible to have sales of second-hand capital to other sectors to use as capital, to households for use as consumption expenditure (for example the sale of cars by hire car companies), to another enterprise as scrap or to the rest of the world. Properly speaking therefore this entry should be acquisition less disposal of capital. It is possible (if unlikely) that in a given period, fixed capital formation may be negative if the value of existing assets sold for uses other than as capital exceeds the value of new capital items acquired. Across all sectors of the economy, the figure for acquisition less disposal of gross fixed capital formation matches that appearing in the expenditure measure of GDP.

14.8 Information on gross fixed capital formation should be obtained from an enterprise at the same time as information for the production account is collected. It is useful to distinguish at least agricultural stocks, building, other construction, plant and machinery and vehicles. The SNA includes other headings including intellectual property products and military weapons systems. If any of these important they should also be included.

Changes in inventories

14.9 The figures for changes in inventories while not part of fixed capital, are part of capital formation and must be included in the capital account also. These should be collected and identified as part of the process of collecting information from enterprises leading to the compilation of production accounts. A distinction should be made between work-in-progress, finished goods, materials and supplies, and goods for resale.

Valuables

14.10 The SNA allows for a category of capital formation called valuables. These are items that have been produced but are not used in production. They are simply held as stores of value in the expectation that their value may increase or at least not decrease. For many small developing countries, there may be nothing to record here. One example where an entry may be necessary is if banks other than the central bank hold gold.

Non-produced assets

14.11 As well as items that have been produced and represent capital formation, there are items that also represent non-financial assets but which do not result from a production process. The obvious example is land and other natural resources. Transactions in these assets appear in the capital account when they are bought and sold between units in different sectors of the economy. By convention, non-resident units can never hold natural resources belonging to another economy, other than the exceptional case of land bought for a new embassy, for example.

- 14.12 A further item relates to contracts, leases and licences. These exist when there is a legal agreement that gives rise to benefits to one or both parties to the agreement because the price of a good, service or asset specified in the contract differs from the price that would otherwise exist and where the benefits can be sold to third parties. A special case where such licences may be relevant for developing countries is the issue of commercial fishing licences. As noted in chapter 12, if the licence is for one year only the payment is recorded as rent. In some circumstances, as explained in section Q of chapter 17 in the 2008 SNA, a licence valid for several years could in some circumstances be treated as the sale of an asset by general government. However, it is most probable that some or all of the conditions in paragraph 17.319 are met, and so in most cases it will be appropriate to treat all commercial fishing licences, even those valid for more than one year as payments for rent to be recorded on an accrual basis year by year.
- 14.14 This item is of key importance both arithmetically and economically. Arithmetically, it can be used to validate the quality of the whole accounting system. Economically, it shows how saving in one sector is made available to another for purposes of investment and, most importantly, how far financial resources come from or go to the rest of the world.
- 14.15 In terms of the accounting structure of the SNA, net lending and borrowing is the final link between the transactions recorded for the domestic economy and the balance of payments. Any net lending by domestic sectors not accounted for by borrowing from other domestic sectors must be lending to the rest of the world, and similarly for borrowing. Net lending or borrowing to or from the rest of the world is also the item that shows the net position with the rest of the world once all items, from imports and exports, through the income flows up to and including capital transfers are aggregated.
- 14.16 Economically, knowing the role of the rest of the world in net lending or borrowing is key policy information especially for countries with fixed exchange rates
- 14.17 Seeing how lending and borrowing is brought about across the economy is the business of financial institutions and is described in the next chapter.

3. Net lending or borrowing

C. Consumption of fixed capital

1. Gross and net

- 14.18 The most commonly used aggregates of the SNA are GDP and GNI. In both cases the G stands for gross meaning before a deduction for the consumption of fixed capital is made. The 2008 SNA, like earlier versions, stresses that ideally net measures, of domestic product (NDP), national income (NNI) and other balancing items should be preferred to gross measures. The rationale for this is as follows.
- 14.19 The cost of capital goods is not part of intermediate consumption and so operating surplus is higher than it would be if the items were treated as intermediate consumption. The reason for not treating them as intermediate consumption is that the cost should not be attributed to the year in which they are acquired but across

Table 14.1: Deriving net borrowing/net lending

Item	Changes in assets						Changes in liabilities and net worth					
	Large NFC	FC	GG	Hh and other	ROW	Total	Large NFC	FC	GG	Hh and other	ROW	Total
Saving/current external balance							42	15	-9	24	5	77
Capital transfers												
Capital taxes									2	-2		0
Investment grants												
Government to public corporations							3		-3			0
From ROW to government									7		-7	0
Gross fixed capital formation	47	4	12	8		71						
Changes in inventories	6					6						
Net lending/borrowing	-8	11	-15	14	-2	0						

all years in which they are used in production. The appropriate deduction to be made year by year is the item consumption of fixed capital.

14.20 Deducting consumption of fixed capital from measures of income allows the SNA definitions of income to agree with the economic idea that income is the amount you can consume in a period and still be as well off at the end as at the beginning. If no allowance is made for the deterioration of fixed capital, the measure of income is too high. This is the first reason why the concept of consumption of fixed capital is important in the SNA.

14.21 A second reason is that when balance sheets of non-financial assets are compiled, the decline in the value of assets due to their use in production is essential to get from values in the opening to values in the closing balance sheet. Balance sheet information is key to studies of productivity.

14.22 A third reason is that consumption of fixed capital figures are needed to estimate government output in the production account. For government, the value of production is estimated as the sum of the costs incurred. As mentioned in paragraph 14.17, it would not be appropriate to attribute the whole cost of capital goods to the year when they are acquired, the costs must be spread over the whole period during which they are used. This is done by treating the consumption of fixed capital as the appropriate amount to include year by year as one of the costs making up the value of production. The figures constitute gross operating surplus for government. (By assumption, the net operating surplus of government is zero.)

14.23 A fourth reason is that it is of key policy interest to know whether new capital formation is sufficient to replace the using up of existing capital (as measured by the consumption of fixed capital) and by how much. At certain times, new capital formation may not be as great as consumption of fixed capital. When this is so, the capital base of the country is declining, often with a decline in the efficiency of its infrastructure, with serious consequences for the potential for future development. Thus net fixed capital formation (equal to gross fixed capital formation less the consumption of fixed capital) is of as great importance as the gross measure.

14.24 Within the capital account, as just described, if saving and capital formation are both measured gross, the derivation of net lending or borrowing will be correctly derived without the need to include consumption of fixed capital in the account. However, the analytical basis of the role of capital in the economy is seriously impaired by its exclusion.

14.25 Before discussing how estimates of consumption of fixed capital might be made, it is useful to review briefly some of the theoretical considerations behind the concept of consumption of fixed capital.

2. The theory behind consumption of fixed capital

14.26 If an item costs 100 and is expected to last 5 years, it is not treated as intermediate consumption at the moment it is acquired. If it were, the figures for operating surplus in the

year of acquisition would be depressed by some costs that should more properly be attributed to the remaining four years during which the item will be used.

14.27 An initial reaction might be to say that the appropriate way to treat the costs would be to allocate 20 to each of the 5 years. In fact this is what commercial accountants call depreciation and is the figure that might appear in commercial accounts. (Tax regulations mean that the commercial depreciation figure might not be derived in such a simple way.)

14.28 There are two reasons why national accountants reject the use of commercial accounting measures of depreciation for the cost of consuming an asset. The main reason has recourse to economic theory and considers both what the asset contributes to production at different points in its life and how this contribution should be valued at different points in time. The second is related to inflation.

14.29 Putting the problem of inflation on one side for the moment, it is easiest to explain the theoretical considerations by means of two highly simplified examples.

The simplest case

14.30 Suppose rather than buying the asset for 100 outright, a loan had to be taken from the bank. Each year, 20 has to be repaid to the bank as well as interest on the outstanding amount. Suppose the interest rate charged is five per cent (for simplicity ignore the FISIM complication at this point). Then the cost in the first year is 25, in the second is 24, in the third is 23, in the fourth 22 and in the last is 21. In total therefore, the asset must earn 115 in order to cover its initial cost of 100 plus the 15 that is the value of interest that a loan of 100 would attract over five years. Even if the unit buying the asset does not need to take out a loan, if the owner did not buy the asset, he could put the 100 into a bank deposit and earn 15 on it over the five years. The figure of 15 is sometimes called the return to capital and sometimes the opportunity cost of money. It is the fact that it is hoped that the asset will bring in 115 over five years rather than just the 100 that means the asset is more productive than labour. The 115 is captured in gross operating surplus and the 15 in net operating surplus.

14.31 The idea that the contribution of the asset to production over the five years is equal to its initial cost of 100 is thus wrong; it has to earn 115. Economic theory states that in a perfectly functioning market, the value of the asset is equal to the sum of future contributions to production suitably discounted according to how far distant these are. The great advantage of this proposition is that it not only explains the value of the asset when acquired (which can in any case be set equal to its cost) but also at any point in its life. This is particularly important because for most fixed assets there is sufficiently little trade in second hand assets that the value of second hand goods cannot be determined by observation of prices.

14.32 Once it is possible to determine the value of an asset at two points in time, it is possible to take the difference between them and describe this as the decline in the value, or consumption, of fixed capital. Once the amount the asset

contributes to production is identified with gross operating surplus, the excess over consumption of fixed capital, net operating surplus is a good measure of income in that it does not depend on a decline in net wealth caused by the decrease in the value of the asset.

A more realistic case

- 14.33 The simple example above assumes that the asset is equally productive over the whole of its life and then suddenly stops, rather like a light bulb. Probably, though, instead of contributing 20 to production in each year, it becomes slowly less efficient so that in fact over the five years it may contribute, say, 30, 25, 20, 15 and 10. This will affect the level of contributions to gross operating surplus in each year. It will also affect the amount of consumption of fixed capital in each year though the sum over the five years will still be 100.
- 14.34 The major difference between commercial depreciation and consumption of fixed capital can thus be characterised as the difference between writing off a past cost on a purely accounting basis and allowing for the decline in the value of asset based on present and future contributions to production.

Inflation

- 14.35 So far the impact of inflation has not been considered. If prices rise steadily, each year the asset will contribute more to gross operating surplus not because it is becoming more efficient but simply because of inflation. In this way, if not corrected, a degree of holding gains will creep into operating surplus. In order to avoid this, the values of assets in the balance sheet are changed not only by the

consumption of fixed capital in each year but also by the change in value due only to price effects.

- 14.36 This allowance for the effect of inflation is also a difference with commercial depreciation.

3. Estimating consumption of fixed capital

- 14.37 Chapter 20 of the 2008 SNA elaborates how this theory of the value of assets can be used to determine not only estimates of consumption of fixed capital but also how to account for other costs associated with fixed assets. That chapter is itself a highly simplified version of a great deal of work that has been done in this area in recent years. More rigorous and more detailed information can be found in Organisation for Economic Co-operation and Development (2001): *Measuring Productivity: Measurement of Aggregate and Industry-level Productivity Growth*; OECD, Paris. Available from: <http://www.oecd.org/dataoecd/59/29/2352458.pdf> and in Organisation for Economic Co-operation and Development (2009): *Measuring Capital: (revised version)* OECD, Paris. Also available from: [http://www.oilis.oecd.org/oilis/2009doc.nsf/LinkTo/NT00000962/\\$FILE/JT03258144.PDF](http://www.oilis.oecd.org/oilis/2009doc.nsf/LinkTo/NT00000962/$FILE/JT03258144.PDF)
- 14.38 Table 14.2 shows a breakdown of gross fixed capital formation by type of asset and by sector. Estimates of consumption of fixed capital are included, by type of asset. For inclusion in the full set of accumulation accounts, these need to be allocated by sector but it is easy to derive acceptable estimates assuming the proportion of consumption of fixed capital per asset type is the same for all sectors. (In reality because the level of aggregation is high, this may not be strictly the case.)

Table 14.2: Estimates of consumption of fixed capital by asset type

	Large NFC	FC	GG	Hh and other	ROW	Total	Consumption of fixed capital
Gross fixed capital formation							
Housing	2			4		6	2
Other buildings and structures	19	3	4	1		27	13
Plant and machinery	13	1	2			16	12
Vehicles	9		3	1		13	8
Agricultural products	5		3	2		10	4
Total gross capital formation	48	4	12	8		72	39
Consumption of fixed capital	27	1	8	3		39	
Net fixed capital formation	21	3	4	5		33	

D. The balance sheet

14.39 A balance sheet is useful for three reasons.

- a. It shows net worth of a unit, sector or the economy as a whole and how this is changing over time.
- b. It is the basis of studies in sustainability and productivity. Whether or not national accountants undertake these studies, themselves, they are likely to receive increasing demands for this data.
- c. Information on the stocks of non-financial assets is necessary in order to compile the consumption of fixed capital as described above.

convert all the entries in the time series to a common price base. This is necessary in order to be able to add the values in different years in order to come up with a figure of the average level of capital formation in that type of asset. (Obviously, figures from different years cannot be added without a price adjustment.) Once the average is available, multiply it by the number of years machinery is thought to last (5 is suggested above). This is an estimate of the initial value of machinery capital which should then be expressed in the prices of that initial year. The estimate is very approximate but will quickly improve as from this initial estimate the additions to the value and deductions from it are made. Indeed, five years later, none of the initial estimate will remain as it will all have been superseded by later information.

1. Compiling a balance sheet

14.40 It is clear that in order to come up with estimates of consumption of fixed capital, it is necessary to have information on the stock of fixed capital assets, or in other words a balance sheet. The first thing to note is that a balance sheet of fixed assets may be constructed in one of two ways. It may show all the fixed assets owned by non-financial corporations, all those owned by financial corporations, all those owned by government and all those owned by other units. Alternatively, it may show all the agricultural assets owned by all sectors in the economy, all building owned by all sectors and so on. Initially we will concentrate on a balance sheet disaggregated by type of asset rather than the sectoral status of the owner.

14.41 The question arises of how best to derive values of assets for the balance sheet. It is possible to consider conducting a survey asking the value of capital stock. However, this is not generally seen as being practical because of the difficulty in assessing the results. The alternative, once an initial estimate of the stock of an asset is established, is to keep this up to date by deducting assets retired from the stock because they are exhausted and adding new ones. (Deductions also have to be made for the gradual using up of assets through consumption of fixed capital, other changes in volume and any changes from changes in prices but these are considered later).

2. Fixed capital

14.42 The question is then how to establish an initial stock of capital? This is best done for one type of asset at a time. Consider machinery for example. Suppose it is estimated that most machinery lasts on average for 5 years. (The figure of 5 years is arbitrary and can be changed in the light of experience. In developing countries, assets are usually kept in service for longer than in developed countries.) Next, draw up a spreadsheet with as long a time series of new investment in machinery as is available. Using an appropriate price index (with a single base year this time)

14.43 This exercise needs to be repeated for each class of fixed capital being considered. The suggested minimum is for agricultural products, dwellings, other construction, machinery and vehicles.

3. Inventories

14.44 Estimating the level of goods in inventories is not easy and some approximation is inevitable. Because changes in inventories are always relative to the previous level and can be either positive or negative, simple accumulation over a period of time will not lead to a level of inventories. One possible way of finding basic information is to approach a contact in a large enterprise to ask for help. This is probably best done in person or by phone rather than by letter, making it clear that the information is intended only to be indicative. For example, suppose a large retailer has provided information on the amount of sales in a year and the cost of the purchases. If this cost is 5 200, then on average the cost is 100 per week and if the retailer says he expects on average that goods spend three weeks in inventories prior to sale, the level of inventories must be of the order of 300. Such an approach can be tried for material and supplies and inventories of finished goods as well as for goods for resale; it is less satisfactory for work-in-progress. Assuming that the industry where this is most of a problem is construction, and that it is the largest enterprises that will be affected, one approach is to ask someone in the industry, again on an informal basis, to give an estimate of how the annual figure of production breaks down into the value of work started last year but completed this year, work started and completed in this year and work started but not completed in the year. The change in work-in-progress in the year should be the difference between work started last year but not completed and work started this year but not completed. There is no reason for the proportion of work not completed in a year to be constant from one year to another but this sort of information on the amount of unfinished work can help make an estimate of how much of the year's output might, over the long run, be incomplete at the end of the year.

E. Other changes in the volume of assets

14.45 Apart from the factors affecting natural resources, discussed below, the main possibility for an entry in the other volume changes of assets account affecting capital formation is the effect of a natural disaster. Floods,

earthquakes and fires all have the potential to make capital formation unusable and the stock of such capital needs to be reduced accordingly.

F. The revaluation account

14.46 The revaluation account shows the impact of rising prices on the value of the stock of assets. It is theoretically possible for price changes to decrease the value of stocks,

also and this has happened for several years now for stocks of computing equipment and some other electronic goods.

G. Accumulation accounts by sectors

14.47 Although much of the discussion above is in terms of accumulation accounts prepared according to the nature of the asset, it is possible to present the information by sector also. Net lending or borrowing is needed by sector for the financial account as discussed in chapter 15. It is also needed to derive complete balance sheets including both non-financial and financial assets.

14.48 The discussion above supposes that most elements of the capital account are prepared on a sectoral basis but that consumption of fixed capital may be prepared initially on a type of asset basis. This needs converting to a sectoral basis by allocating the estimates for consumption of fixed capital to sector in the proportion that the type of asset concerned is allocated.

Table 14.3: Example of a set of accumulation accounts for non-financial assets

	Large NFC	FC	GG	Hh and other	ROW	Total
Opening balance sheet						
Fixed capital	79	8	22	16		125
Inventories	23					23
Subsoil deposits			87			87
Capital account						
Fixed capital	47	4	12	8		71
Consumption of fixed capital	-30	-1	-5	-3		-39
Inventories	6					6
Other changes in volume of assets						
Inventories	2					2
Extraction of sub-soil deposits			-9			
Revaluation						
Fixed capital	4	1	2	2		9
Inventories	3					3
Subsoil deposits			12			
Closing balance sheet						
Fixed capital	100	12	31	23		166
Inventories	34					34
Subsoil deposits			90			

14.49 Table 14.3 shows an example of how a set of connected balance sheets can be prepared. The first set of entries correspond to the stock of assets in the opening balance sheet. The following entries are exactly those that appear in the capital account explaining how net lending or borrowing is derived, as in table 14.1. In this case there are entries for gross fixed capital formation and changes in inventories but none for valuables or contracts, leases and licences. The amounts of consumption of fixed capital though do have to be shown, with a negative sign, since they are part of the explanation of the change in the value of assets between the beginning and end of the accounting

period. The next section contains other volume changes in assets. In this example it is assumed there are no entries affecting fixed capital. There is, though, an entry for inventories that represents an exceptional loss perhaps due to a natural disaster. (Remember that regular losses from inventories are taken into account when calculating withdrawals from inventories for use in compiling the production account.) The next entries are revaluation entries that show the effect of increasing prices on the stock of fixed capital and of inventories. The closing balance sheet entries at the bottom of the table are derived simply by adding the entries in the four preceding sections.

H. Natural resources

14.50 The 2008 SNA recommends that the balance sheet include information on natural resources. As noted when discussing forestry and fisheries, for example, it may be very useful to have information about whether these resources are being used sustainably or not and whether any illegal logging or fishing is taking place.

14.51 Although the SNA recommends placing a monetary value on natural resource stocks, this is not easy and a good starting place is to include information in volume terms that goes quite a long way towards answering important environmental questions.

14.52 The land area of a country is usually constant from one year to another. (Singapore is an example of a country where the land area increases due to active reclamation of land from the sea.) The amount under buildings, used for crops (arable land) or under forests may alter from year to year as cities expand and people settle on land previously used for crop production or forests are felled to provide more land for cultivation. It is not the task of the national accountant to collect such data but if it is available (perhaps from the ministry of agriculture) it could be useful to include it with other information in the balance sheet.

14.53 Sub-soil deposits are also of considerable interest to government since the extraction of valuable minerals may represent a considerable share of exports. The volume of deposits will probably be known at the start of the year. During the year this volume will alter for a number of reasons.

- a. New deposits may be found, expanding the total available.

- b. Technical developments (or price changes) may mean that deposits that were previously uneconomic to extract become economic leading in effect to an increase in reserves. Conversely, new information or a price fall may make some previously economic deposits uneconomic constituting an effective fall in reserves.

- c. Extractions during the year will reduce the level of stocks remaining at the end of the year.

14.54 In the case of natural forests, fish stocks and other biological resources, the stock levels will increase by means of natural growth and reproduction but decrease according to off-take for use by people.

14.55 There may be other changes in the amount of natural resources available during the year. The possibility of illegal logging and fishing has already been mentioned. Natural disasters may affect stocks, for example fires destroying forests, earthquakes and floods making mines inaccessible or disease wiping out animal herds.

14.56 Thus even without a monetary valuation of natural resources, information can be presented in volume terms that shows how the start of year stocks are changed by events during the year, some due to human intervention and some due to natural causes.

14.57 In table 14.3 there are entries for natural resources, say mineral deposits since there was an entry for rent payable on sub-soil resources in table 12.4. There is an entry for other volume changes representing the amount of resources extracted and a revaluation item also.

I. Is this the SNA?

- 14.58 Under capital formation the SNA includes valuables. The assumption here is that these are unlikely to be significant for developing countries. will normally be sufficient to consider only capital formation (gross fixed capital formation and the change in inventories) and natural resources.
- 14.59 The 2008 SNA extended the coverage of non-financial assets to include contracts, leases and licences, and goodwill and marketing assets. For developing countries, apart from commercial fishing licences, described earlier, these are not likely to be significant which means that it
- 14.60 There are also some other cases of capital transfers possible (described in paragraph 10.212 of the 2008 SNA). These tend to be either infrequent or not very significant in any economy.

Key points to remember

Compiling the capital account, apart from estimates of consumption of fixed capital, is straightforward. The figures for capital formation are those in the expenditure estimate of GDP and capital transfers are available from the GFS and BOP.

Consumption of fixed capital is an important concept and the use of spreadsheets and some simple assumptions make it fairly quick and easy to make reasonable estimates.

Balance sheets give information useful for studies of both sustainability and productivity as well as simply measuring net worth.

Information on natural resources can be offered in physical units as a first step.

Chapter 15: Financial assets and liabilities

A. Introduction

- 15.1 In chapter 5 there is an explanation of how most of the output of financial institutions is related to transactions in the various financial instruments. The transactions themselves, however, are contained in the financial account. Although net borrowing or lending has been determined at the end of the capital account, it is very desirable to go on to compile the financial account also. There are two reasons why the account is useful.
- 15.2 At the end of the capital account, figures are derived for net lending or borrowing sector by sector. They illustrate how capital formation is financed by one sector making funds available to another but the net lending or borrowing figures alone do not show how the funds are raised. For example, bonds promise interest but no control is ceded to the lender whereas shares do pass control to the new shareholders but with uncertain returns. Whether an investor chooses to buy bonds or shares will depend on his attitude to risk and the potential rewards to the investment also reflect the degree of risk associated with the investment. This distinction is especially interesting when the funds are being raised from the rest of the world.
- 15.3 The financial account also shows whether the rate at which funds are put on deposit with a bank is matched by similar levels of bank lending or whether lending is being undertaken in excess of new deposits being received.
- 15.4 The financial account also shows whether the types of instrument held by each sector are plausible. If they are not, then the suspicion is that the figures for net borrowing or lending derived at the end of the capital account are not realistic. That in turn suggests that an error has been made somewhere else in the accounts. This sort of checking is analogous to the checking inherent in the supply and use table but whereas that relates to the flow of goods and services, this relates to the flow of financial resources.
- 15.5 In this area, the third of the IMF's statistical systems is of major assistance, that covering monetary and financial statistics (MFS). Monetary statistics covers data relating only to stocks and flows of financial instruments held by financial institutions. Financial statistics extends the sectoral coverage to the whole economy and the rest of the world. Not only is there a manual for the MFS, there is a compilation guide for MFS also. Chapter 8 of that guide is particularly useful in describing the practical issues in the compilation of integrated balance sheet and flow accounts by sector. However, it is likely that staff in the central bank responsible for preparing MFS data are following this advice already and so the national accountant can draw on their experience and hard work. In addition recent initiatives by the IMF to conduct surveys of both direct and portfolio investment mean that there is an increasing wealth of data available to statisticians.

B. Accumulation accounts

- 15.6 As with non-financial assets, there are four accumulation accounts relating to financial assets; the financial account that shows transactions in financial instruments, the other changes in the volume of assets account that shows all changes in the stock of financial assets and liabilities that are not due to transactions or to changes in prices, the revaluation account that shows the effects of a changes in prices (including changes in exchange rates as they affect assets and liabilities denominated in foreign currencies) and the balance sheet showing the stock of financial assets and liabilities.
- 15.7 It is clear that once the opening and closing balance sheets are known as well as two of the three sets of events, then the third can be derived arithmetically so as to make the identity that the closing balance sheet is equal to the opening balance sheet plus the transactions in the financial account plus the holding gains and losses between the two balance sheets plus the unexpected events. In commercial accounts, the first account presented is often the balance sheet, showing the position on net worth. Then the profit and loss account is presented, showing how the situation on last year's balance sheet has been changed to reach the present position.
- 15.8 There are two sorts of transaction recorded in the financial accounts. The first of these are the counterpart entries to all the entries in the other accounts. Every purchase of an item requires that a financial asset is used to pay (for example the holding of currency decreases) or a liability is incurred (for example the loan on a credit card increases). Every inflow of a resource leads to an increase in an asset (for example the holding of currency increases) or the reduction of a liability (for example paying off part of a debt). If these

were the only entries in the financial account, in principle it would be possible to associate every transaction in the financial account with a transaction elsewhere in the accounts, even if this would be an insuperable task in practice.

- 15.9 However, there are other transactions recorded in the financial account that do not relate to transactions in other accounts, these are transactions that simply exchange one kind of asset or liability for another. Suppose a person pays currency into a bank account. For that person the value of one asset (currency) decreases but the value of another asset (a bank deposit) increases or the value of a liability (a bank loan) decreases. At the same time, for the bank the value of one asset (currency) increases but the value of a liability (the bank deposit) also increases or the value of an asset (a bank loan) decreases. Although the composition of the net worth of the person and the bank have both changed, the net worth of each is unaffected. These transactions have no immediate connection with the rest of the accounts and cannot be identified by considering the other accounts.
- 15.10 Given that it is possible to exchange one asset for another not only many times in a year but even several times a day, it is not practical to set out to measure each and every transaction in a financial instrument. The SNA

recommendations on consolidation are followed as far as possible. Different sorts of financial instruments are not consolidated with one another. Assets and liabilities are not offset against one another. But successive transactions in the same instrument by the same set of units are consolidated. For example, suppose at the beginning of the period unit A holds no foreign currency. Unit A then buys foreign exchange from unit B, uses some to make a payment to unit C and then converts the rest back to domestic currency by selling it to unit B. At the end of the period, unit A will still have no holding of foreign currency. Unit B will have less than it had at the start of the period, the difference being made up by the acquisition of some of foreign currency by unit C.

- 15.11 This example gives an indication of how the financial account can be compiled. The approach is to start by compiling the opening and closing balance sheets for financial instruments. Then exceptional events that are recorded in the other changes in assets account and holding gains and losses are identified. That part of the change in the balance sheet not accounted for by these two sets of changes must be due to the set of transactions needed for inclusion in the financial account. And if everything is perfectly measured, the set of transactions so identified will agree with the figures for net lending or borrowing from the capital account.

C. The balance sheet

- 15.12 The starting point is to consider those financial instruments where not only is the stock known but a sectoral allocation can be made with reasonable confidence. Many of these have already been referred to because they have been used to compile the allocation of primary income as described in chapter 12. Although the source of the data is described here in brief, in fact it will almost always have been already collated by staff in the central bank as part of compiling financial statistics.
- 15.13 The case of monetary gold and SDRs is simple. The only two sectors involved are the central bank and the rest of the world. The figures are available in both GFS and BOP and should be identical.
- 15.14 Information on bank deposits should be available from the MFS data along with the allocation to domestic sectors and the rest of the world, if applicable. This is the same information as was used to determine the part of FISIM relating to bank deposits and the allocation of SNA interest to sectors.
- 15.15 The same situation applies to bank loans except that MFS data may not cover loans by money lenders. However, if FISIM and interest has been allocated in respect of money lenders, there must be information on the level of loans also. It is worth talking to the people in the central bank about the extent of lending being carried out by such units so that a consistent story is told by both the national accounts and monetary statistics.
- 15.16 Information relating to loans from international institutions such as the World Bank will be available, via the MFS, from government and BOP sources.
- 15.17 Foreign controlled enterprises (branches) may have loans from their head offices in which case information on the stock of these loans (as well as the interest payments covered in chapter 12) will be available from the BOP.
- 15.18 Other enterprises may on occasion have loans from non-resident banks but the monetary authorities are likely to have information on this.
- 15.19 Information on the stock of government bills and bonds issued is available from GFS. The holdings by large enterprises and the rest of the world can be found in commercial accounts and the BOP. The remainder must be held by the households and other sector.
- 15.20 For corporate bonds, the level of bonds issued will be available from the commercial accounts for large enterprises. Holdings by government, large enterprises and the rest of the world will be available from GFS, commercial accounts and BOP respectively. Holdings by the household and other sector are then derived as the residual necessary to balance issue and holdings.
- 15.21 Information on shares is put together in the same way as for corporate bonds.

- 15.22 For unincorporated corporations, the value of equity is equal to the net worth of the corporation. For a public corporation, this should be available from a balance sheet if there is one or from the parent ministry and is a liability of the corporation and an asset of government.
- 15.23 For branches, the value of equity is available from the BOP.
- 15.24 Other unincorporated enterprises will be in the households and other sector. The value of their equity will be equal to their net worth but since this will be both an asset and liability of the same sector, omitting it for lack of data will not distort the overall balance sheet position.
- 15.25 At this point a number of financial instruments remain where it is difficult either to devise a reasonable sectoral allocation, or to determine the total amount of the instrument. These instruments are:
- Domestic currency (where the total is known but not the allocation),
 - Foreign currency (where neither the total nor allocation is known)
- c. Accounts receivable/payable (where neither the total nor sectoral allocation is known).
- 15.26 In addition, there are a number of instruments where it may be presumed that the amount in a developing country is not very significant. These are:
- Other securities
 - Deposits with foreign banks
 - Collective investment schemes
 - Insurance technical reserves
- 15.27 However, for each of the large corporations sector, for government and for the rest of the world, a figure should be available for net worth. Net worth is the total of all assets less all liabilities so for these three sectors, an entry under assets of "other financial instruments" can be calculated as net worth less the assets identified plus the liabilities identified. Once this figure is available for all these four sectors, that for the households and other sector can be derived as a residual and then net worth for this sector calculated.

Table 15.1: Schematic table for compiling a balance sheet

Item	Assets						Liabilities					
	Large NFC	FC	GG	Hh and other	ROW	Total	Large NFC	FC	GG	Hh and other	ROW	Total
Monetary gold		X				X						
SDRs		X				X					X	X
Currency and deposits												
With domestic banks	X		X	RR1	X	X		X				X
Bonds												
Government bills and bonds	X	X		RR1	X	X			X			X
NFC corporate bonds	X	X		RR1	X	X	X					X
FC corporate bonds	X	X		RR1	X	X		X				X
Loans												
World Bank					X	X			X			X
With non-residents					X	X	X	X				X
With domestic banks		X				X	X		X	RR1	X	X
Equity												
Shares in NFC	X	X		RR1	X	X	X				X	X
Shares in FC	X	X		RR1	X	X	X				X	X
Equity in FDI					X	X	X	X				X
Quasicorporates												
Public			X			X	X	X				X
Private				X		X				X		X
Other assets nec	RC1	RC1	RC1	RR2	RC1	X						
Financial net worth	X	X	X	RC2	X	*						

15.28 Table 15.1 shows schematically how balance sheets for all sectors can be assembled.

- a. The first step is to complete the row for each instrument except the row for “other financial instruments”. In each of these rows, the residual item is shown by an entry of RR1.
- b. The second step is to use the figure for net worth in financial instruments for the two corporate sectors, general government and the rest of the world to calculate a figure for the entry for the other financial instrument row for these sectors. These entries are shown as RC1.
- c. The third step is, using the figures just calculated for other financial instruments for all other sectors, calculate the entry for households and other as a residual, shown as RR2.
- d. Lastly, calculate the figure for net financial worth for the households and other sector, shown as RC2.

(A familiarity with the rules of Soduku is a great help here and elsewhere in the sector accounts!)

15.29 The results of this exercise should reveal the following. The financial net worth of the sum of all the domestic sectors

should exactly match that of the rest of the world. Every asset (except the gold bullion part of monetary gold) must have a matching liability and if that liability is not in the same economy, it must be in the rest of the world. So the grand total for the balance sheet, indicated with an asterisk in table 15.1 should be exactly equal to this item.

15.30 In fact, the table should look familiar. The entries in tables 12.3 and 12.4 show the flows that are recorded from the holding of asset and liabilities. As mentioned in that chapter, the way to get the entries there is actually to start with the figures on stocks, which is what table 15.1 is.

15.31 There are two differences. The first is that the entries in the balance sheet are reversed as compared with the flow tables because the holding of an asset (on the left hand side on table 15.1) corresponded to a receipt of investment income (on the right hand side of tables 12.3 and 12.4. Similarly the recognition of a liability (on the left hand side of table 15.1) leads to the payment of investment income (on the left hand side of tables 12.3 and 12.4.

15.32 The second difference is that tables 12.3. and 12.4 should be based on the average holding in the year whereas the balance sheets relate to the holdings at the beginning and end of the period. The average of these is likely to give the best available estimate for the average holdings in the period however. Thus compiling balance sheets is in fact an important part of the process of deriving the flow accounts.

D. The flow accounts

15.33 Once two balance sheets are complete, it is possible to calculate the difference between them, cell by cell. Each cell has to be separated into three parts, that due to other volume changes, that due to holding gains and losses and the amount representing transactions in financial assets and liabilities.

financial instruments attract holding gains and losses. In particular, deposits and loans denominated in domestic currency do not. Neither do domestic currency or accounts receivable/payable so this means most of the “other financial instruments” items is free of holding gains and losses. The exception is foreign currency but in most countries at most times, the holdings of foreign currency relative to domestic currency and other asset will be small.

1. Other volume changes

15.34 In general there are few entries to be made in this account. The most significant is debt write-off. Debt forgiveness, which must be by mutual agreement, is recorded first as a capital transfer in the capital account and then a payment of the debt in the financial account. Debt write-off is a unilateral decision where the creditor simply considers that the claim on the debtor has no realistic chance of being repaid.

15.37 Three types of instrument remain where holding gains and losses may need to be recorded in addition to transactions in the instruments. These are securities, particularly bills and bonds, equity and insurance technical reserves. Since bills are short-term (often very short-term) it may be assumed that all changes in value may be recorded as interest and not as holding gains and losses. For developing countries, it is probable that there are negligible insurance technical reserves and so the question of holding gains and losses on them may be ignored. That leaves monetary gold and SDRs, equity and bonds to be considered. Each is discussed below.

15.35 There may be entries needed for monetisation or demonetisation of gold but the central bank can provide information on any necessary entries.

Monetary gold and SDRs

2. Holding gains and losses

15.36 Once the volume changes are accounted for, what remains to be done is the separation of holding gains and losses from transactions in financial assets and liabilities. The situation is somewhat simplified, though, because not all

15.38 Monetary gold and SDRs are affected by holding gains and losses but the monetary authority and the ministry of finance should have complete information on both holding gains and losses and transactions readily available.

Shares

- 15.39 The most important form of equity in a developing country is equity in quasi-corporations including that in foreign direct investment enterprises. The value of this equity is derived as the value of all assets less the values of all liabilities. The value of holding gains and losses attaching to the value of the equity is thus the difference between holding gains and losses on the assets involved less the holding gains and losses on the liabilities involved. Usually there may be few if any transactions in this sort of equity but where there are, these can be derived using the identity above linking the opening and closing balance sheets.
- 15.40 It was noted above that there may be few listed shares in enterprises in developing countries. What there are will attract holding gains and losses.
- 15.41 It is not always clear how to separate holding gains and losses from transactions. For example, a unit may hold no shares at the time of the opening balance sheet, may buy shares to the value of 100, later sell them for 120 and so have no shares held at the time of the closing balance sheet. It would clearly not be correct to assume that because there were no shares held in either balance sheet there were no transactions in them during the period. In fact the transactions are shown as purchases of shares of -20 (100 - 120). This is explained by holding gains of 20 so the closing balance sheet (0) is made up of the opening balance sheet of 0 plus transactions of -20, plus holding gains of 20 (assuming no exceptional events).
- 15.42 The total value of holding gains and losses can be calculated as the difference between the value on the opening balance sheet and that on the closing balance sheet adjusted for the issuing of any new shares and any withdrawal of shares. The next problem is to determine how these are allocated between sectors. The attribution to the rest of the world should be available from the balance of payments account. Despite the example above, it is suggested that pragmatically the remainder may be allocated according to the holdings by sector at the end of the period unless there is any obvious other information. However, it is not unusual for the central bank to have quarterly information on financial statistics and if this is so, the allocation between holding gains and losses and transactions for shares should be done quarter by quarter and the annual figures derived as the sum of the four quarters. This will at least catch change of ownership between sectors if the change straddles the end of a quarter.

Bonds

- 15.43 The determination of holding gains and losses on bonds is the most complicated element to be solved. The value of a bond at any point in time is calculated by applying a discount factor to the redemption value. The change in value between two points in time is treated as interest. However, there is a problem because the debtor (the issuer of the bond holding the liability) and the creditor (holding the claim on the issuer) may have different views on the appropriate discount factor. The debtor will use the interest rate prevailing when the bond was issued; the creditor will use the interest rate prevailing at the time the bond is being valued. The total value of interest over the life of the bond is not affected by this difference in perspective but the timing of the recording of interest would be. Since the SNA requires symmetric recording for both the debtor and creditor, it has been decided that the debtor's view should be the basis of recording interest. The difference between the creditor and debtor valuation of the bond is treated as a holding gain or loss. This will lead to significant holding gains and losses to be recorded only if there is a wide difference in the interest rates at the time of issue and at the date of the balance sheet or if, although the difference in interest rate is small, the remaining term of the bond is very long term.
- 15.44 Once any holding gains and losses associated with bonds are determined, they need to be allocated by sector and it is suggested the same pragmatic approach be adopted as for holding gains and losses on shares.
- 15.45 More information on revaluing financial instruments can be found in the *External Debt Guide* on pages 114-118 and in the IMF publication *Quarterly International Investment Position Statistics*.

3. The financial account

- 15.46 At last, once the other three accumulation accounts have been compiled, it is possible to derive the financial account.
- 15.47 Because the financial account is the last account in the sequence of accounts, there is no balancing item to carry down to a subsequent account but the overall state of the account is shown by including the changes in net worth as the last item on the right hand side as the sum of all changes in assets less the sum of all changes in liabilities. In other words, the change in net worth shows the net payments due to a unit as a creditor less the payment due to be paid by the unit as a debtor. For financial assets and liabilities, the sum of the changes in net worth coming from the financial account plus the changes in net worth due to other volume changes and to revaluation should be equal to the changes in net worth between one balance sheet and the next. If this is not so, given the way in which the financial account has been derived as a residual, this means there is an arithmetical mistake in the compilation process.
- 15.48 What is less automatic is the fact that the balance of transactions in assets in the financial account less those in liabilities, sector by sector, should be equal to net lending or borrowing from the capital account. It is quite likely that this will not be the case and so a number of steps are necessary.
- 15.49 The first is to consider whether some holding gains and losses or other changes have been overlooked. As noted, the holding gains and losses on foreign currency have not been explicitly considered because the allocation by sector is problematical. However, the extent to which this can explain any discrepancy must be judged against the likely holdings and, importantly, the changes in exchange rate during the period.
- 15.50 The allocation of holding gains and losses sector by sector may be in error because a change in holdings of shares or bonds was complete within a period and the sort of problem explained in the example above has not been captured.

15.51 There may have been errors in one or other balance sheet. The changes from the start to the end of the period should accord with local knowledge about developments in the economy. In particular if there is a significant change in the balance of net worth between sectors, an explanation for this should be available.

15.52 It is possible that the figures for net lending or borrowing reflect errors elsewhere in the accounts. Do the figures for saving by sector look plausible in the light of previous periods? Does the relationship between saving and capital formation seem plausible in relation to past periods and current developments? Could it be that a capital transfer has been forgotten or that current transfers are under or over stated? To the extent that figures for property income

Table 15.2: A set of integrated financial accumulation accounts

Item	Assets						Liabilities					
	Large NFC	FC	GG	Hh and other	ROW	Total	Large NFC	FC	GG	Hh and other	ROW	Total
Opening balance sheet												
Monetary gold and SDRs		37				37					7	7
Currency and deposits	10		24	53	5	92		92				92
Bonds	27	25		12	4	68	4	8	56			68
Loans		85			2	87	22	9	35	15	6	87
Equity	9	32	6	19	7	73	47	17		4	5	73
Other assets nec	8	-19	5	4	2	0						0
Net financial worth							-19	34	-56	69	2	30
Financial account												
Monetary gold and SDRs						0						0
Currency and deposits	-6		-1	17	-1	9		9				9
Bonds	2	3		-2	-1	2	-1		3			2
Loans		11				11	-4	1	9	6	-1	11
Equity	-5	11	-3	5	1	9	5	1		1	2	9
Other assets nec	1	-3	1	1		0						0
Changes in net financial worth							-8	11	-15	14	-2	0
Other changes in the volume of assets												
Monetary gold and SDRs												
Deposits												
Bonds												
Loans												
Equity												
Other assets nec												
Changes in net financial worth												
Revaluations												
Monetary gold and SDRs		1				1						
Deposits												
Bonds												
Loans												
Equity		2		1		3	2	1				3
Other assets nec												
Changes in net financial worth							-2	2		1		1
Closing balance sheet												
Monetary gold and SDRs		38				38					7	7
Deposits	4		23	70	4	101		101				101
Bonds	29	28		10	3	70	3	8	59			70
Loans		96			2	98	18	10	44	21	5	98
Equity	4	45	3	25	8	85	54	19		5	7	85
Other assets nec	9	-22	6	5	2							
Net financial worth							-29	47	-71	84		31

are consistent with balance sheet entries, the former cannot be changed very much without also changing the latter. If the problem is thought to go as far back in the accounts as the production account, remember that making a change there must have a consequence in the goods and services account. As noted above, this sort of checking, similar in many ways to using the supply and use table, is a very powerful reason for persevering with the sector accounts to the end.

- 15.53 Once all possible checking is done, a row of errors and omission should be included in the financial account.

Understanding the account

- 15.54 Quite apart from checking whether the figures for net lending or borrowing in the financial account match the figures from the capital account, it is useful to consider whether the individual entries in the account seem plausible. This is not as easy as in other accounts because it is possible to have negative as well as positive entries in each cell.
- 15.55 As in the capital account, changes in assets are shown on the left hand side of the account, the same side as uses are shown in current accounts; liabilities and changes in net worth are shown on the right hand side of the account, the same side as resources are shown in the current accounts.
- 15.56 Holdings of each type of financial instrument can increase or decrease but the entries for assets are always entered on the left hand side of the account and for liabilities are always entered on the right. However, the entries on both sides of the account may be either positive or negative. An increase in a bank deposit increases the claim of the depositor (the asset holder) on the bank (the holder of the liability) The entry is positive on both sides of the account. A withdrawal of a deposit decreases the claim of the depositor on the bank and appears as a negative entry on both sides of the account.

E. Is this the SNA?

- 15.59 There has been much publicity given to the development of new financial instruments over recent years. Deciding how to record these in the SNA has added greatly to the complexity of the descriptions of financial instruments and the recording of the associated flows in the SNA. It is the introduction of these instruments that led to the change in definition of the services provided by financial institutions. In the 1993 SNA, the main function of these institutions is given as financial intermediation. Now it is supplemented by liquidity transformation and risk management.
- 15.60 In this publication and the companion *Concepts in brief*, it is assumed that for most developing countries these

- 15.57 Total transactions under assets must be equal to the total transactions under liabilities of the same financial instrument. As explained above, the entry for each sector is actually an aggregate of many individual transactions. However, it is useful to be able to analyse how the entry for a single transaction is made. This is the result of a three-step decision process, as follows:

- What type of financial instrument is involved?
- Which unit is the creditor (the asset holder, the unit with a claim on another unit's resources) and which the debtor (the holder of the liability, the unit responsible to make a payment under certain specified conditions)?
- Does the transaction increase the net worth of the creditor and decrease the net worth of the debtor? If yes, the entries are positive on both sides of the account. If the transaction decreases the net worth of the creditor and increases the net worth of the debtor, the entries are negative on both side of the account.

4. Example accounts

- 15.58 Table 15.2 illustrates a set of financial balance sheets for the opening and closing period with the three flow accounts reconciling them. In this case, there are no entries in the other changes in the volume of assets account; it is included for completeness only. The revaluation account includes only two lines. One is for monetary gold and SDRs. The other is for equities. No entries are shown for deposits, bonds or loans because these are assumed to be all denominated in local currency so will not be subject to nominal holding gains or losses. The residual row, other assets nec will include domestic currency and other accounts payable/receivable neither of which is subject to nominal holding gains or losses. It is possible that there should be holding gains and losses on some of the remaining items in this heading but with no information about them, any holding gains or losses are likely to be negligible and so may be ignored.

complexities can be ignored other than possibly those that are reflected in the balance of payments accounts.

- 15.61 For a few countries with important off-shore banking centres, these instruments cannot be ignored. A very brief discussion of some of the types of instruments involved is given below. This is intended by way of introduction only to both those who need to understand the way in which more complex financial instruments work and those who are simply curious to have some insight into the instruments that underlie the banking crisis of 2008. Further details on these instruments and how to measure transactions in them can be found in the full version of the 2008 SNA.

1. Investment and money market funds

- 15.62 Individuals with large savings can decide to invest in shares and buy packets of shares belonging to different companies. They will choose companies they feel are likely to offer reasonable dividends and also where the share price is likely to increase over time. However given the costs of engaging in the stock market, due to the difference between the buying and selling prices, it is not economic to trade very often in very small packets of shares. In addition to these costs, there is the time involved in deciding which companies are good prospects and which might have been good prospects some while ago but are so no longer. In order to make it easier for individuals with modest amounts of savings and with limited interest in following the growth potential of individual companies, investment funds were set up. The fund itself buys a wide range of shares, has staff that can monitor the performance of the different shares and then buy and sell them as appropriate. The fund itself has a large pool of money matched by relatively small holdings from the very many customers. The customer's holdings in the fund are described as shares or units. These can be traded on exchanges in the same way as shares in individual companies. The fund manages the investment represented by total value of the shares or units in the fund. The investment earnings are used to cover the costs of the fund, pay their employees and make a profit. The remainder is passed back to the share or unit holders in the fund either as dividends or holding gains. (In some cases there will be holding losses assigned to the share or unit holders.)
- 15.63 Some funds do not hold shares in companies but may hold securities such as government bills or other short term instruments. These funds are called money market funds but essentially function the same way as investment funds.

2. Asset backed securities – repackaging debt

- 15.64 One of the types of loans that banks make are mortgages to the purchasers of houses. A customer receives a very large loan and in return undertakes not only to repay the loan but to make significant interest payments over a very long period of time. The bank will recover what it has lent but there is a long time delay before this happens
- 15.65 One of the first important financial innovations was when a financial institution decided to sell a package of mortgages to another financial institution. The first financial institution accepted a lower return on the mortgages in order to receive repayment faster. (This process of exchanging long-term debt for immediate payment of a different value is what is meant by liquidity transformation.)
- 15.66 The arrangement just described was called a collateralised mortgage obligation (CMO). Later it was decided to carry out the same sort of transformation all other forms of debt, for example credit card debt. These arrangements were called collateralised debt obligations (CDO). Collectively CDOs, CMOs and other such arrangements are called asset-backed securities (ABS).
- 15.67 The assumptions underlying the issuing of CMOs was that very few mortgages would default and that even if the customer did not pay, the financial institution holding the

mortgage could claim the house the mortgage related to as collateral for the debt, sell it and recover their liability in this manner. For as long as this sort of debt transformation had been common, house prices continued to rise. It became an article of faith that a CMO could not fail to deliver and the resulting ABS were given a top quality credit rating.

- 15.68 It was when house prices declined that the trouble started. It was realised that the credit ratings were overstated. However, the mortgages and other loans had been repackaged so many times that it was initially extremely difficult to know exactly where the dubious loans were, how many there were and what the extent of the possible default would be. The effect was similar to a food processing plant discovering that one of its ingredients had been contaminated but being unable to be certain which products were affected and how many were now unsafe to eat.

3. Financial derivatives

- 15.69 Among the new financial initiatives, a great deal of attention has focused on financial derivatives. In fact the basic idea behind a financial derivative is very old. Suppose a farmer has a large flock of sheep that he raises for wool. He would like to know the price he will get from the wool next year in order to decide how many of the sheep to keep and how many to either sell or kill. A merchant would like to know what the price of wool will be next year in order to decide whether to sell all the wool he holds this year or whether to keep some of it in order to sell it next year if the price is going to be higher. Suppose the merchant and the farmer come to an agreement about the amount of wool the merchant will buy next year and the price at which he will buy it. Both merchant and the farmer avoid a degree of uncertainty. The farmer runs the risk that the price he agreed with the merchant will be lower than he would have received if the price rises more than expected but avoids the consequence of the price being lower than he has agreed. The merchant risks paying more for the wool if the price rises less than expected but avoids the consequence of the price being higher than agreed. This is the essence of risk management.
- 15.70 The sort of agreement described is a financial derivative and such agreements have been in force for many hundreds of years. Recently however, variations in such agreements have developed that embody a greater degree of speculation and are closer to gambling. For example agreements may be made about payments that will be due depending on whether a stock market index is higher or lower than that a given amount. It is possible for unit A to “hedge its bets” by reaching an agreement with unit B dependent on event X occurring and a different agreement with unit C dependent on event X not occurring. This is possible because B and C have a different view of the likelihood of event X happening or because they view the losses that would affect them under their agreement differently.

4. Combining the instruments

- 15.71 Some funds may include both asset backed securities and financial derivatives as well as other funds (so creating a fund of funds). This is a means of disseminating the risk

from the institutions offering a mortgage (say) to the holders of the shares in the funds holding the CMO in which the mortgage is packaged. These shareholders are not necessarily in the financial sector or even in the same country.

5. Impact on the output of financial institutions

15.72 All managed funds carry an administrative charge which is often 2 percent per year of the value of shares held in the fund. The more complex and riskier funds often have a two-part charging structure, charging 2 per cent per year of the value of the fund and 20 per cent of any gain over a certain amount that is made by the fund. These fees are in addition to any gains made by the financial institutions trading on their own account.

Key points to remember

Most of the information needed will be available from staff in the central bank responsible for compiling monetary and financial statistics.

Most of the work in compiling the accounts consists of using the accounting identities inherent in the accumulation accounts to derive the few entries for which information is not readily available from other systems.

The accounts associated with financial instruments not only explain how financial markets work but present a powerful tool to cross-check the other accounts in the system.

Getting to the end of the sequence of accounts is a major achievement and should bring a well-deserved sense of satisfaction.

Chapter 16: Presentation of the accounts

A. Introduction

16.1 Important as it is to complete a set of accounts, there is one more task of almost equal importance for the national accountant and this is communicating the results to others. Without a formal publication and formal policy for release of information, data which has been compiled at significant resource cost will not be exploited to its full. Users may know (or suspect) that figures for GDP should be available somewhere in the statistical office and ask for it. They may not know how much information is available on the contribution of various industries to GDP or the composition of household consumption.

16.1 The first requirement therefore is to prepare sets of tables for general release. However not everybody has the ability to look at tables of figures and discern the information these figures convey. One useful addition therefore is to include charts and figures. Another is to use words. Just as some users are not skilled at interpreting tables of numbers, not all national accountants feel comfortable with writing text but it is a skill worth developing.

1. Links to other data sets

16.2 Before starting to write, it is useful to consider who the probable readers are. Some will be colleagues who have provided information for incorporation in the accounts. Explaining how such information is used may lead to a response along the lines of “If I knew that was what you wanted, I could also have given you the following”. Just as the national accountant understands the national accounts better than statisticians in other areas, they will have a more compendious knowledge of what statistics in their area cover and how they can best be exploited.

16.3 Making clear the fact that the national accounts draw heavily on other statistical areas is helpful to non-statistical users who can be reassured that the same message about the economy derives from apparently different datasets. Examples of the links it is useful to explain appear below in section B.

2. The national accounts tables and explanatory text

16.4 Text that accompanies national accounts tables should serve a number of purposes. The first is to convey something of what is and what is not covered. Some users

believe firmly but mistakenly that national accounts do not include subsistence agriculture or estimates for the hidden economy. It is desirable to make clear that this is incorrect and include text that says, for example, that approximately X percent of all agricultural output is for subsistence purposes and that this constitutes about Y percent of household consumption; or that informal taxi services or roadside food vendors account for about W or Z percent of the total activity in these areas.

16.5 The exact form of the tables to be used in a presentation can be determined according to the sorts of interest in a country. It is not necessary to follow either the exact layout of the tables in the 2008 SNA or indeed the precise terminology for the names of the tables. For a non-specialist, more informative titles may be more helpful. However, for international users a short list of the terminology you have adopted to suit local circumstances with explanations of how this matching the international terms would be useful.

16.6 In section C, the tables from earlier chapters are repeated with some suggestions about how they might be described.

3. Satellite accounts

16.7 Some commentators think the national accounts are more comprehensive than they are. The most obvious case is those who assert GDP is an adequate and exhaustive measure of welfare whereas the shortcomings of purely monetary measures of well-being has been stated clearly and repeatedly in the SNA from its earliest days. However, work additional to the SNA is possible to try to extend the macro-economic aggregates to cover some non-monetary concerns in the framework of a satellite account.

16.8 Even if the statistical office does not currently have the resources to develop such satellite accounts, letting the users know what might be done if more resources were available must be a useful exercise. Section D summarises some basic information about what a satellite account is and what types of accounts are frequently compiled. Acknowledging what the SNA does not cover, or perhaps does not cover in as much detail as some users would like, is another way to try to help users avoid misinterpretation of the results.

B. Links to other data sets

16.9 As indicated above, some few words indicating the main data sources used to compile the accounts are useful. The following suggestions are made to illustrate the key features it is useful to explain to users of the accounts and to colleagues providing data.

1. Industrial data

16.10 Information shown on an industry basis comes from surveys conducted in coordination with other parts of the statistical office but some differences may be noted

- a. Within the SNA, information relates to production and not to sales, that is changes in inventories are used to adjust sales figures.
- b. The contribution of each industry to GDP is measured not by output but by value added.
- c. For wholesale and retail trade, the difference between the cost of goods bought for resale and the value of those sales is used as the measure of output not total turnover.
- d. For the financial industry, it is the service provided with making finance available that is taken as output. This does not include interest paid to banks.
- e. By convention the value of output of public services is measured as the sum of the costs incurred in providing the services
- f. Information in the national accounts includes estimates for the hidden economy or informal sector.

2. Employment and population data

16.11 Information on the composition of the labour force, for example from a labour force survey or from a population census is used to make sure all parts of the economy are well-measured.

C. A set of national accounts

16.17 This section illustrates how tables prepared according to the advice in this publication could be presented and gives an indication of what accompanying text might be helpful.

1. Tables showing GDP

16.18 The first set of tables to present are those showing GDP, in time series format. These should include the three estimates of GDP and a very broad explanation of why there are three estimates. Table 16.1 illustrates the sort of information it might be useful to include in such very basic tables.

3. Household surveys

16.12 Wherever possible, extensive use is made of information coming from household budget surveys about the composition of household consumption and its relation to household income. Where a recent household budget survey is not available, steps are taken using the accounting structure of the SNA to make as detailed as possible an analysis of the composition of household composition

4. Prices

16.13 One of the main uses of estimates of GDP is to present estimates of growth rates both in total and at detailed levels within the economy. For this purpose, extensive use is made of all prices available to statisticians, for example consumer and producer prices as well as information on the prices of imports and exports. These are used at the finest level of detail possible and not just at aggregate levels.

16.14 Much attention is given to GDP per capita figures calculated in the context of the international comparisons programme (ICP). This exercise uses not only very detailed information on prices, some of which are collected specifically for the programme, but also on a wealth of information on the expenditure estimate of GDP.

5. Other data sets

16.15 Where there are industries of particular importance in a country, for example agriculture or mining, extensive use will be made of data sets relating to those industries for example physical information on agricultural harvests and mineral extractions as well as normal monetary information collected in the normal survey processes.

16.16 Throughout the process of compiling national accounts, extensive use is made of the three statistical systems developed by the IMF; those relating to the balance of payments, government finance statistics and monetary and financial statistics. There is further discussion on the ways these links can be examined at the end of the next section.

Although this suggested table includes only one data point, obviously in practice it will be usual to include a number of recent periods.

16.19 The production estimate should include value added disaggregated by industry. Associated notes need to explain briefly that value added is the difference between output, the value of all goods and services produced by an industry, and intermediate consumption, the value of goods and services that are used in the course of production. It would be helpful to include information on the number of people

- employed in each industry also. For most developing countries, it is suggested that both subsistence agriculture and the informal economy should be included to avoid misperceptions about whether they are included or not.
- 16.20 As well as time series in current values, series of volume measures are useful together with an overview of significant changes in the composition of GDP by industry over the recent past.
- 16.21 Tables showing the income estimate should explain that part of value added represents the reward to labour (compensation of employees). Explain that compensation of employees includes any benefits and payments in kind as well as wages and salaries in cash. Some of value added represents payments to government of taxes related to production. (If you have to use producers price valuations add in taxes on products.) For large enterprises, the rest of value added represents the contribution of capital to production, described as gross operating surplus. Explain that for small enterprises is not possible to separate the part of value added due to labour from that due to capital and so an item called gross mixed income covers both. There will not be a table of income measures in volume terms because gross operating surplus and gross mixed income are calculated as residuals and cannot be divided into a price and volume element.
- 16.22 Explain that the third measure of GDP, covering the expenditure on goods and services, is measured at values that include taxes on products (including VAT if applicable) and so an adjustment for this tax element must be added to both the production and income measures of GDP.
- 16.23 The table showing the expenditure components of GDP should include at the very least, household consumption expenditure, general government consumption expenditure, gross fixed capital formation, changes in inventories, exports and imports (with a negative sign). It would be helpful to show how government expenditure is split between individual and collective expenditure, something of the commodity composition of fixed capital formation (construction, plant and machinery, vehicles and agricultural assets) and the breakdown of imports and exports into goods and services. Give whatever detail is possible on household consumption even if this is only to show how much is due to subsistence activity.

Table 16.1: Estimates of GDP using three approaches

GDP by production		GDP by income	
Value added		Compensation of employees	165
Agriculture	61	Gross operating surplus	91
Export crops	17	Gross mixed income	50
Subsistence agriculture	34	Taxes on products	9
Other	10	Other taxes on producton	6
Mining and quarrying	26	Subsidies on production	-3
Manufacturing	58		
Food manufacturing	13	GDP	318
Drink and tobacco products	7		
Clothing and textiles	13		
Building materials	10		
Other manufacturing	15		
Electricity and gas	16		
Construction	30	GDP by expenditure	
Own account dwellings	4	Household final consumption expenditure	217
Other buildings	15	Subsistence agriculture	37
Other construction	11	Imputed rent of owner occupied dwellings	13
Wholesale and retail trade	37	Marketed goods and services	167
Acomodation and food services	12	General government consumption expenditure	38
Imputed rent of owner-occupied dwellings	11	Gross fixed capital formation	72
Public services	19	Changes in inventories	5
Financial services	33	Exports	36
Other services	6	less Imports	50
Total value added	309		
Taxes on products	9	GDP	318
GDP	318		

Table 16.2: GDP and GNI

GDP	318
Plus primary income from the rest of the world	
Compensation of employees	10
Interest	3
Dividends	1
Rent	
Less primary income to the rest of the world	
Compensation of employees	8
Interest	9
Dividends	4
Rent	
GNI	311

16.24 This table should be shown in volume terms also with an analysis of how the share of the components alters over time.

2. Tables showing GNI and the link between the national accounts and balance of payments

16.25 It is really useful to regularly prepare and release a table such as table 16.2 that shows the relationship between GDP and GNI, explaining that the first measures the income generated in the economy and the second measures the income available in the economy once claims of non-residents on the economy relating to production and claims by residents on other economies are taken into account. Make it very clear that this information is strictly consistent with the official balance of payments figures.

3. Tables showing sector accounts

16.26 The set of tables that follows shows how the tables developed in chapters 12 to 15 can be presented to users with in indication of the use that can be made of them. By way of introduction it is desirable to explain briefly that corporations, government and households have different economic objectives so that it is interesting to see how each contributes to production, consumption and wealth accumulation. For practical reasons of data availability, only the largest corporations are shown separately from households. Indicate how many firms are covered and what proportion of employment of output they represent.

16.27 Because the residual sector contains many disparate types of units, medium and small enterprises, households and NPISHs, you may not want to show it explicitly but simply explain in accompanying notes what you have done.

Table 16.3: Production by sector

Item	Uses						Resources					
	Large NFC	FC	GG	Hh and other	ROW	Total	Large NFC	FC	GG	Hh and other	ROW	Total
Output							291	41	36	98		466
Intermediate consumption	120	8	17	12		157						
Value added	171	33	19	86		309						
Taxes on products						9						
GDP						318						
Compensation of employment	115	20	10	20		165				157	8	165
Gross operating surplus	55	12	9	15		91	55	12	9	15		91
Gross mixed income				50		50				50		50
Taxes on production	4	1		1		6			6			6
Subsidies on production	-3					-3			-3			-3
Taxes on products									9			9
Allocation of GDP generated by sector							55	12	21	222	8	318

- Remember though, that any experienced national accountant will be able to calculate figures for the composite sector in the same way that you have.
- 16.28 These tables need to be presented in time series format. The usual choice is to present one sector per page with the periods running across the page and transactions down it. But other possibilities exist, for example having one page per time period showing the transactions by sector (as in the tables here).
- 16.29 Table 16.3 shows a production account sector by sector extended to show information on the composition of value added. In this example, just over 60 per cent of output is attributable to large corporations and about two thirds of output represents value added. About one half of value added represent payments to employees. Gross mixed income is about 60 per cent of gross operating surplus. Taxes on product and production are only four per cent of GDP. (Note that it may be appropriate to describe the features of the tables in approximate percentage terms rather than figures with one or two decimal places. There are two reasons for this. Saying the split is 50:50 is readily understood; saying it is 53.4: 46.6 is not so eloquent and lays claim to a degree of accuracy that may well be spurious.)
- 16.30 Table 16.4 (which is a copy of table 12.5) shows how investment income and rent on natural resources changes the allocation of income available to sectors. In this example, primary income available to both non-financial corporations and general government is significantly lower than the initial allocation by sector while for financial corporations and households and other the share increases. It is for consideration how much of the detail underlying the table should be shown in the formal presentation, made available on a web site or perhaps only made available on application to the office. Staff responsible for GFS and BOP, however, are likely to find it useful.
- 16.31 Table 16.5 (which is a copy of table 13.1) shows how primary income is further redistributed by the payment of taxes on income and other transfers. This redistributive process significantly increases the income available to government. In this example, the table shows a noticeable inflow from the rest of the world. In particular, personal remittances, coming directly to households exceeds current international cooperation in the form of technical assistance.
- 16.32 Table 16.6 (which is a copy of table 13.2) shows final consumption by households and government. In this example, government consumption greatly exceeds disposable income, suggesting that there is a major imbalance in the economy and that soon steps will have to be taken by government to bring revenue and expenditure into closer alignment, Households however show a savings ratio of 10 per cent of disposable income.
- 16.33 Table 16.7 (which is a copy of table 14.1) shows that both large non-financial corporations and general government need to borrow to finance their capital formation even though general government receives significant investment grants from the rest of the world.
- 16.34 Table 16.8 (which is a copy of table 14.2) shows the composition of fixed capital formation by type of asset for each sector. For the households and other sector, the figure of 4 matches own account construction of houses in table 16.3 indicating no new acquisition of houses by the household and other sector from other sources in the period in question. However some housing was acquired by non-financial corporations, presumably to rent out. For financial corporations, most fixed capital is in the form of buildings and structures (presumably new offices). The table also

Table 16.4: Primary income by sector

Item	Comes from						Goes to					
	Large NFC	FC	GG	Hh and other	ROW	Total	Large NFC	FC	GG	Hh and other	ROW	Total
Compensation of employment												
From domestic enterprises	115	20	10	20		165				157	8	165
Gross operating surplus	55	12	-10	15		72	55	12	9	15		91
Gross mixed income				50		50				50		50
Taxes on production	4	1		1		6			6			6
Subsidies on production	-3					-3			-3			-3
Taxes on products									9			9
Allocation of GDP generated by sector							55	12	21	222	8	318
Compensation of employees from abroad					10	10				10		10
Total interest flows	5	15	12	8	3	43	2	19	3	10	9	43
Total dividends and rent	8	5			1	14	2	6	2		4	14
Balance of primary income	46	17	14	234	7	318						
Gross National Income (GNI)	46	17	14	234		311						
External balance of primary income					7	7						

Table 16.5: Redistribution by means of transfers

Item	Comes from						Goes to					
	Large NFC	FC	GG	Hh and other	ROW	Total	Large NFC	FC	GG	Hh and other	ROW	Total
Gross National Income (GNI)							46	17	14	234		311
Taxes on income	4	2		8		14			14			14
Social assistance			3			3				3		3
Current international cooperation												0
Receivable					5	5		5				5
Payable			1			1					1	1
Transfers involving NPISHs					6	6				6		6
Personal remittances						0						0
Receivable					7	7				7		7
Payable				1		1					1	1
Total transfers	4	2	4	9	18	37		19	16	2		37
Disposable income	42	15	29	241	-16	311						
National disposable income	42	15	29	241		327						
External balance of secondary income					-16	-16						

Table 16.6: Consumption expenditure and saving

Item	Uses						Resources					
	Large NFC	FC	GG	Hh and other	ROW	Total	Large NFC	FC	GG	Hh and other	ROW	Total
National disposable income							42	15	29	241		327
Final consumption expenditure									38	217		255
Saving	42	15	-9	24		72						
Current external balance					5							
External balance of goods and services					14							
External balance of primary income					7							
External balance of secondary income					-16							

Table 16.7: Capital formation and net/lending/borrowing

Item	Changes in assets						Changes in liabilities and net worth					
	Large NFC	FC	GG	Hh and other	ROW	Total	Large NFC	FC	GG	Hh and other	ROW	Total
Saving/current external balance							42	15	-9	24	5	77
Capital transfers												
Capital taxes									2	-2		0
Investment grants												
Government to public corporations							3		-3			0
From ROW to government									7		-7	0
Gross fixed capital formation	47	4	12	8		71						
Changes in inventories	6					6						
Net lending/borrowing	-8	11	-15	14	-2	0						

Table 16.8: Capital formation by type of asset

	Large NFC	FC	GG	Hh and other	ROW	Total	Consumption of fixed capital
Gross fixed capital formation							
Housing	2			4		6	2
Other buildings and structures	19	3	4	1		27	13
Plant and machinery	13	1	2			16	12
Vehicles	9		3	1		13	8
Agricultural products	5		3	2		10	4
Total gross capital formation	48	4	12	8		72	39
Consumption of fixed capital	27	1	8	3		39	
Net fixed capital formation	21	3	4	5		33	

Table 16.9: Balance sheet information for non-financial assets

	Large NFC	FC	GG	Hh and other	ROW	Total
Opening balance sheet						
Fixed capital	79	8	22	16		125
Inventories	23					23
Subsoil deposits			87			87
Capital account						
Fixed capital	47	4	12	8		71
Inventories	6					6
Other changes in volume of assets						
Consumption of fixed capital	-27	-1	-8	-3		-39
Inventories	2					2
Extraction of sub-soil deposits			-9			
Revaluation						
Fixed capital	4	1	2	2		9
Inventories	3					3
Subsoil deposits			12			
Closing balance sheet						
Fixed capital	103	12	28	23		166
Inventories	34					34
Subsoil deposits			90			

shows estimates of the consumption of fixed capital by type of asset. By comparing the consumption of fixed capital figures with new expenditure it can be seen that housing and agricultural products have much longer expected lives than plant, machinery and vehicles.

- 16.35 Table 16.9 (which is a copy of table 14.3) shows the opening stock of non-financial capital and how it changes during the year. About two thirds of all fixed capital belongs to large non-financial corporations; government

owns more than households. All the sub-soil deposits in the country are shown in the balance sheet of government.

- 16.36 Table 16.10 (which is a copy of table 15.2) shows similar data for financial assets and liabilities. In particular, the section for the financial account shows that the net borrowing of government was provided mainly by issuing bonds and taking out loans. Households and others increased deposits much more than loans; financial corporations took in deposits and bought equity.

Table 16.10: Balance sheet information for financial assets and liabilities

Item	Assets						Liabilities					
	Large NFC	FC	GG	Hh and other	ROW	Total	Large NFC	FC	GG	Hh and other	ROW	Total
Opening balance sheet												
Monetary gold and SDRs		37				37					7	7
Currency and deposits	10		24	53	5	92		92				92
Bonds	27	25		12	4	68	4	8	56			68
Loans		85			2	87	22	9	35	15	6	87
Equity	9	32	6	19	7	73	47	17		4	5	73
Other assets nec	8	-19	5	4	2	0						0
Net financial worth							-19	34	-56	69	2	30
Financial account												
Monetary gold and SDRs						0						0
Currency and deposits	-6		-1	17	-1	9		9				9
Bonds	2	3		-2	-1	2	-1		3			2
Loans		11				11	-4	1	9	6	-1	11
Equity	-5	11	-3	5	1	9	5	1		1	2	9
Other assets nec	1	-3	1	1		0						0
Changes in net financial worth							-8	11	-15	14	-2	0
Other changes in the volume of assets												
Monetary gold and SDRs												
Deposits												
Bonds												
Loans												
Equity												
Other assets nec												
Changes in net financial worth												
Revaluations												
Monetary gold and SDRs		1				1						
Deposits												
Bonds												
Loans												
Equity		2		1		3	2	1				3
Other assets nec												
Changes in net financial worth							-2	2		1		1
Closing balance sheet												
Monetary gold and SDRs		38				38					7	7
Deposits	4		23	70	4	101		101				101
Bonds	29	28		10	3	70	3	8	59			70
Loans		96			2	98	18	10	44	21	5	98
Equity	4	45	3	25	8	85	54	19		5	7	85
Other assets nec	9	-22	6	5	2							
Net financial worth							-29	47	-71	84		31

4. Links to the IMF data systems

- 16.37 Users with a familiarity of monetary and financial statistics, for example as compiled in accordance with the IMF's MFS, should be able to see how the figures in table 16.10 relate to those in MFS.
- 16.38 Table 16.11 shows data relating to the rest of the world extracted from the preceding tables, with items on the right of the tables now labelled credits and those on the left debits. Not all balancing items are shown but the result is a table that will seem very familiar to those who compile the balance of payments. A comparison between this table and a standard BOP table will reveal the strict consistency between the two data sets
- 16.39 Table 16.12 shows data related to general government extracted from the preceding tables. Items on the right are

labelled revenue and those on the left expenses GFS. These should be reconcilable with GFS figures without too much difficulty. If a country is still using the 1986 version of the GFSM, there will be some differences because that manual records revenue and expense on a cash basis. Not only will accrual adjustments be omitted but any transactions in kind will also not appear in the GFSM data.

- 16.40 The 2001 version of GFSM moves to an accrual basis but still differs from the SNA in that imputed transactions are not included. The SNA figures for output and consumption include a figure of 9 for consumption of fixed capital held by government. This amount will not appear in the GFS figures, even on a 2001 basis. In addition there are some small differences of how some items of capital formation are recorded but overall net lending and borrowing in the SNA and GFS are identical.

D. Satellite accounts

- 16.41 A satellite account can take one of two forms. These are often referred to as internal and external satellites. An internal satellite account is one that takes one part of the accounting system and draws attention to it either by introducing greater detail or new aggregates while aggregating those areas of lesser interest
- 16.42 One example of an internal satellite account is that for tourism. This concentrates on areas of special interest to

tourists, such as hotels and restaurants, possibly sporting or cultural attractions and so on while aggregating those parts of the economy that are not so impacted by tourism. The match is not exact. Some non-tourists will engage in activities typical of tourists, for example eating in a restaurant, and some tourists will engage in activities not typical of tourists, for example buying medicine at a pharmacy. Nevertheless, the resulting analysis can give

Table 16.11: Information from the sector accounts relating to the rest of the world (balance of payments)

Debits		Credits	
Exports	36	Imports	50
Primary income from the rest of the world		Primary income to the rest of the world	
Compensation of employees	10	Compensation of employees	8
Interest	3	Interest	9
Dividends and rent	1	Dividends and rent	4
Current transfers from the rest of the world		Current transfers to the rest of the world	
International cooperation	5	International cooperation	1
Transfers involving NPISHs	6	Transfers involving NPISHs	
Personal remittances	7	Personal remittances	1
Current external balance	5		
Capital transfers		Capital transfers	
From the rest of the world	7	To the rest of the world	
		Net lending/borrowing	-2
Financial transactions		Financial transactions	
Deposits	-1	Deposits	
Bonds	-1	Bonds	
Loans		Loans	-1
Equity	1	Equity	2

Table 16.12: Information from the sector accounts relating to the general government sector (GFS)

Expenses		Revenue	
		Output	36
Intermediate consumption	17		
Compensation of employees	10		
Consumption of fixed capital	9	Taxes on products	9
		Other taxes on production	6
		Subsidies on production	-3
Interest	12	Interest	3
Dividends		Dividends	2
		Taxes on income	14
Social assistance	3		
International cooperation	1	International cooperation	5
Consumption expenditure	38		
Saving	-9		
		Capital taxes	2
Investment grants	3	Investment grants	7
Gross fixed capital formation	12	Net lending/borrowing	-15
Financial transactions		Financial transactions	
Deposits	-1	Deposits	
Bonds		Bonds	3
Loans		Loans	9
Equity	-3	Equity	
Other assets nec	1	Other assets nec	

interesting information about the role that tourism plays in the economy.

16.43 Another example of an internal satellite account concerns identifying all non-profit institutions in the economy and drawing up accounts for these units taken together in contrast to all other units.

16.44 An external satellite account takes a part of the accounting system that is of particular interest and adds information that is normally outside the system. One example is an account that includes monetary estimates of the value of household services. Another concerns accounts for the

environment where monetary values may be attached to depletion of natural resources and, possibly, places values on environmental degradation.

16.45 Compiling satellite accounts can be quite demanding of resources, both of data and staff time. However, it is well to be aware of such developments and to know that internationally agreed manuals describe best practice for the compilation of some of the more common satellite accounts are available, for example through the UN web site. Chapter 29 of the 2008 SNA gives an overview of some of the most commonly prepared satellite accounts, including those referred to here.

Key points to remember

Communicating the results well is as important as making good estimates.

Show how the accounts confirm or dispute accepted views of what is happening in the economy and quantify them.

Remember the reader knows less about national accounts than you do; use text and pictures to explain what the data in the table is saying; use language the reader can understand.

Emphasize the consistency between national accounts and other macro-economic systems.

Chapter 17: Devising an immediate and a long term work programme

A. Introduction

- 17.1 Compiling a set of national accounts is much less straightforward than, say, compiling a price index but as with any task, careful planning helps to make clear what is possible and what is overambitious with existing resources. Sections B and C look at the process of determining an initial work programme. Section B items tasks to be undertaken; section C at matching human resources to the tasks. Not only is a formal work programme essential for the compiler to determine what can be produced and when, it can also serve as the basis for justifying a request for more resources or resisting a reduction in them.
- 17.2 Section D considers the steps that can be taken once the initial work programme is fully and smoothly operational. This includes incorporating the results of occasional data sources such as a population census and responding to requests for one-off exercises such as in depth studies on one particular aspect of the economy.
- 17.3 At various points, in order to keep the initial implementation of the full system manageable, it has been suggested that some approximations and shortcuts can be

adopted. These must be reviewed regularly to confirm that they are still of sufficiently small magnitude that the overall results are not unduly distorted. A check list of the most important issues are contained in Section E.

- 17.4 Throughout this chapter, the discussion in chapter 1 about the trade-offs between timeliness, accuracy and comprehensiveness should be kept firmly in mind. Two other precepts are also valuable. The first is that in many cases, eighty per cent of the final product can be achieved with twenty per cent of the effort for the whole. The second precept is very similar; that the best is often the enemy of the good. Perfect accounts never exist for any country for any time period. Having reasonably good estimates for all parts of the accounting system is likely to lead to better and more useful accounts than very good estimates for a small part. Only with all parts of the system available can the internal consistency checks be undertaken. Only with all parts of the system available will users understand how much information is conveyed by the accounts and support their extension.

B. An initial work programme

- 17.5 As with all tasks, a good starting point is to make a list of everything that will be needed to complete it. National accounts draw on a very wide array of data. This fact is the great strength of the SNA, since it puts data for particular facets of the economy in context and shows whether these are telling a consistent story about the path of economic development.

1. Data coming from outside the national accounts unit

- 17.6 Many necessary data sets will typically be the responsibility of other units within the statistical office or elsewhere in government. It is worthwhile talking to the staff responsible to explain what use the national accounts staff will make of their data. If the information is not exactly what is needed, it may be possible to negotiate a small change to make it more appropriate. Equally there may be some information that was not previously recognised as being relevant to national accounts but which can be used to strengthen the base of the accounts. The

basic data sets needed include, but may not be confined to, the following:

Information from enterprises showing the level of sales and production, intermediate consumption and labour costs collected by survey;

Employment by industry;

Information on prices, both “wholesale” prices, or those facing producers and “retail” or consumer prices, with as much commodity detail as is available;

Accounts for government;

Figures for imports and exports with commodity details;

The full balance of payments accounts;

Information on capital formation;

Financial statistics;

Agricultural statistics;

Construction statistics;

Commercial accounts for the very largest enterprises and full accounts for public corporations.

17.7 Find out the time schedule for the availability of each data set and impress on the provider the importance for national accounts of knowing when to be able to rely on the data being available.

17.8 Key to establishing and keeping to a work programme will be an annual planner which may well take the form of a wall chart which is always visible to all national accounts staff to remind everyone of where each task fits into the whole picture and where the forward and backward links are. The first entries on this planner should be the dates when data coming from outside the national accounts unit are available.

2. Tasks for the national accounts unit

17.9 The next step is to make a list of all the tasks that must be done within the national accounts unit. Many of these will consist of processing each of the data sets just enumerated into a format suitable for the national accounts.

Manufacturing industries

17.10 The most important and time consuming task is likely to be the processing of the information from enterprises into the form necessary for the estimation of production accounts, changes in inventories and estimates of capital formation. As discussed in chapter 2, decisions need to be made about where to draw the boundary between large, medium and small enterprises. Take the time to draw up a histogram of how many firms fall into different size categories, either by turnover or number of employees. Remembering that it takes almost as long to process every return, regardless of its relative importance, make a provisional decision on where to draw the boundaries between large, medium and small.

17.11 Next, sub-divide the columns of your histogram by industry. Identify which are the really important industries for your economy and set these aside. Then consider how many of the remaining industries it would be desirable to identify. Remember that you cannot publish a complete set of industries until you have data for every one of them. If you disaggregate too far, you will have few enterprises in some categories and will need very high response rates in order to have reliable results. You may also have problems of confidentiality about releasing data for industries that contain very few enterprises. In such cases it would be worth considering aggregating some of your industries together. These aggregations should group industries in similar broad industrial groups, for example within manufacturing or within services.

17.12 Now make a table of your industry groupings for each of the large, medium and small categories and into each cell put an estimate of how many person-weeks you think it will take to produce the figures you want, just for this cell, of the production account, changes in inventories and capital formation.

Other goods producing industries

17.13 Now work through the other data sets you will receive from other units and consider in a similar way how much information you need to collect, how much you want to include in your final tables and how long you expect it to take to produce each of them.

17.14 Will agricultural information be disaggregated? Probably yes but the nature of the disaggregation will vary from country to country. Key export crops are probably worth distinguishing. It may be useful to show estate production from small-scale activity. Subsistence food production may be a separate category. How much work needs to be done on the information available from colleagues working on agricultural statistics? What about information on capital formation and changes in inventories? This is not just a question of expenditure on tractors, farm implements and so on but must include estimates for changes in the stock of animals and growing crops and plantations. How long will all this take?

17.15 What information is available for construction? Ideally it could be treated like the industrial data described above but this may be too optimistic. How many weeks will it take to produce information on production, changes in inventories (remember work-in-progress on projects not complete at the end of the accounting period) and capital formation, both the tools used and completed structures and buildings not yet sold?

Particular industries

17.16 There are a number of industries that often have a strong public sector involvement and which are of particular importance for the economy. One of these is mining and quarrying which is especially important for resource rich countries. The provision of gas, water and electricity is crucial in all economies and also dominated by a few large providers. Transport and information and communication are equally key industries. Consider the data sources for each, discover when these are available and estimate how long it will take to reduce the incoming data to the format necessary for the national accounts.

17.17 The extent to which small and informal activity is important in these industries will depend on local circumstances but it is always important for transport, especially in cities. Consider how estimates for this are to be made and how long it will take.

Government information

17.18 At first sight, it would seem that having government data should be straightforward but in fact this may not be quite so. Central government accounts should indeed be straightforward, but consideration needs to be given to how

to ensure that lower levels of government are covered as well as any special agencies not in the central government accounts. Quite often information on local government is difficult to obtain or may be very delayed. Take advice from staff in the Ministry of Finance about any delays that are caused by waiting for local government data and consider whether working initially with central government data and grossing this up for local government would save significant time and staff resources. Make an estimate for the resources needed to incorporate local government data when it is available also.

- 17.19 Determine how long it will take to reformat the information provided by the Ministry of Finance (probably on the basis of the GFSM) to derive estimates of government intermediate consumption, compensation of employees and capital formation. You will need to identify taxes on production and on products even for the production-side estimate of GDP. How much longer would it take to complete the analysis of all taxes and of transfers? Not very much, but this information constitutes a major segment of the information necessary for the sector accounts – do it!
- 17.20 Be aware that sometimes government information is initially compiled on a period other than that used for the national accounts, for example fiscal year rather than calendar year. If this is so, discuss with the originators whether they can provide the information in such a way that this is not a problem, for example, quarterly data that can be aggregated as desired.

Other services

- 17.21 For financial services it is worth talking extensively with the central bank to see how far they can help to make the estimates you need or at the very least help to collate the information needed from which the estimates can be made. They will probably find this beneficial to themselves as well as helpful to you. Ascertain how long it will take and what timing is possible.
- 17.22 The estimate of the imputed rent of owner-occupied dwellings is important but almost always based on very partial data, most of which is not updated every year. This is a task that can be fitted into a suitable gap in the annual planning process. It is important to make a reasonable estimate but devoting excessive resources to the task is unlikely to be a good use of time because of the large degree of uncertainty involved.
- 17.23 Carefully consider which other services are important to identify and which are possible with the data sources available. Will the usefulness of the results justify very resource-intensive preparation of estimates for many small industries?

Consumption of fixed capital

- 17.24 The importance of making estimates for consumption of fixed capital is discussed in chapter 14. Setting up the initial estimates is not dependent on receiving new data and so can be done anytime. Once a functioning spreadsheet exists, it should be simple and quick to incorporate new estimates of gross fixed capital formation and derive the

implications for new estimates of consumption of fixed capital.

3. Getting to the first estimate of GDP

- 17.25 Once you have made estimates for how long it will take to process each of the necessary sets of data, you need to think about how long it will take to assemble them and when in the course of a year it will be possible to do so. It may not be necessary to wait until the last piece of contributory data is ready before you can start on the assembly though clearly it will not be possible to finish until everything you need is available and processed.
- 17.26 It is not enough simply to decide that you have finished processing one set of incoming data and move on to another. For every set it is necessary to look at it in the context of past data. The first comparison will obviously be with the previous year. Does the apparent change accord with your expectations? What about changes over a somewhat longer period? Remember that it is easy to suppose that sudden large changes are suspect. Often they are, but not always. One year the compilers in an OECD country found that there was a significantly large apparent increase in gross fixed capital formation compared with the previous year. Because they did not know what it was, they assumed it was an error and changed the data to be more in line with their expectations. However, it turned out that the unusual figures were the installation of mobile phone antennae and were quite correct. In this case, it was realised fairly quickly that there should indeed have been a large increase over previous years. However, it is much easier to spot unexpected increases (or decreases) and investigate them than to identify that smooth series are wrong because there should have been a sudden fluctuation. Having a check list of events you expect to cause significant changes from past observation is one way to manage this situation.
- 17.27 Investigating movement in a single series over time is one way to check for plausibility. Another is look at series that you would expect to move in line with one another. If food production is up, does household consumption expenditure go up as well? If there is a large import of capital goods does capital formation show a similar increase? Does the change in the number of employees reported in labour force statistics seem consistent with information from the business register about births and deaths of new firms?
- 17.28 It is not possible to be exact about how long such cross-checking should take. Each person processing one set of data should do this automatically but having someone from another area look over the results with a quizzical eye can be very beneficial.

4. Deflation to volume terms

- 17.29 Along with collating the various sets of information necessary for the estimation of GDP at current values, it is important to consider how long it will take to express each of these in volume terms. Obviously dividing one figure by another is not a very difficult or time consuming task but the assessment of its plausibility is crucially important. This means comparing the effects of deflating related items to ensure that not only the current values but also the deflators being used are broadly consistent. For example,

the deflators for particular imported goods should be compared with the deflators used for the goods as expenditure items, whether these are final consumption, capital formation or intermediate consumption. If, for example, the growth in construction output is not similar to the movement in housing costs, you need to consider whether the problem is with the current values, the deflators or possibly both. Under pressure of time, there is a danger that this sort of checking may not be undertaken with sufficient care so be sure to allow enough time for it in the work programme.

- 17.30 Chapter 9 describes the process of compiling information in volume terms and explains why chain-linked indices are increasingly preferred. Changing the base year used for volume estimates takes time but is a very good use of time. Data using very old base year weights are of little analytical use and serve to discredit the efforts involved in the rest of the exercise. For example, a country with significant natural resources needs to be sure that the importance of these in volume terms reflects their importance in a recent year and not the situation several years ago before major changes in relative international prices.

5. Documentation

- 17.31 As noted, national accounts are conceptually more difficult to compile than, say a price index, or aggregating survey information. Much of the learning process takes place by doing, with procedures explained by word of mouth but this is not enough on its own. There have been frightening examples of where a smoothly running section suddenly became dysfunctional because one member of staff left and no-one else really knew exactly what it was he or she did. This is especially so if extensive use is made of complex spreadsheets and what they are doing is not obvious (or even discernible) to anyone other than the person who set them up. Some documentation of processes is vital especially if complex excel worksheets are used. In the best of all possible worlds, this documentation should be sufficiently tidy that it can be made available to anyone who requests it but not having the time to prepare formal exhaustive documentation is not a reason to ignore the need to write down the steps taken to convert the data as they come to the national accounts section into the form in which they feature in the accounts. The time taken to

document a task in the first place will be saved over and over again as changes in staff take place.

6. Releasing the results

- 17.32 By now you should have estimates for when each incoming data set should be available and how long it will take to process each of them. First of all decide when a complete set of accounts should be available. If complete annual accounts can be made available within six to eight months of the end of the year, this looks good. If it looks optimistic, take time to see if you can reduce the preparation time, possibly by using less data or trying to see if incoming data can be made available sooner than you initially thought.
- 17.33 Once you know when a satisfactorily complete set of data should be available, think about whether it would be possible to release a preliminary estimate based on less data with the clear warning to users that this estimate is provisional and is likely to be revised. Users always press to have data as quickly as possible, but a very quick but very unreliable estimate does no favours to yourselves as compilers, to the reputation of the statistical office or, ultimately, to the users who run the risk of making bad policy decisions based on bad information.
- 17.34 It is highly desirable to announce in advance when “final” figures will be available and to stick to this announcement. If users know your announced date is reliable, this will help to keep them from continually pestering you to see if the results are available yet. If you plan to release a preliminary estimate a firm pre-announced date for the release is also needed. The same is true if you will have quarterly estimates except that the delay in their availability should be much shorter, for example not more than six to eight weeks after the end of the quarter.
- 17.35 Data should be released in a form that answers many of the users’ potential questions. It should include a set of tables with key data, including for example rates of change and shares of totals and text explaining the key features of the new data. Preparing the releases will take time, but not a lot of time and should ultimately save time as users become accustomed to accessing such a release electronically at given data.

C. Matching tasks and people

- 17.36 Once you have a list of all the tasks to be done and estimates of how long each should take, you need to consider how these are to be allocated among the staff available. This should be done and agreed in advance for the year as a whole so all members of the team can see how their particular tasks feed into the whole picture.
- 17.37 Remember that no member of staff works for 52 weeks in a year. Everyone is entitled to some leave in addition to statutory holidays. People are sick from time to time or have family emergencies to deal with that keep them away from the office for some days. Even when people are in the

office, there are other events that take time. Staff meetings, training sessions, and engaging with visitors such as World Bank and IMF staff all take time and even if it is “not very much”, to the extent this affects all the members of the team, you may find that a significant number of work days have been removed from your time table. Even planning that each staff member can work for 44 weeks in the year may be optimistic.

- 17.38 Management time is often neglected in small offices. At least the head of the unit and desirably others at lower levels, need to understand the schedule for the year, to

- monitor this and be able to make adjustments if this is necessary. Remember too that staff do not stay in the same job for ever. It is likely that there will always be at least one person new to national accounts working in the section and they will need someone else to help them until they have become totally familiar with the work. Suppose that you have four members of staff and each of them requires your attention for half an hour a day on average. This sounds a lot but if you keep a diary of how often you see staff and how long each one stays, you will be surprised how much of your day is taken up in this way. It is not a waste of time, but it does mean that you yourself will not work for even 44 weeks on the direct tasks associated with putting the accounts together. Half an hour a day for four staff members is a quarter of the working day, so your 44 weeks are down to 33.
- 17.39 The annual planner should now contain dates for incoming data and estimates of how long it will take to convert incoming data into the form needed by the accounts. It is very likely that some parts of the year may be very crowded and some much less so. Consider whether it would make a very significant difference to the possibility of producing annual accounts six to eight months after the end of the year (or quarterly accounts about 60 days after the end of the quarter) if the timing of key input series were different. If so, be prepared to make the case to senior management in the office to see if some rescheduling might be possible.
- 17.40 Consider which staff member, or staff members, will do which task. Different people have different strengths so review your estimates for the time each task should take and think again about whether your initial estimate is correct for a particular individual. If you have too few staff to do all the tasks you have itemised, consider how to reduce either the list of tasks or the time each needs.
- Reducing the industry dimension is one obvious possibility. Moving the boundary between large medium and small enterprises is another. Simplifying the number of financial assets and liabilities is another. Usually staff are willing to make an extra effort in an emergency but you cannot work in emergency conditions for the whole year. Do not assume that staff will simply work longer and harder to get everything done.
- 17.41 Remember that the unexpected often happens and you should have a little slack in your time table to allow for this. It is better to estimate 12 weeks for a task and take 10 than to estimate 8 and take 10. While the result seems to be the same the sense of pressure and failure in the second actually reduces productivity rather than enhancing it. And the extra two weeks will have been allocated to another task that will suffer. If you have two weeks in hand first have a modest celebration, but then be sure that something will happen to fill up the time
- 17.42 At least once a year you should discuss your work programme with your line manager. Explain why some limitations have to be made with the number of staff available. You may be able to make a good case for having more staff, but do not accept to expand the work programme on a promise that “we hope to make more staff available soon”. Start the expansion after the staff have come. Use the detailed planner and estimates of tasks by week to convince senior management that this is the only way to proceed. There is an answer to the question “how did this project get so far behind”? It is “one day at a time”. Each little hold-up seems manageable and it is easy not to take remedial action immediately but without regular monitoring of progress against the detailed planner there is the danger that serious slippage and the need for action does not become apparent until too late.

D. Moving beyond the simplest steps

- 17.43 This list of tasks and the effort that needs to be put into drawing up a detailed work programme may well sound daunting but it is the only way to get a really clear view of how limited resources can best be deployed in order to satisfy as many priorities as possible. The simple process of writing things down often reveals aspects of the work that we are aware of sub-consciously but do not fully appreciate, such as how much time is spent on training new members of the team or even just how long it takes to keep track of incoming correspondence.
- 17.44 As indicated throughout this document, an assessment of the priorities for the national accounts should be made in terms of the whole system assuming that adjustments can be made to achieve these, rather than taking the present situation as immutable. In particular there are three major areas where it has been argued the quality of the accounts as well as their usefulness could be significantly improved; these are commodity balancing, compiling sector accounts and compiling accumulation accounts.
- 1. Commodity balancing and derivation of GDP at current values**
- 17.45 Assuming you have estimates of GDP from the production side and estimates of government consumption, capital formation, export and imports, you need to consider how much time you can afford to devote to making a reasonable estimate of household consumption expenditure. As explained in chapter 8, commodity balancing need not be a very protracted task but will result in very much better estimates than estimating a single residual for household consumption expenditure. In addition, comparisons with previous years can be made in much more robust terms. The process also allows much more robust estimates of expenditure estimates for household consumption in volume terms.
- 2. Sector accounts**
- 17.46 Chapters 10 to 14 discuss how simple sector accounts can be compiled. As pointed out, most of the information needed is available from other sources so that the process

of compiling the accounts is not in itself very time consuming. Learning how to interpret the accounts and helping users to do so also will probably take a little longer at least initially. Demonstrating the consistency of the national accounts with the balance of payments and government accounts underlines how a more comprehensive view of the economy can be portrayed and used for policy purposes. Having information on savings ratios and net borrowing and lending by sector is a major analytical advance as well as helping to improve the quality of the accounts by ensuring all the accounting identities are satisfied and produce plausible results.

E. Longer term considerations

17.48 It is not unreasonable to expect it to take three years to get into a regular working rhythm where a more or less complete set of accounts is being produced on a predictably regular basis. ONLY when this is so is it appropriate to consider what else could be done with more resources. There are basically three sorts of extensions that can be considered. The first of these is the consequence for the national accounts of one-off data sources becoming available from elsewhere in the office. The second is responding to requests from users for one-off exercises. The third is the question of whether some of the simplifications introduced in order to complete the system could be relaxed.

1. One-off data sources

17.49 The classic example is the results of population census which occurs every five or more probably every ten years. The results have implications for estimates of GDP per capita and also for figures on the labour force which may be used for grossing up production estimates. However, the chances are that most of the analysis of the consequences for the national accounts may have been studied elsewhere in the office, by those responsible for the census and the labour statisticians, for example.

17.50 Another example is the availability of a new household budget survey or income and expenditure survey. This can improve not only the information underlying the compilation of price indices used within national accounts but also assist in commodity balancing exercises.

17.51 As indicated, often much of the work associated with incorporating the results of such one-off data sources may be undertaken as a regular part of the exercise itself. Problems may occur for the national accounts section, though, if it is suggested that staff from the section are to be seconded temporarily to help with the exercise. Here the detailed planner comes into its own again. Senior management needs to be confronted with the consequences for the timetable for the production of the accounts of removing staff even for a relatively short period.

3. Accumulation accounts

17.47 The accumulation accounts provide key data for those looking for the potential for growth in the economy. Again much of the necessary information is available from other sources. An estimate of consumption of fixed capital in addition to the figures for gross fixed capital formation already part of the GDP estimates shows how far the capital base of the economy is sustainable. Providing information on the stock of financial assets and liabilities not only helps to articulate how financial services are provided to the economy but also allows the role of foreign finance in the economy to be demonstrated. Given how much of this work will already be available from the central bank, the extra resource cost to the national accountants is modest, but the benefits to users are very considerable.

17.52 Where you cannot look to others to provide input is when you have to consider what the consequences of new data are for past estimates. It makes no sense to incorporate new data into the estimates for year n leaving previous years unchanged with an apparent step from year n-1 to year n. Many compilers are reluctant to change back data thinking that this looks like an admission of past error. This is quite mistaken. Be sure to explain in your releases that previous estimates were the best possible on the information then available but with new data (explain what this is) better estimates are now available. Having the courage to the need to do this is a sign of strength not a sign of weakness.

2. One-off exercises

17.53 From time to time, with the best intentions, analysts will suggest that the national accounts section undertake a special exercise to examine a particular aspect of the economy. A tourism satellite account is one example, a social accounting matrix is another. Each of these are very useful analyses but require both more staff resources and more data. Sometimes a budget will be provided to cover these but often overlooked is the extra demand placed on existing staff members with an already full work load to assist in explaining how the features of interest are currently covered in the national accounts or, if not, why not. Again the planner is a valuable way to explain to senior management the consequences of proceeding with such one-off exercises, particularly those where the interest and benefit lie outside the statistical office and possibly even outside the country. If such exercises are to be worthwhile, they must be properly resourced and the consequences for regular work fully understood.

3. Relaxing the simplifications in the system

17.54 Almost every previous chapter has ended with a section asking how far what was proposed was strictly consistent with the whole SNA. As pointed out at the beginning there is probably no single country that implements the whole of the SNA in every detail without any variations to take account of particular local conditions. Implementing less

than the whole system is not implementing a different system, it is simply being selective about what is most important to a particular country faced without sufficient resources to implement the whole system. Nevertheless if more resources do become available the question arises of how to decide which parts of the system should be more fully implemented.

Consider looking again at the dividing lines between large, medium and small enterprises. It may be relatively easy and analytically useful to increase the number of enterprises considered to be large but probably spending more effort improving estimates of informal enterprises will be more beneficial.

17.55 National accountants are always dependent on others for most of their data. It is not appropriate for a national accountant to consider trying to collect data that should be provided by another section of the office. If this data is really crucial to the improvement of the accounts, then in the limit it might be better for the extra resources (or some of them) to be made available to the unit responsible for the basic data.

Consider expanding the number of financial assets and liabilities shown on the accounts but be sure to follow the lead of the central bank and their coverage in their monetary and financial statistics.

17.56 The candidates for using extra resources might be the following:

Consider the balance of resources spent of annual and quarterly accounts. Having more complete quarterly accounts without losing timeliness on either the quarterly or annual tables might be more useful than more industrial detail.

Consider expanding the list of industries distinguished in the accounts. The expansion should be to show industries where there is a real analytical interest rather than simply to follow ISIC.

There may be a new development in the economy, for example greater use of outsourcing, or the new exploitation of a natural resource, that requires a significant adjustment to the procedures that are currently in place.

Key points to remember

A detailed work programme is essential to ensure that accounts are produced when expected and are the best way to demonstrate the need for more resources and resist cuts to existing ones.

In drawing up the work programme remember:

Everything takes longer and requires more effort than initially envisaged.

Unexpected events happen often, it is only the nature of the event that is unpredictable.

How did this project get behind – one day at a time.

Beating a deadline is much more encouraging than missing one even if the end result is the same.

Management and managing process is as important (or more) than producing results.

Once the results are available, release them electronically with enough text to help the users interpret them well.

Do not aim to compile perfect accounts – you are bound to fail; aim for accounts where the balance between timeliness, accuracy and comprehensiveness is the best you can achieve with the given resources.

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Glossary

Animal resources yielding repeat products cover animals whose natural growth and regeneration are under the direct control, responsibility and management of institutional units.	10.92
Asset An asset is a store of value representing a benefit or series of benefits accruing to the economic owner by holding or using the entity over a period of time. It is a means of carrying forward value from one accounting period to another.	10.8
Asset boundary for fixed assets The asset boundary for fixed assets consists of goods and services that are used in production for more than one year.	10.33
Buildings other than dwellings include whole buildings or parts of buildings not designated as dwellings. Fixtures, facilities and equipment that are integral parts of the structures are included.	10.74
Capital taxes consist of taxes levied at irregular and infrequent intervals on the values of the assets or net worth owned by institutional units or on the values of assets transferred between institutional units as a result of legacies, gifts inter vivos or other transfers.	10.207
Capital transfers are unrequited transfers where either the party making the transfer realizes the funds involved by disposing of an asset (other than cash or inventories), relinquishing a financial claim (other than accounts receivable) or the party receiving the transfer is obliged to acquire an asset (other than cash) or both conditions are met.	10.19
Changes in inventories are measured by the value of the entries into inventories less the value of withdrawals and less the value of any recurrent losses of goods held in inventories during the accounting period.	10.118
Changes in net worth due to saving and capital transfers represent the positive or negative amount available to the unit or sector for the acquisition of non-financial and financial assets.	10.21
Computer software consists of computer programs, program descriptions and supporting materials for both systems and applications software.	10.110
Consumption of fixed capital is the decline, during the course of the accounting period, in the current value of the stock of fixed assets owned and used by a producer as a result of physical deterioration, normal obsolescence or normal accidental damage. ...	10.25
Contracts, leases and licences are treated as assets only when both the following conditions are satisfied. The terms of the contract, lease or licence specify a price for the use of an asset or provision of a service that differs from the price that would prevail in the absence of the contract, lease or licence. One party to the contract must be able legally and practically to realize this price difference.	10.186
Contracts, leases and licences are treated as assets only when both the following conditions are satisfied. The terms of the contract, lease or licence specify a price for the use of an asset or provision of a service that differs from the price that would prevail in the absence of the contract, lease or licence. One party to the contract must be able legally and practically to realize this price difference.	10.16
Costs of ownership transfer The costs of ownership transfer consist of the following kinds of items (i) All professional charges or commissions incurred by both units acquiring or disposing of an asset such as fees paid to lawyers, architects, surveyors, engineers and valuers, and commissions paid to estate agents and auctioneers. (ii) Any trade and transport costs separately invoiced to the purchaser, (iii) All taxes payable by the unit acquiring the asset on the transfer of ownership of the asset. (iv) Any tax payable on the disposal of an asset. (v) Any delivery and installation or disinstallation costs not included in the price of the asset being acquired or disposed of. (vi) Any terminal costs incurred at the end of an asset's life such as those required to render the structure safe or to restore the environment in which it is situated.	10.51
Cultivated biological resources cover animal resources yielding repeat products and tree, crop and plant resources yielding repeat products whose natural growth and regeneration is under the direct control, responsibility and management of an institutional unit.	10.88

Databases consist of files of data organized in such a way as to permit resource-effective access and use of the data.	10.112
Dwellings are buildings, or designated parts of buildings, that are used entirely or primarily as residences, including any associated structures, such as garages, and all permanent fixtures customarily installed in residences.	10.68
Economic owner The economic owner of entities such as goods and services, natural resources, financial assets and liabilities is the institutional unit entitled to claim the benefits associated with the use of the entity in question in the course of an economic activity by virtue of accepting the associated risks.	10.5
Entertainment, literary and artistic originals consist of the original films, sound recordings, manuscripts, tapes, models, etc., on which drama performances, radio and television programming, musical performances, sporting events, literary and artistic output, etc., are recorded or embodied.	10.115
Entitlement to future goods and services on an exclusive basis relates to the case where one party which has contracted to purchase goods or services at a fixed price at a time in the future is able to transfer the obligation of the second party to the contract to a third party.	10.195
Existing fixed asset An existing fixed asset is one whose value was included in the stock of fixed capital of at least one producer unit in the domestic economy at some earlier point in time either in the current period or in the immediately previous accounting period.	10.38
Expenditure measure of GDP The expenditure measure of gross domestic product (GDP) is derived as the sum of expenditure on final consumption plus gross capital formation plus exports less imports.	16.47
Finished goods consist of goods produced as outputs that their producer does not intend to process further before supplying them to other institutional units.	10.142
Fixed assets are produced assets that are used repeatedly or continuously in production processes for more than one year.	10.11
GNI Gross national income (GNI) is defined as GDP plus compensation of employees receivable from abroad plus property income receivable from abroad plus taxes less subsidies on production receivable from abroad less compensation of employees payable abroad less property income payable abroad and less taxes plus subsidies on production payable abroad.	16.54
Goods and services account The goods and services account shows the balance between the total goods and services supplied as resources to the economy as output and imports (including the value of taxes less subsidies on products not already included in the valuation of output) and the use of the same goods and services as intermediate consumption, final consumption, capital formation and exports.	16.27
Goods for resale are goods acquired by enterprises, such as wholesalers or retailers, for the purpose of reselling them to their customers. .	10.145
Goodwill and market assets The value of goodwill and marketing assets is defined as the difference between the value paid for an enterprise as a going concern and the sum of its assets less the sum of its liabilities, each item of which has been separately identified and valued.	10.199
Gross capital formation shows the acquisition less disposal of produced assets for purposes of fixed capital formation, inventories or valuables.	10.24
Gross fixed capital formation in a particular category of fixed asset consists of the value of producers' acquisitions of new and existing products of this type less the value of their disposals of fixed assets of the same type.	10.64
Gross fixed capital formation is measured by the total value of a producer's acquisitions, less disposals, of fixed assets during the accounting period plus certain specified expenditure on services that adds to the value of non-produced assets.	10.32
Income measure of GDP The income measure of gross domestic product (GDP) is derived as compensation of employees plus gross operating surplus plus gross mixed incomes plus taxes less subsidies on both production and imports.	16.48
Information, computer and telecommunications (ICT) equipment consists of devices using electronic controls and also the electronic components forming part of these devices.	10.85

Intellectual property products are the result of research, development, investigation or innovation leading to knowledge that the developers can market or use to their own benefit in production because use of the knowledge is restricted by means of legal or other protection.	10.98
Inventories are produced assets that consist of goods and services, which came into existence in the current period or in an earlier period, and that are held for sale, use in production or other use at a later date.	10.12
Investment grants consist of capital transfers made by governments to other resident or non-resident institutional units to finance all or part of the costs of their acquiring fixed assets.	10.208
Land consists of the ground, including the soil covering and any associated surface waters, over which ownership rights are enforced and from which economic benefits can be derived by their owners by holding or using them.	10.175
Land improvements are the result of actions that lead to major improvements in the quantity, quality or productivity of land, or prevent its deterioration.	10.79
Legal owner The legal owner of entities such as goods and services, natural resources, financial assets and liabilities is the institutional unit entitled in law and sustainable under the law to claim the benefits associated with the entities.	10.5
Machinery and equipment covers transport equipment, machinery for information, communication and telecommunications (ICT) equipment, and other machinery and equipment.	10.82
Marketable operating leases are third-party property rights relating to fixed assets.	10.190
Marketing assets consist of items such as brand names, mastheads, trademarks, logos and domain names.	10.198
Materials and supplies consist of all products that an enterprise holds in inventory with the intention of using them as intermediate inputs into production.	10.131
Military inventories consist of single-use items, such as ammunition, missiles, rockets, bombs, etc., delivered by weapons or weapons systems.	10.144
Mineral and energy resources consist of mineral and energy reserves located on or below the earth's surface that are economically exploitable, given current technology and relative prices.	10.179
Mineral exploration and evaluation consists of the value of expenditures on exploration for petroleum and natural gas and for non-petroleum deposits and subsequent evaluation of the discoveries made.	10.106
Natural resources consist of naturally occurring resources such as land, water resources, uncultivated forests and deposits of minerals that have an economic value.	10.15
NDP Net domestic product (NDP) is defined as gross domestic product (GDP) less the consumption of fixed capital.	16.52
Net borrowing see net lending	10.28
Net lending is defined as the difference between changes in net worth due to saving and capital transfers and net acquisitions of non-financial assets (acquisitions less disposals of non-financial assets, less consumption of fixed capital). If the amount is negative it represents net borrowing.	10.28
NNDI Net national disposable income (NNDI) is defined as net national income (NNI) plus current transfers receivable from abroad less current transfers payable abroad.	16.57
NNI Net national income (NNI) is defined as gross national income (GNI) less the consumption of fixed capital.	16.55
Non-cultivated biological resources consist of animals, birds, fish and plants that yield both once-only and repeat products over which ownership rights are enforced but for which natural growth and/or regeneration is not under the direct control, responsibility and management of institutional units.	10.182
Non-produced assets consist of three categories (i) natural resources, (ii) contracts, leases and licences, and (iii) purchased goodwill and marketing assets.	10.14

Other buildings and structures comprise non-residential buildings, other structures and land improvements.	10.73
Other capital transfers consist of all capital transfers except capital taxes and investment grants.	10.210
Other intellectual property products include any such products that constitute fixed assets but are not captured as research and development, mineral exploration and evaluation, computer software and databases or entertainment, literary and artistic originals. 10.117	
Other machinery and equipment consists of machinery and equipment not elsewhere classified.	10.86
Other structures include structures other than buildings, including the cost of the streets, sewer, etc.	10.76
Other work-in-progress consists of output (other than on cultivated biological resources) that is not yet sufficiently processed to be in a state in which it is normally supplied to other institutional units.	10.141
Permit to undertake a specific activity A permit to undertake a specific activity is one where: the permits are limited in number and so allow the holders to earn monopoly profits, the monopoly profits do not come from the use of an asset belonging to the permit-issuer, a permit holder is able both legally and practically to sell the permit to a third party.	10.192
Permits to use natural resources are third-party property rights relating to natural resources.	10.191
Production measure of GDP The production measure of gross domestic product (GDP) is derived as the value of output less intermediate consumption plus any taxes less subsidies on products not already included in the value of output	16.47
Public monuments are identifiable because of particular historical, national, regional, local, religious or symbolic significance.	10.78
Purchased goodwill and marketing assets represent the whole or part of the net worth of an institutional unit.	10.17
Research and development consists of the value of expenditures on creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and use of this stock of knowledge to devise new applications. This does not extend to including human capital as assets within the SNA.	10.103
Transport equipment consists of equipment for moving people and objects.	10.84
Tree, crop and plant resources yielding repeat products cover plants whose natural growth and regeneration are under the direct control, responsibility and management of institutional units.	10.95
Valuables are produced goods of considerable value that are not used primarily for purposes of production or consumption but are held as stores of value over time.	10.13
Water resources consist of surface and groundwater resources used for extraction to the extent that their scarcity leads to the enforcement of ownership and/or use rights, market valuation and some measure of economic control.	10.184
Weapons systems include vehicles and other equipment such as warships, submarines, military aircraft, tanks, missile carriers and launchers, etc.	10.87
Work-in-progress consists of output produced by an enterprise that is not yet sufficiently processed to be in a state in which it is normally supplied to other institutional units.	10.134
Work-in-progress on cultivated biological resources	10.140
Work-in-progress on cultivated biological resources consists of output that is not yet sufficiently mature to be in a state in which it is normally supplied to other institutional units.	10.140