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Handbook of National Accounting

LINKS BETWEEN BUSINESS ACCOUNTING AND NATIONAL ACCOUNTING

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NOTE

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ABBREVIATIONS

BEA : Bureau of Economic Analysis (United States of America)
GFCF : Gross fixed capital formation
GCF : Gross capital formation
GCS : Gross capital stock
FC : Financial corporation
FIFO : First in, first out
FISIM : Financial intermediation services indirectly measured
FRB : Federal Reserve Board (United States of America)
INSEE : Institut national de la statistique et des études économiques (France)
ISIC : International Standard Industrial Classification of All Economic Activities
LIFO : Last in, first out
NCS : Net capital stock
NFC : Non-financial corporation
NIPA : National income and product accounts (United States of America)
PIM : Perpetual inventory method
PV : Present value
SNA : System of National Accounts
SUT : Supply and use tables
UNSD : United Nations Statistics Division

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INTRODUCTION

0.1. This is one of a series of handbooks prepared by the United Nations Statistics Division (UNSD) to help countries, particularly developing countries, implement the 1993 System of National Accounts.[1] The series also includes the following handbooks which have already been published or soon will be:

Integrated Environmental and Economic Accounting;[2]
Use of the SNA for Transition Economies;[3]
Input-Output Table Compilation and Analysis;[4]
Household Accounting: Experiences in the use of Concepts and their Compilation;[5]
A System Approach to National Accounts Compilation;[6]
Analytical and Policy Uses of National Accounts.[7]

0.2. Besides the handbooks prepared by UNSD, other organizations of the Inter-Secretariat Working Group on National Accounts (ISWGNA) such as Eurostat (the Statistical Office of the European Communities), the International Monetary Fund (IMF), and the Organisation for Economic Co-operation and Development (OECD), as well as other international organizations such as the Food and Agriculture Organization (FAO), World Tourism Organization, etc. also prepare handbooks in their specialized fields of statistics. All handbooks published or soon to be published in support of the implementation of the 1993 SNA are announced in the ISWGNA=s *SNA News and Notes*, a biannual newsletter edited and published by UNSD.[8]

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[1]The *System of National Accounts 1993* was prepared under the auspices of the Inter-Secretariat Working Group on National Accounts which includes the Commission of the European Communities, the International Monetary Fund, the Organisation for Economic Co-operation and Development, the World Bank and the United Nations (United Nations publication, Sales No. E.94.XVII.4).

[2]United Nations Statistics Division, Studies in Methods, Handbook of National Accounting, Series F, No.61 (United Nations publication, Sales No. E.93.XVII.12).

[3]*Ibid*., No.66 (United Nations publication, Sales No. E.96.XVII.11).

[4]*Ibid*., No.74 (United Nations publication, Sales No.E99.XVII.9).

[5]*Ibid*., No. 75 (United Nations publication, forthcoming in 2000).

[6]*Ibid*., No. 77 (United Nations publication, Sales No.E.99.XVII.10).

[7]*Ibid*., No. 78 (United Nations publication, forthcoming in 2000).

[8]*SNA News and Notes* is published in four UN languages (English, French, Russian and Spanish) and can be accessed on the Internet: http://www.un.org/depts/unsd. Correspondence including requests for free subscriptions may be addressed to: UNSD, room DC2-1720, New York, NY 10017, United States of America, Tel.: 1(212) 963-4854; fax:1(212) 963-1374; e-mail: sna@un.org.

0.3. This handbook attempts to cover the conceptual aspects and practical aspects of linking business accounts to national accounts through countries' experiences. Due to the diversity of business accounts standards among countries as well as the extent to which business accounts are made available to statisticians, the handbook will not be able to provide a set of concrete and detailed international guidelines. However, it is hoped that it will provide a general guide to business accounts and the possibility of linking items in them to SNA concepts with necessary adjustments, given the knowledge of concrete rules and regulations specific to a country.

0.4. The main target audience for this handbook are staff responsible for the compilation of national accounts, though it is also a useful reference for other people who provide statistics for the preparation of national accounts. These include accountants, staff in other government agencies such as tax authorities as well as branch statisticians in national statistical offices. The preparation of national accounts by national statistical offices requires close collaborative effort between staff in national accounts and staff in other areas internal and external to that agency that provide the basic data. While the manipulation and adjustment of the basic data in concepts and formats compatible with the requirements of the SNA is the responsibility of national accountants, a minimal understanding of those requirements by staff in other areas will help minimize the extent of any required adjustments.

0.5. The use of business accounts to compile national accounts is not new. Some countries use business accounts indirectly through censuses and surveys of business or tax returns, others use business financial reports directly. Many countries, however, combine both direct and indirect uses. No matter how business data are obtained, it is important that their contents be clearly understood. It is for this reason that much of this handbook is devoted to reading business accounts and to showing how to link their data to national accounts concepts. The linking of business accounts to national accounts requires a clear understanding of business accounts, which is, more often than not, a handicap faced by national accountants who are trained mainly in macroeconomics and not in business accounting. An understanding of business accounts formats and the conceptual links between national accounts and business accounts would help national accountants and survey specialists to use data from business accounts properly and to design survey questionnaires that ask the most relevant data from business accounts in a format that is understood by business accountants.

0.6. Full business accounts, consisting of the profit and loss statement, the balance sheet and possibly the statement of changes in the financial position, are prepared mainly by incorporated enterprises because they are required by law and have to be submitted to tax authorities in some standard forms. In many countries, these tax returns are kept confidential by the tax authorities. Only when shares of corporations are publicly traded are their accounts required to be made public under regulations issued by government agencies which are set up to protect shareholders against fraud in the sale of corporate securities.

0.7. Because of the above circumstances, business accounts of privately held corporations may not be available for use by national accounts statisticians. Furthermore, for the accounts that are required to be made public, their contents are normally not detailed enough for the compilation of all items of national accounts so that efforts would be needed to obtain additional information from corporations. This does not mean that statisticians have to rely only on the cooperation of private corporations for information. With governmental cooperation, information on tax returns can still be used while protecting the confidentiality of tax returns of individual corporations. The United States of America is a case in point to illustrate how business accounts can be utilized even though "full business accounts" or similar information provided by businesses to tax authorities are never made public and access by statistical agencies to tax returns records is limited.[9] In that

[9]Accounts of publicly traded corporations that are made public are based on a different set of accounting rules,

country, aggregate tabulations by industry and by other characteristics of items on tax returns prepared on the basis of a statistically edited sample are made available by the Treasury Department (see chapter V). In addition, the Census Bureau has access to the master tax return mailing list and revenue data for each business; the Bureau of Economic Analysis, which prepares national accounts, has access to the complete tax returns for a small number (hundreds) of large corporations' tax returns. France is one of a few countries where statisticians (at INSEE) can use the tax returns of every company (see chapter IV) identified by a specific code number, which makes it possible to link all information, be it administrative or surveyed, on an enterprise as a whole.

0.8. Since business accounts are the only or main source of information on corporate business activities, it seems natural that a standardized format should be developed to link data from business accounts to national accounts. Unfortunately, accounting standards, both in format and content, may vary not only from one country to another but also from one business to another; this makes it impossible to develop a standardized format for converting business accounts to national accounts. National accountants, as a consequence, have to use their judgement and understanding of the accounting practices in their countries to link business accounts data to national accounts data with appropriate adjustments. Because of the complication imposed by non-standardization, it is suggested that information from business accounts should first be rearranged in the formats of national accounts - which are called intermediate accounts - without any adjustments. Individual items in the intermediate accounts are then adjusted to conform as much as possible to national accounts. The conceptual linking of items in business accounts to national accounts is discussed in chapter I and the practice in France of a full-fledged system of integrating business data and national accounts data is discussed in chapter IV.

0.9. In all countries, legal business entities are required by law to show the contents of business accounts in forms with varying degrees of standardization to tax authorities and for public information. These forms follow in their broad outlines either the Anglo-American or the German-French traditions. The formats for business accounts, particularly the statement of incomes and expenditures, of the Anglo-American tradition (for example in Australia, Britain, Canada and the United States of America) are quite different from those of the German-French tradition (for example in most European Union countries).

0.10. Table 0.1 shows the general formats of the statement of incomes and expenditures of the two major traditions. In the German-French tradition, the elaboration of common business accounting standards especially for public information greatly facilitates the use of business accounts to compile national accounts. As can be seen, the German-French format provides economic information which fits better the requirements of national accounts, particularly cost of goods and services used in production and staff costs. The Anglo-American general format, though beneficial to the analysis of functional costs for business purposes, hides the information required by national accounts behind functional terms like selling and administrative expenses which include labour costs, service costs and depreciation of equipments and buildings. In both traditions, extraordinary income and expense are separated from ordinary income and expense, the latter including items such as insurance compensation or loss due to disasters, expropriation, etc.

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commonly known as generally accepted accounting principles (GAAP). The rules for GAAP are prepared by non-governmental organizations such as the Financial Accounting Standards Board (FASB) and the American Institute of Certified Public Accountants (AICPA).

Table 0.1 General formats of the statement of incomes and expenditures

Anglo-American tradition	German-French tradition
Sales/turnover	Incomes
Cost of sales	Sales/turnover
Gross profit	Increase in stocks of finished goods and work in progress
General administrative expenses	Work performed and capitalized for own use
Selling and distribution expenses	Other operating income
Operating income (or profit)[10]	Investment incomes (interest and dividend receivable)
Investment income (net interest, dividend receivable)	Extraordinary income
Other net incomes	Charges
Net income (or profit) on ordinary activities	Reduction in stocks of finished goods and work in progress
Taxation on ordinary income (or profit)	Raw materials and consumables
Net income (or profit) on ordinary activities after taxation	Staff costs
Extraordinary net income (or profit) after taxation	Other operating charges
Profit of the financial year	Interest payable
	Tax on profit on ordinary activities
	Profit on ordinary activities after taxation
	Extraordinary charges
	Taxes on profit on extraordinary activities
	Profit for the financial year

0.11. Standards of business accounts began with Eugen Schmalenbach's works in 1921 which were put in concrete form and implemented in Germany as of 1937 (Deutsche Kontenrahmen - German accounting pattern), in Sweden in 1940 and in France in 1941 (Plan comptable général - PCG). The French PCG was revised in 1947, 1957 and 1982 in agreement with business accountants taking into account the needs of national accounts. The French version has had great influence on other countries such as Belgium, Spain, Portugal, the Commonwealth of African Countries, Madagascar and Mauritius (OCAM) and some Latin American countries. The German and French tradition also influenced the business accounting standards of

[10]Income is the common United States terminology while profit is the common British terminology. Profit is an abbreviation for profit or loss.

the Fourth Directive (1978)[11] of the European Community now the European Union (EU), which also accepts the Anglo-American format. The French PCG has been the basis for the preparation and publication of intermediate accounts by INSEE that are based on business accounts but close to SNA concepts.[12]

0.12. The Fourth Directive was to set a common denominator for a common market to function in an orderly manner. Though standards are legal mandates for EU countries, they can be bent to obtain the agreement of all member States, thus limiting their effectiveness. The Directive provides two balance-sheet formats, four profit-and-loss account formats, 60 points over which EU countries can make a choice. It further permits member States to exempt small and medium companies from complying with the standards.[13]

0.13. On a global scale, the International Accounting Standards Committee (IASC) was set up under a 1973 agreement "to formulate and publish in the public interest basic standards to be observed in the presentation of audited accounts and financial statements and to promote their worldwide acceptance and observance". It is an independent private-sector body set up by professional accounting bodies in Australia, Canada, France, Ireland, Mexico, Japan, the United Kingdom and the United States. Currently, it has a membership of 120 professional accountancy bodies in 89 countries.

0.14. In the United States of America and Canada, flexibility in both format and content of business accounts is preferred by both the business community and the accounting profession. Flexibility is normally practised in the following areas: the valuation of inventories, the method of depreciation and depletion, the treatment of leasing (capital versus operating) and research and development. The adopted method will influence the value of net income and income tax liabilities. Depending on the type of industry and the objective of a corporation, a specific method to deal with the above areas is chosen. For example, if the corporation wants to reduce tax payment in high inflation periods (they have to pay higher taxes in subsequent periods), then LIFO (last in, first out)[14] is used to value inventories and an accelerated method is used to calculate depreciation and depletion in order to increase the cost assigned to the current accounting period. However, in so doing, net income (or profit) is also reduced, which may not be an immediate objective for other corporations. The latter may want to go into the opposite direction in order to show higher net income. Similarly, capital leasing if not capitalized will show lower value of liabilities. The methods used vary by type of industries. Computer firms prefer FIFO (first in, first out) as it matches inventory costs of previous periods (which are higher as the price trend of computer components drops over time) against current sales so that net income is lower. Conversely, retailers prefer LIFO as it matches current costs against current sales. With detailed information, accountants will be able to recalculate these values according to the same accounting

[11]Fourth Council Directive of 25 July 1978, *Official Journal of the European Communities*, No L 222/11, 14 August 1978.

[12]The principles and practices of the French version and the links with national accounts are very well described in Francis Rousse's *Normalisation Comptable, Principes et Pratiques*, published by the French Ministère de la coopération et du développement, 1989. It was translated into Spanish under the title *Normalización Contable, Principios y Prácticas*, published by the Statistical Office of the European Communities (Eurostat, 1992).

[13]See Richard Lewis and David Pendrill, *Advanced Financial Accounting*, fourth edition (London, Pitman Publishing, 1994), pp. 36-39.

[14]In the United States of America, once the method is chosen by a company, it must be used consistently from one year to the next. Changes in method of valuation must be approved by the tax authority, the Internal Revenue Service.

standards for comparison. Unfortunately, more detailed information is generally not available unless national regulations exist or private corporations are willing to cooperate. In the United States of America, with GAAP[15] there has to be a disclosure of inventory valuation method. The problem with statisticians using this information is where a corporation uses several methods, which one used by a particular industry is not specified. Nevertheless, with the growing internationalization of capital markets, international standards for business accounts may eventually evolve. The need for capital from the international financial market requires national firms to be listed on the stock markets of other countries, forcing them to conform with their standards. The need to accommodate diverse standards for stock listing would be costly and detrimental to the growth of internationally traded common stocks, unless a common accounting standard is adopted.

0.15. One important issue to be noted in the use of business accounts is the difference between business accounts for tax purposes and those for business analysis or public information. A major difference commonly cited is in the treatment of depreciation: accounting for tax purposes may apply a depreciation schedule allowed by tax authorities in order to reduce the immediate payment of income taxes while accounting for business analysis focuses on the true standing of a company with a different schedule of depreciation which reflects the nature of the fixed assets. This, however, is not an important issue in national accounts, where the concept of depreciation (or consumption of fixed capital) is not the same as in business accounts. The SNA concept of consumption of fixed capital must reflect the cost of fixed capital used up in production, which is measured at current market price (see chapter VIII). The consumption of fixed capital is commonly calculated by the perpetual inventory method (PIM) to replace depreciation used in business accounting in order to come closer to the actual cost of fixed capital used in production. In many developing countries that are unable to calculate the SNA consumption of fixed capital for lack of time series data on fixed capital formation, business depreciation is used as a proxy (see chapter VII).

0.16. There are other differences between tax accounting and analytical accounting that have consequences for national accounting. These differences may differ from country to country and therefore cannot be generalized. However, for the purpose of illustration, the following example on the "loophole" interpretation of expenses on research and development (R&D) by the business community in the United States of America is given. There, billions-of-dollars-a-year "goodwill", the excess of the purchase price over the cost of tangible assets on the balance sheet and an important part of the acquisition cost, is flexibly interpreted as "purchased research and development" by many businesses so that they can be written off immediately as intermediate consumption, though goodwill is clearly capitalized expenditure and therefore must be depreciated over time.[16] To use the information from business accounts properly, known value of R&D that is really "goodwill" has to be reclassified to acquisition of nontangible assets. In addition, intermediate consumption also has to be adjusted lower and value added adjusted higher. This does not mean that every item in business accounts has to be adjusted to conform with concepts in national accounts. National accountants have to balance between the needs for improvement, limited resources and timely release of economic information.

0.17. Another issue of importance to national accounting is the consolidation of business accounts of a parent company and its subsidiaries. When a corporation holds substantial voting rights in another company (even with less than 50% ownership), the financial statements of the parent and subsidiary may be combined into what are termed *consolidated business accounts*. In the United States of America, consolidation of a

[15]See footnote 9.

[16]More firms write off acquisition costs - Accounting strategy lets many avoid goodwill", *The Wall Street Journal,* 2 December 1996.

parent company and its subsidiaries is even allowed by tax authorities when 80% of shares of the subsidiaries are owned by the parent company. Consolidation, however, reduces the information available to national accountants since consolidated business accounts of a parent corporation and its subsidiaries are not the sum of their elements. In the consolidated income statement, revenues and expenses resulting from intercompany transactions are netted out. Similarly in the balance sheet, receivables, payables, stocks owned, retained earnings, etc., show only net values. In addition, with consolidated accounts, financial corporations may be combined with nonfinancial corporations, which makes the sectorization in national accounting less than perfect. For multinational corporations with subsidiaries in many countries, consolidated accounts are not very useful for investors and creditors in their activities in some particular countries.

0.18. It is important for the purposes of compiling national accounts that unconsolidated business accounts be the norm. This is the reason the SNA recommends in its paragraph 4.38 that "each individual corporation should be treated as a separate institutional unit". Another reason for the SNA to take this position is that groups of corporations and conglomerates are heterogeneous in activities and their size and composition may be continually shifting over time as a result of mergers and takeovers, thus changing the classification of an institutional unit and, therefore, defeating the purpose of time series analysis. In order to study the relationships between output and inputs, the netting out of intra-company transactions in consolidated accounts would not be appropriate since it distorts the relationships between output and inputs. France is one of the countries that require the submission of data by every (smallest) legal corporate unit. But even with unconsolidated accounts, statisticians still face the difficulty of compiling production accounts by industries (see chapter II).

0.19. This handbook includes papers dealing with linking, and necessary adjustments to conform business accounts concepts to national accounts concepts and countries' experiences in using business accounts. From the conceptual point of view and the experiences of many countries, it is possible and even desirable to use business accounts to compile all accounts of the non-financial corporations sector, except the balance sheet. The SNA balance sheet requires the revaluation of financial assets and liabilities at market prices, the valuation of intangible assets and many non-produced assets, which demands so much additional information that business is unlikely to comply. The compilation of fixed assets is discussed in chapter VIII and the compilation of intangible and non-produced assets is presented in chapter IX. The compilation of financial assets and liabilities is not discussed in the handbook as UNSD was not able to commission a paper on the revaluation of financial assets and liabilities. That subject will be left to a future handbook. Among the very few countries that have attempted to compile the financial assets and liabilities in balance sheets, Canada still has mixed valuation of financial assets, some at market prices, some at historic costs, the United States of America has its balance sheets prepared by the Federal Reserve Bank (i.e. the central bank) but with concepts that are not consistent with national accounts. In France, the Banque de France (i.e. the central bank) has prepared financial assets and liabilities that are consistent with national accounts but with information from the financial market, the banking system and the government accounts rather than direct information from business accounts.

0.20. Finally, it is important to emphasize that accounts for the non-financial corporate sector cannot be compiled independently. They must be compiled in an integrated manner with other sectors of the economy. The confrontation of data from other sectors would result in more reliable data. For example, tax payable reported by the non-financial corporations must be confronted with the same data received by the Government which should be taken as more reliable. The second case is insurance expenses and claims. These are normally not reported separately in business accounts since the amounts payable and receivable may not be significant; therefore the information on insurance must be obtained from insurance companies. Similarly, data on reported interest receivable and payable by business which are normally incomplete must be confronted with

the data on interest paid and received reported by the central bank and by Governments especially with respect to interests paid on government bonds. In both the cases of insurance and interest, premiums on insurance and interest must be divided into service charges and current transfers. This information must come from the financial insurance sector.

0.21. The handbook does not discuss separately government-owned non-financial corporations because the SNA treats them like private non-financial corporations. Quasi non-financial corporations which are integrated as part of the government budget, (i.e. they keep complete set of accounts), should be treated as if they were corporations (SNA, paras. 4.49-4.50). Some of these quasi-corporations are government monopolies which aim at raising government revenues. "While in principle only the excess of the monopoly profits over some notional 'normal' profits should be treated as taxes [on products], 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". (SNA, para. 7.69)

Summaries of the chapters

0.22. Chapter I attempts to clarify the concepts and practices behind business accounting and to show the necessary adjustments to the information from business accounts in order to arrive at national accounts concepts. The adjustments would normally affect simultaneously the full sequence of national accounts including the production accounts, the generation of income accounts, the allocation of primary income accounts, the secondary distribution of income accounts, the use of disposable income accounts, the capital accounts, the financial accounts, the other changes in assets accounts and the balance sheets. Some adjustments may be carried out with information from business accounts only, but some may be carried out only when taking the whole economy into consideration. The calculation of financial intermediation services indirectly measured (FISIM), insurance service charges, net equity of households on insurance and pension funds belongs to the latter category. It is shown that business accounts can be used to build up all national accounts up to the financial accounts. The compilation of the financial accounts, to be fully satisfactory, would require the statement of changes in the financial positions. For the balance sheets, it is possible in principle to convert the business balance sheets into the national accounts balance sheets but it would require so much information that the task seems impractical. It is for this reason that another chapter, chapter VIII, is added to show how fixed assets and consumption of fixed capital can be calculated given only information on capital formation, asset average life, survival functions and depreciation schedule.

0.23. Chapter II presents another useful aspect of business accounts to national accounts. The chapter discusses cost accounting as an organized control of expenses the objective of which is to verify the ability to maximize production and to reduce cost in every segment of the firm such as manufacturing workshop, warehouse, transportation, maintenance, purchasing, selling departments, etc. The chapter reviews the principles used in cost accounting to assign costs to every activity and/or every product produced by a multi-product, multi-activity, multi-establishment enterprise. Cost accounting is a device used by business accountants to measure the break-even point of a product. The information would be useful to national accountants and survey specialists when designing survey questionnaires with respect to the methods and the allocation keys used by business accountants in allocating costs of headquarters and auxiliary services to each individual establishment, including the allocation of fixed costs to individual products required in the compilation of the symmetric product-by-product input-output table. The latter aspect is beyond the scope of this handbook but it is useful information to national accountants who are responsible for input-output compilation. It is not suggested here that cost accounting should be the means for arriving at the symmetric product-by-product input-output table, but it should be looked at as a useful supplementary method to obtain additional information from cooperative enterprises for which the treatment of secondary products by the

commodity industry technology produces negative inputs. Cost accounting is, unfortunately, used mainly by large enterprises that can afford the cost of preparation, and the information obtained is only for internal uses.

0.24. Chapter III shows a practical approach used in Canada to estimate change in inventories at current market prices and holding gains in the keeping of inventories when prices change over time. The method provides information to adjust output and intermediate consumption calculated directly from business accounts. This useful method is necessary due to the fact that the theoretical approach by the SNA cannot always be implemented for lack of full information. It is easy to show that the Canadian approach is the same as the SNA approach given that business accountants use the perpetual inventory method to record additions and withdrawals of inventories.

0.25. Chapter IV discusses the French experience in fully utilizing business accounts of almost all corporations and unincorporated enterprises, the smallest legal units that registered with the tax administration. With an official agreement between INSEE which is responsible for national accounts compilation and the tax administration of the Ministry of Finance, a unique inter-administrative register of enterprises is developed and maintained at INSEE, in which each of the over two million enterprises is given a specific identification code that is used by both enterprises and governmental bodies. Excerpts from business accounts standardized by decree are always attached to tax returns that are forwarded to INSEE for use in its Unified System of Enterprises Statistics. With a system of unique identification code for each enterprise, INSEE is able to integrate information from surveys, accounts attached to tax returns, estimates for missing data and adjustments in concepts to build up a unified intermediate system of data on enterprises. The French data system is obviously helped by the standardization of business accounting and the full cooperation of government agencies. This French approach has been adopted in many African countries and countries in other regions, e.g. Peru.

0.26. Chapter V reviews the full framework of national accounts compilation in the United States of America. Estimate methods for benchmark years, annual and quarterly accounts by products are shown in a summarized form. Information from business accounts such as wages and salaries of employees by industries, nonfarm quasi-corporate income, corporate profits, net interest, capital consumption allowances, business transfer payments, dividends, inventories, pensions (annual) are obtained indirectly from tax returns tabulated by the Treasury Department and reports by regulatory agencies (relating to banking, insurance, communications, transportation). In addition, quarterly statements and annual reports of publicly owned companies can be obtained from tabulations by private concerns. For annual and quarterly accounts of the business sector for the non-financial corporations accounts, the United States of America has to rely on estimates by the income approach but adjusted to conform with national accounts concepts.

0.27. Chapter VI discusses the experience of Malaysia in compiling the non-financial corporations sector within the fully integrated sectoral accounts of the country recently implemented according to the 1993 SNA. The Malaysian approach relies not only on business accounts (for communications, part of transportation, utilities) but also annual establishment surveys and enterprise surveys. In its establishment surveys, enterprises are asked to allocate even property incomes and current transfers to individual establishments. The allocation of non-production incomes and expenditures is questionable, in principle, but when data are aggregated by sector, it provides valuable allocation keys to allocate total controls obtained from other reliable sources. The paper also shows how financial intermediation services indirectly measured (FISIM) are allocated to the non-financial sector.

0.28. Chapter VII discusses the experiences in some Latin American countries, namely Colombia, the Dominican Republic, and Peru. The paper takes a very broad view. It not only deals with the conversion of

financial statements to the SNA format, but also reviews practices on how to integrate this information with the traditional compilation of industry accounts, based on establishment surveys. It emphasizes the need to compile the common production and generation of income accounts of enterprises and establishments for groups of enterprises in order to avoid large discrepancies in the course of compilation. The latter integration is done with the help of the SNA table of Cross-Classification of Industry and Sector (CCIS) data. The paper furthermore shows that the reconciliation of capital and financial accounts and balance sheet data are the key to integration of the non-financial sector data with the data of other sectors.

0.29. Chapter VIII covers the measurement of fixed capital stock and consumption of fixed capital in the SNA. The estimation of consumption of fixed capital is important to estimate net operating surplus, net savings according to the SNA concept. Stock of fixed assets is important in the analysis of industrial activity, particularly the non-financial corporations sector. Chapter VIII is written with numerical examples so that basic assumptions used by the perpetual inventory method (PIM) can be clearly explained. Chapters VIII and IX can be applied not only to the non-financial corporations sector but also to other sectors.

0.30. Chapter IX on balance sheet valuation of produced intangible assets and non-produced assets reflects the Dutch approach. This chapter is an attempt to show various simple methods that can be easily applied for estimation in any country. The authors applied one of the three following methods, depending on type of asset: (a) the PIM method by accumulating expenditures on a certain type of asset, which are simultaneously reduced by amortization over the assumed life of the assets: this method is applied to mineral exploration, patented entities and computer software developed for in-house use; (b) the net present value of income receipts from an asset over its assumed life: this method is applied to entertainment, literary or artistic originals. natural oil, gas and non-metallic reserves and non-cultivated biological resources such as plants, animals and fish; and (c) current market prices: this method is applied to land and buildings. The authors generally used assumptions that produce a lower point in the range of possible values. The handbook does not advocate any method or assumption used. It is up to national accountants to come up with the methods and assumptions that are appropriate to their countries.

I. COMPILATION OF NATIONAL ACCOUNTS FROM BUSINESS ACCOUNTS: NON-FINANCIAL CORPORATIONS

Vu Quang Viet
United Nations Statistics Division

A. Overview

1. This chapter aims at explaining how accounts prepared by business accountants can be used in the preparation of the full sequence of accounts of the non-financial sector according to the 1993 System of National Accounts. This full sequence of accounts includes the production account, the generation of income account, the allocation of primary income account, the secondary distribution of income account, the use of disposable income account, the capital account, the financial account and the balance sheet. Because there are many conceptual differences between business accounts and national accounts, linking them would require many adjustments: some may be carried out with information only from business accounts, but others may be carried out only when taking the whole economy into consideration. The calculation of financial intermediation service charge (FISIM), insurance service charges, net equity of households on insurance and pension funds belongs to the latter category. The linking of business accounts to national accounts would require a clear understanding of business accounts, which is, more often than not, a handicap faced by national accountants who are trained mainly in economics and not in business accounting. For that reason, the chapter tries as much as possible to clarify the concepts as well as the practices behind business accounting. It also tries to cover the SNA concepts so as to clarify the required adjustments. However, the chapter is written with the assumption that readers have already been trained in basic national accounting. To be practical, all necessary details that need clarification are covered but not every detail in the SNA accounts or in business accounts is shown, in order not to hamper the presentation. Business accounting concepts and structures are discussed at length, though the discussion is no doubt insufficient in many respects such as inventory, bonds valuation, depreciation and depletion methods. For more information, readers are advised to consult textbooks on business accounting. Basic information on international differences in business accounting and the summary of experiences in using business accounts which are covered in the Introduction will not be repeated here.

1.2. This chapter will focus on the elaboration of all major conversions linking business accounts to national accounts on the basis of the 1993 SNA. However, following the French experience, intermediate accounts which follow the general concepts and framework of the SNA and use the information on business accounts are first established before adjustments are made to conform them fully to SNA concepts. Policy makers and business analysts may find these accounts useful as they would provide many financial ratios averaged over a particular economic activity such as trade, transport, electronic production, etc. They also provide information on actual sources of investment funds, for instance, which include depreciation, retained earnings, increase in net equity, borrowing, etc.

1.3. Based on our research, it is clear that the compilation of the non-financial institutional sector in national accounts from business accounts is possible. However, it would require very detailed information on business accounts that is not normally available in public forms, particularly with regard to the compilation of the SNA balance sheet which would require revaluation of all long-term financial and non-financial assets held by

corporations. The revaluation would require full cooperation from businesses and their accountants unless some short-cut methods can be designed to replace actual revaluation. One short-cut method has already been widely used by national accountants and economists, namely the perpetual inventory method which is designed to estimate capital stocks and the consumption of fixed capital. No short-cut method seems to be available to revalue bonds and stocks held by corporations. Thus, in order to compile the SNA balance sheets without full information, short-cut methods should be developed to revalue long-term financial assets and liabilities. The compilation of other SNA accounts from production account to financial account faces fewer problems. Some adjustments, when not made, would not affect the final accounts in a very significant way. For example, some transfers such as charitable contributions by a corporation may not appear in its business account but may be of small value, and anyway it may be adjusted later on after the intermediate accounts are compiled if one knows charitable contributions by all corporations from accounts of charitable organizations. Similarly, it may not be possible to differentiate sources of interest income receivable by corporations, either from financial intermediaries or from non-financial corporations (for bonds). The information from financial intermediaries on interest would allow this separation later on in the process of reconciliation of the full system of national accounts.

1.4. Business accounts, normally called financial statements, consist of three main accounts that are necessary for the preparation of the integrated SNA accounts:

(a) The statement of incomes and expenditures which is sometimes called income statement or profit and loss statement;
(b) The statement of changes in financial position; and
(c) The balance sheets (normally at least two consecutive balance sheets).

To be perfectly compatible with national accounts concepts, these financial statements should come from the smallest legal unit of enterprise since consolidated financial statements will net out inter-enterprise transactions and liabilities within a conglomerate which the SNA wants to capture. Preferably, analytical business accounts should be used instead of accounts prepared for tax purposes.

1.5. Below are the discussions of, respectively, the income statement, the statement of changes in financial positions and the balance sheet, their links to national accounts and necessary adjustments of business information to arrive at the final SNA estimates. Minor adjustments to conform business accounts to SNA estimates are discussed while business accounts are described. Major adjustments are singled out and discussed after the descriptions of business accounts. It seems that there are numerous differences in concepts between business accounts and the SNA, but many differences fortunately concern transactions of low value; thus if it is not possible to adjust them, there may not be any material difference between the two accounts. There are many examples given in the chapter to facilitate explanations and understanding. Almost all numerical examples are linked together as though they were from the same corporation. There are two criteria for recording economic transactions in business accounts: the functional or purpose criteria and the "nature of objects exchanged" criteria (raw material, labour, financial capital, etc.). Using the functional criteria, business accounts are normally classified in broad categories like production or manufacturing (sales, cost of goods sold), distribution or marketing, and cost of administration, other incomes and other expenses (mostly concerned with financial functions), etc. The criteria of "nature of goods exchanged" would classify incomes and expenditures in terms of sales of goods sold, costs of materials, services, labour, depreciation, financial costs etc. Obviously, a business account can combine two criteria. But normally, the functional classification would reveal less information on revenues and expenses by nature, which are necessary for national account compilation. Business accounts that are available for public information in the Anglo-American countries incline toward the functional classification.

B. Statement of incomes and expenditures

1. Description of the income and expenditure statement

1.6. A statement of incomes and expenditures, or for short income statement, of a corporation is a summary of revenues and revenue expenses,[33] capital gains and losses ending with net income and retained earnings for a particular period. A traditional multiple-step formula where the cost of goods sold which reflects the cost of goods manufactured and/or bought for resale is separated from the cost of selling and general administration takes the following form:

Table 1.1. Multiple-step income statement

	Sales or revenues
Less	Cost of goods sold
Equal	**Gross profit**
Less	Operating expenses
Plus	Other income
Less	Other expenses
Equal	**Net income before income taxes**
Less	Income taxes
Equal	**Net income**
Less	Dividends payable
Equal	**Addition to retained earnings**

1.7. Corporations may also use a single-step formula where all sales or revenues and other incomes are first totalled, and then all operating expenses and other expenses are deducted from that. The multiple-step formula is preferred because it provides immediate profit figures for financial analysis across companies. However, with details one can easily transform the single-step formula to the multiple-step formula. A single step formula is shown in table 1.2.

1.8. The income statement provides almost all the information necessary for the compilation of production accounts, generation of income account, allocation of primary income account, secondary distribution of income account and use of income account for non-financial corporations in the SNA. Below the income statement is presented in general formats and then in more details in order to link it to SNA accounts.

[33] In business, a revenue expenditure refers to an immediate charge as an expense aginst revenue. Capital expenditure is an expenditure for the purchase or expansion of business assets and is recorded in the asset accounts.

Table 1.2. Single-step income statement

	Sales or revenues
	Sales or revenues
	Other income
Less	**Cost and expenses**
	Cost of goods sold
	Operating expenses
	Other expenses
Equal	**Net income before income taxes**
Less	Income taxes
Equal	**Net income**
Less	Dividends payable
Equal	**Addition to retained earnings**

1.9. The example in table 1.3 shows an income statement in a format that is commonly used for public information. The statement also contains more detailed categories identified in brackets with capital letters for a more in-depth discussion later on. The statement is presented with a numerical example that will be used throughout the chapter. The statement reflects current practices in both the United States and members of the European Union.

1.10. Below are discussions of the meaning of each category of the income statement in table 1.3. It is important to point out again that each category may be treated slightly differently from one country to another and within a country from one company to another. Therefore, it is necessary to read carefully what is included in specific business accounts. Differences between business accounts and the SNA are discussed either as footnotes if they are less important or as notes on adjustments if they are more important. While reading the description of business accounts, readers can consult table 1.7 (pages 37 to 39 below) that shows business accounts in detail with the classification of business items into SNA items. Table 1.7, of course, will be discussed after the discussion of the income statement.

Table 1.3. Income statement

		X COMPANY **Statement of income for the year ended 31 December 19xx**		
	(a)	Sales, net of discounts, returns, VAT and sales taxes		850
-	**(b)**	Cost of goods sold		-586
=	**(c)**	**Gross profit**		264
-	**(d)**	Operating expenses		-222
		Selling expenses	115	
		General expenses	107	
=	**(e)**	**Operating income**		42
+	**(f)**	Other income		9
-	**(g)**	Other expenses		-15
=	**(i)**	**Income from continuing operations**		36
-	**(k)**	Taxes on income		-12
=	**(l)**	**Net income from continuing operations**		24
+/-	**(m)**	Discontinued operations of segment		0
		Income from discontinued operations, net of taxes		0
		Loss on disposal of segment, net of tax savings		0
+/-	**(n)**	Extraordinary gains or loss, net of taxes		0
+/-	**(o)**	Cumulative effect of change in accounting principle		0
=	**(p)**	**Net income**		24
-	**(q)**	Charitable contributions		-2
-	**(r)**	Dividends payable		-12
=	**(s)**	Retained earnings		10

Note: Headings (a) to (o) below refer to table 1.3 entries.

(a) Net sales

1.11. Sales included here are for the principal products and the provision of services within the company's normal activities after deduction of:

- Returns or allowances off the sale prices for defective goods;
- Discounts for early payments for sales on credits;

- Value added tax and/or other types of taxes directly linked to sales.

Normally only principal products are included here; incomes from secondary activities such as rental incomes of company buildings and warehouses would be treated as other incomes. Most OECD countries follow the definition of net sales discussed above, with the exception of Japan. In Japan, rebates are legally required to be included in sales and then treated as selling expenses.[34]

1.12. Sales are for products sold with immediate payment or on credit. Sales on credit are also entered as trade receivables in the balance sheet. Payments may be delayed with notes issued by sellers to buyers. Notes are written with interest but this interest is not counted as part of sales.

1.13. Own construction, capitalized own improvements (major repairs, betterment) are not included in either sales or other incomes. These costs are capital expenditures and therefore are included only in the statement of changes in the financial position and the balance sheets.

(b) Cost of goods sold

1.14 This shows the cost of goods sold to produce the sales. Its definition is different for trading companies and for manufacturing companies.

Trading companies

1.15. For trading companies which merely buy goods for resale without anything done to the products except to prepare special packaging, display and market them, the costs of goods sold are values of products bought for resale at purchase prices plus freight-in cost. The costs of goods sold are defined as follows:

Table 1.4. Cost of goods sold of trading corporations

	Inventory of goods for resale at the beginning of the period		20
Plus	Net cost of purchases for resale		110
	Purchases net of discounts, returns and allowances	100	
	Freight-in cost	10	
Less	Inventory of goods for resale at the end of the period		-30
Equal	**Cost of goods sold (or cost of goods bought for resale)**		100

1.16. There is one minor difference between the business accounts treatment and the SNA treatment of cost of goods sold. Business accounts always include in the cost of goods sold, the freight-in cost, i.e. the cost of transporting goods from suppliers to purchasers. The SNA does not include this cost if purchasers are invoiced separately by suppliers or any other transporters (SNA, para. 6.112 (c)). Corporations normally keep separate accounts for freight-in cost in order for management to monitor this cost. The freight-in cost is treated by the SNA as an intermediate cost of traders.

[34]OECD, *Accounting Practices in OECD Member Countries* (Paris, 1980).

Manufacturing corporations

1.17. For manufacturing corporations, the cost of goods sold is defined in terms of direct manufacturing cost of the goods sold (see the example in table 1.5) including overhead cost which is production related but cannot be directly traced to an end product and therefore must be assigned by some allocation method. It is important to point out that the cost of goods manufactured covers only part of the SNA production cost since operating expenses which include selling and general expenses such as general administration are not included in the cost of goods manufactured.

Table 1.5. Cost of goods sold by manufacturing corporations

	Inventory of finished goods at the beginning of the period			70
Plus	**Cost of goods manufactured**			492
		Raw materials used in manufacturing	153	
	Plus	Direct labour in manufacturing	260	
	Plus	Manufacturing overhead cost (materials, services, depreciation and labour)	81	
	Plus	Goods in process beginning inventory	21	
	Less	Goods in process ending inventory	-23	
Less	Inventory of finished goods at the end of the period			-76
Equal	**Cost of goods sold**			486

(c) Gross profit

1.18. Gross profit is the difference between net sales and cost of goods sold. For trading corporations, gross profit is almost the same as the SNA concept of trade margins except with the difference in freight-in cost as discussed above.

(d) Operating expenses

1.19. Operating expenses include two categories: selling expenses and general expenses which are not specifically identifiable with production process.

1.20. Selling expenses include all expenses incurred to generate sales of company products such as expenses for storing (rentals, insurance), preparing goods for sale, displaying, advertising, selling, commission to salesmen, depreciation of sales equipment and cost of delivery paid by the seller.

1.21. General expenses include expenses related to the general administration of the company such as accounting, data processing, credit and collections, office supplies, depreciation of office equipment and other general expenses.

1.22. Operating expenses also include payments of property tax, business license, stamp taxes, levies on use of vehicles, ships, aircraft, equipments, taxes on pollution, etc. to Governments. These items need to be identified separately since they are treated as *other taxes on production* in the SNA.

(e) Operating income

1.23. Operating income is the difference between gross profit and operating expenses. Operating income is useful for a financial analysis of the company since it represents the income it earns regularly through its core activities.

(f) Other income

1.24. Other income is non-operating in nature. This category normally includes:

- Rental on warehouses, buildings, equipments (for operating leasing) or the like;
- Interest income including interest earned on notes extended to customers and on bonds issued by others as well as interest earned from financial intermediaries[35];
- Interest on capital leases;[36]
- Dividends and shares of additions to retained earnings of non-consolidated subsidiaries and associates[37];
- Gains net of losses from sales of financial and fixed assets.

(g) Other expenses

1.25. This category is similar to other income in nature. It includes:

- Interest expenses including interest payable to banks, on notes payable and bonds issued by the corporation;

[35]The distinction is important in the SNA. Interest income receivable from, or interest expenses payable to, financial intermediaries such as banks generate the output of the financial intermediaries but interests on notes or bonds are pure property incomes without any output produced.

[36]According to the accounting standard of the United States of America and Canada, but not of many other countries like members of the European Union, Japan, Australia (see George Foster, *Financial Statement Analysis*, second edition, Prentice-Hall, USA, 1986, p. 146), a capital lease (which is called financial leases by the SNA, is long term and uncancellable but requires no immediate cash payment) must be capitalized, i.e. the good is treated as a fixed asset bought by the corporation with an imputed loan from the leasing company. The regular rental payment must then be separated into two parts: the interest payment is recorded together with other interest expenses; the other part is recorded as a payment to reduce outstanding loans.

[37]These shares of additions to retained earnings of the company's subsidiaries and associates are also recorded in business accounts of parent corporations. When the subsidiary or associate is a non-resident, this dividend is called by the SNA reinvested earnings. The recording of shares of additions to retained earnings is normally regulated by tax authorities on the basis of the controlling interest of the parent corporation, which varies across countries.

- Other expenses related to other incomes;
- Write-down of inventory;[38]
- Bad-debt allowances.[39]

(i) Income from continuing operations

1.26. Income from continuing operations is different from operating income in the sense that the latter shows income derived from main activities of the corporation while the former includes some extra incidental income that is mainly from financing activities and not production related. The category also includes certain income that is production related such as rentals or royalties on copyrights that are outputs whose input costs are not easily identified because they are integrated with input costs of main activities.

(k) Taxes on income

1.27. Taxes on income include only taxes on income from continuing operations that reflect reported net income. There are other taxes such as taxes payable on income from discontinued operations of segment, taxes on extraordinary gains or tax savings on extraordinary losses which will be discussed later. Those taxes are not normally shown in the income statement but in separate notes. Therefore taxes on income here do not include all taxes payable by the corporation.

[38]In most countries, inventory is valued at lower of cost or market values, so when market values of inventory fall below cost, values of inventory must be written down. The reduction which is capital loss is entered here. If it is not an actual write-down but only an allowance of inventory write-down, the item is not a capital loss and therefore must be ignored in the SNA.

[39]Allowance for bad debts is an estimate of the corporation on the basis of its historical record or best guess for the uncollectible credit sales. It is treated both as an expense in the accounting period where sales take place and as a reduction from the face value of accounts receivable in the balance sheet. Allowance for bad debts to meet regulatory or supervisory requirement is not recognized as a flow to be accounted for in the SNA and therefore should be disregarded. However, as bad debt allowance is *not* treated as expense in the SNA, accounts receivable reported in business accounts should be increased by an amount of bad debt allowance to obtain SNA accounts receivable. If a bad debt is written off when it is clear that the debt is uncollectible, for example when the debtor is declared bankrupt by a court, the write-off will affect only the balance sheet as part of other changes in volume. Accounts receivable and allowance for bad debt are both reduced by the same amount of write-off and the net value of accounts receivable remains the same. For example, if the amount of write-off is 1,000, then:

	Before write-off	After write-off
Accounts receivable	40,000	39,000
Less allowance for bad debt	4,000	3,000
Accounts receivable net	36,000	36,000

When a bad debt that had been written off is recovered, the payment is entered as cash receipts in the balance sheet.

1.28. In addition, taxes on income here reflect not only taxes on current income but also:

- Tax deduction for capital loss of preceding years (i.e. tax loss carried forward);[40]
  tax deduction for increasing employment (i.e. employment tax credits): in the SNA, this deduction is treated as *other subsidies on production*;
- Tax deduction for charitable contribution;
- Subsidies on production;
- Irregular taxes on wealth or assets which should be treated in the SNA as *capital transfers*.

(m) Discontinued operations of segment

1.29. Since business accounts want to show regular activities of a business, when a business segment (i.e. some activities) of a corporation is discontinued during the accounting period, most countries would require that net incomes (defined as in table 1.1) received from that segment be separated from continuing incomes, for analytical purposes. According to common business practices, only net income after taxes for the discontinued operations is entered in the income statement. Details are, however, shown in separate notes. For the SNA accounts, full information on expenses and taxes to generate the net income is needed instead of only the net amount.

(n) Extraordinary gains and loss

1.30. Extraordinary gains and *uninsured* losses are also normally required by legal authorities to be shown separately. This category includes capital gains or loss related to events of unusual nature and infrequency of occurrence such as:

- Natural disasters such as fire, earthquakes;
- Expropriation;
- Prohibition under newly enacted law;
- Gains and losses from extinguishment of debt;
- Recall of defective products;
- Award or payment of compensation by court judgement or agreement out of court.

(o) Cumulative effect of change in accounting principle

1.31. A third category that is normally shown separately is cumulative effect of change in an accounting principle. Consistency is the basic concept of accounting to maintain the same accounting principle from year to year. However, companies are also allowed to change if the current procedures are not appropriate to reflect the financial status of the firm. Tax reduction alone is not an adequate legal justification for the change. For example, a change from the straight line depreciation method to another method must be justified. The difference in the cumulative value of depreciation which affects income must be shown here. With respect to the SNA, the cumulative effect can be ignored since it relates to past activities. The reason for business accounts to include this item is that business must account for all sources of income and pay taxes on them.

[40] According to the SNA, tax deductions on capital loss of preceding years must be treated as part of accounts payable by government and tax deductions on this loss during the current period is the payment by Governments to reduce their accounts payable. To conform to the logic of the SNA in this area is too cumbersome, therefore it is suggested that tax payable accounts only for the tax payable net of deductions.

Changes in accounting methods create less or more incomes for past periods. To conform to the SNA, these income adjustments must be subtracted or added from net income depending on whether the effect is positive or negative.

Note on accounting income and taxable income

1.32. Net income reported in business accounts is not the same as taxable income reported to Governments. The main reason for them to differ is that accounting income is used for business analysis and has to conform to business accounting standards set by professional accounting associations or government agencies while taxable income is calculated to show the net income upon which tax is assessed. Following are some examples:

(a) Business standards require that rental payment for capital leases be broken down into interest payment and principal payment, thus making only interest payment a part of business expenses. However, tax laws may allow firms to deduct the full rental payment as a business expense. Thus, taxable income in this case is smaller than accounting income. The SNA adopts the same accounting standard for capital leases (called financial leasing by the SNA). However, many countries do not require capitalization of capital leases in accounting standards, thus making the attempt by national accountants to capitalize them by themselves almost impossible because it would require information beyond their reach. In the latter case, for practical reason, capital leases are treated in the SNA like operating leases, i.e. rental payment is fully treated as a cost of services.

(b) Tax laws allow the use of many alternative methods for depreciation including accelerated depreciation. To reduce income tax payable in the current periods, firms may choose the methods that are most beneficial for tax reduction. For their own analysis and public information, they may choose different methods that are more appropriate, thus making accounting income different from taxable income.

(c) Similarly, the accounting standards applied to the valuation of inventories may also be different from those used for tax purposes, thus making not only net income but also cost of goods sold and operating expenses differ.

1.33. As accounting income tax differs from income tax payable (actual) and in case the corporation wants to show in business accounts all transactions according to accounting standards including accounting income taxes assessed on the accounting net income, then the difference between the accounting income tax and the (actual) income tax payable is entered as *deferred income taxes* in the balance sheet and the statement of changes in financial position. It is worth noting that over the life of an asset, the sum of the stream of accounting net incomes generated is equal to the sum of the stream of taxable net incomes. Similarly, the total of accounting income taxes is the same as that of payable income taxes. That is the reason why for each accounting period, deferred income taxes appeared. They may be positive or negative. In business accounting, deferred income taxes for inventories are classified as current liabilities and deferred income taxes for depreciation are classified as long-term liabilities. In the United States, 90% of firms surveyed reported some type of deferred taxes.[41] The SNA is quite flexible in the recording of taxes in the system: "Income taxes deducted at source, such as pay-as-you-earn taxes, and regular prepayments of income taxes, may be recorded

[41] *Principles of Accounting* by B. E. Needles, H.R. Anderson and J.C. Caldwell, fourth printing, p. 1004 (Houghton Mifflin Company,1981).

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 [which is later than the period in which the income accrues].[42] For the purpose of the SNA, we will use income taxes payable. Income taxes payable are equal to accounting income taxes less deferred income taxes. Net income used for SNA purposes should also be adjusted accordingly.

Note on depreciation and depletion

1.34. **Depreciation** in business accounts and national accounts is applied only *to produced fixed* assets, whether tangible such as buildings, plants and equipment or intangible such as oil exploration, development of software and entertainment, literary or artistic originals. In business accounts, depreciation is included separately as part of expenses under three different headings: cost of goods manufactured, operating expenses, and discontinued operations of segment if the last item exists.

1.35. **Depletion** of natural resources in business accounts is treated like depreciation, as part of the cost of goods and services, but in the SNA it is treated as part of other changes in volume in the balance sheets.

Note on valuation of inventories in output calculation

1.36. Business accounting does not concern itself with the concept of output. Its focus is on sales and cost of goods sold in order to measure net income. National accountants need to use business accounts in order to derive the SNA concept of output. The output of non-financial activities is measured as sales net of discounts, returns, VAT and sales taxes plus changes in inventories. Thus, the valuation of inventories is quite important to the measurement of output, intermediate consumption, gross capital formation and finally GDP in the SNA. Different values of inventories would produce different output values. For this reason, this note will discuss in depth why business inventories should be revalued according to the SNA concept.

1.37. In business accounting, many methods are used to value inventories at cost. The more frequently used ones are: FIFO (first in, first out), LIFO (last in, first out), and average cost method. LIFO best matches revenues and cost of goods sold especially when there has been a prolonged period of inflation or deflation, but it is not the best way to measure the current balance sheet; FIFO is more suited to the balance sheet as the value of ending inventories is closest to current market values. Table 1.6 below shows the valuation methods of the SNA, LIFO and FIFO using the perpetual inventory method of recording (PIM), instead of the periodic method of recording. The PIM recording method is similar to the method advocated by the SNA and adopted by some business firms. Under PIM, sales and purchases of each individual item are recorded continuously. With the availability of powerful micro-computers, PIM is increasingly adopted by business to replace the periodic recording method. From the illustration in table 1.6, it is possible to derive some basic ways to approximate the SNA method in measuring non-financial output. The table divides the annual accounting period into sub-periods in order to see the accuracy of the methods used in measuring output. In the table, products produced are entered immediately into inventories and remain there until they are withdrawn for sale. Differences in valuation methods lie in the valuation of inventories withdrawn.

1.38. **The SNA method** values addition to inventories for purchased goods at purchasers' prices and for work-in-progress and finished products which enter inventories at basic prices prevailing at the time of entry, while withdrawals are valued at the prices at which they are then sold. The SNA method, however, values

[42] SNA, para.8.52.

ending inventories (assets) at market prices (which are basic prices) at the time of valuation. This revaluation was not introduced in table 1.6.

Table 1.6. Output calculation of goods production activities given different methods of inventory valuation

	SNA			LIFO			FIFO		
Period	1	2	Year	1	2	Year	1	2	Year
1. Beginning inventories									
Unit	0	60	0	0	60	0	0	60	0
Value	0	300	0	0	300	0	0	300	0
2. Production									
Unit	60	5	65	60	5	65	60	5	65
Unit cost	5	7		5	7		5	7	
Value	300	35	335	300	35	335	300	35	335
3. Addition to inventories									
Unit	60	5	65	60	5	65	60	5	65
Unit cost	5	7		5	7		5	7	
Value	300	35	355	300	35	335	300	35	335
4. Sales									
Unit	0	10	10	0	10	10	0	10	10
Unit cost	5	7		5	7		5	7	
Value	0	70	70	0	70	70	0	70	70
5. Withdrawal from inventories									
Unit	0	-10	-10	0	-10	-10	0	-10	-10
Unit cost	5	7		5	7&5[43]		5[44]	5[45]	
Value	0	-70	-70	0	-60	-60	0	-50	-50
6. Changes in inventories									
Unit	60	-5	55	60	-5	55	60	-5	55
Value	300	-35	265	300	-25	275	300	-15	285
7. Ending inventories									
Unit	60	55	55	60	55	55	60	55	55
Value	300	265	265	300	275	275	300	285	285
8. Output calculated as sales + changes in inventories									
Unit	60	5	65	60	5	65	60	5	65
Value	300	35	335	300	45	345	300	55	355

1.39. **The LIFO method** values incoming inventories as does the SNA but values withdrawals at the cost of the last items entered into inventories.

[43]LIFO withdraws the last incoming inventory (5 units) first and therefore values them at the unit cost of 7 (i.e. last in, first out). The other 5 units withdrawn are valued at the unit cost of 5.

[44]FIFO values the 10 units withdrawn at the unit cost of 5 (i.e. first in, first out).

[45]See previous footnote.

1.40. **The FIFO method** values incoming inventories as do the other methods but withdrawals at the cost of the first items acquired.

1.41. The output calculated by the SNA method is 335, which matches the actual output assumed in the table. The output calculated by LIFO is 345, which is more than the actual output. The output by FIFO is 355, which is farther away from the actual output than LIFO. The difference, or error, is capital gain due to inflation. When prices are declining, FIFO gives an output value which is closer to the actual one than is LIFO's. Changes in inventories calculated according to the SNA include all capital gains (or loss) on the inventories sold and so the output calculated by the SNA eliminates all capital gains from sales.

1.42. With regard to valuing changes in inventories and ending inventories, which are used in the balance sheet, the SNA values all inventories at current market prices, so changes in inventories and the ending inventories must be revalued at the unit cost of 7. The ending inventories, after revaluation, are equal to 385 (55x7), which is higher than the ending inventories in table 1.6 by 120. This difference is the capital gain for goods remaining in inventories. The results in the table also show that, in case of inflation, FIFO produced the value of ending inventories close to its market price, while the LIFO value is farther away.

1.43. There is no easy and accurate short-cut to convert LIFO and FIFO values of inventories to SNA values without detailed information as shown in table 1.6. The revaluation is, in fact, better done by business accountants than by national accountants at the last stage of data collection. It would be significant for national accounting if business accountants agreed to value inventories as the SNA recommends, but it is highly unlikely because banks and financial analysts always want to value inventories in the most conservative manner, i.e. at the lower of cost or market value. Another way of approximating the right changes in inventories for the calculation of output is to request from business information on addition to, and withdrawal from, inventories valued at market prices at the time they are entered into or withdrawn from inventories and then to calculate change of inventories as the difference between addition and withdrawal instead of calculating it as the difference between ending inventories and beginning inventories. However, as long as prices do not change, whatever method used in valuation, output and inventories would be the same. Errors will be large if prices increase or decrease rapidly. An approximation method, as practised by Statistics Canada, is shown in chapter III.

2. Relationship between the income statement and SNA accounts

1.44. The business income statement is the main source of information for compiling production accounts, primary and secondary distribution of income accounts of the corporate non-financial or financial institutional sectors of the SNA. For the compilation of the SNA accounts, more detailed information will be needed than is normally published for public consumption. The elaboration of necessary details will be discussed in this part. With necessary details, the data from business income statements will first be arranged into intermediate accounts, the term used by French statisticians[46] and then the intermediate accounts are adjusted to conform with SNA concepts to arrive at the final SNA accounts.

1.45. The procedure for compiling SNA accounts from business accounts in this chapter is as follows:

(a) First, classify the items in the income statement into SNA transactions;

[46]See *Normalisation Comptable, Principes et Pratiques* by Francis Rousse (Ministère de la coopération et du développement, Paris, 1989).

(b) Second, assemble the reclassified items into intermediate accounts that are conceptually quite close to the SNA;
(c) Third, adjust the items in the intermediate accounts to make them fully compatible with the SNA. This adjustment can be done only by national accountants on the basis of information that is not usually available to business accountants.

1.46. In terms of classifying items in business accounts into SNA transactions, identification of the following SNA categories is most important:

(a) **Output** is an SNA concept and not a business accounting concept in some countries. It includes both primary output and secondary outputs. Some secondary outputs such as rentals are included in category (f) for *other income* (see table 1.3). All revenues that can be considered output by the SNA must be assembled. To calculate main outputs from business income statements, it is necessary to net out the cost of goods bought for resale from net sales which is always done in business accounts by including the cost of goods bought for resale as part of the cost of goods sold (see table 1.7(a), p. 37). So, normally lines A1 and A2 are not needed. But in order to classify an enterprise either into manufacturing, trading or other services, it is necessary to distinguish different kinds of outputs. In our table 1.7 example, it is necessary to distinguish manufacturing output and trade margins (which is output created by reselling goods bought from other enterprises). Net sales of goods bought for resale minus cost of goods bought for resale gives the value of trade margin.[47] Net sale of goods manufactured after adjusting for changes in inventories of finished and semi-finished goods gives the output of manufactured goods. If the value added of trade margins is higher than the value added of manufactured goods, the enterprise is classified as a trading enterprise, and the trade margin is the primary output; otherwise, it is classified as manufacturing (SNA, para. 5.7). Here, we try to simplify the example, otherwise an enterprise may also produce some services for sale. For institutional sector accounts, it is not important to distinguish various kind of outputs. Intermediate accounts for output compiled from table 1.7 are shown in table 1.9(a) on page 40. Intra-enterprise transactions among their own establishments are normally not regarded as revenues of the enterprise, but in the SNA, the outputs of establishments must be estimated and added to the output of the enterprise. In order not to increase value added, the same outputs are then treated as intermediate consumption of the enterprise.

(b) **Intermediate consumption** requires one to identify in the cost of goods manufactured, selling and general and other expenses, the intermediate input costs of goods and services according to the SNA. Basically, the identification task requires removing from the above expenses labour costs, depreciation, other taxes on production, property income, current transfers, capital gains or losses. Tables 1.9(b) and 1.9(c) show how intermediate consumption is compiled from table 1.7.

(c) **Compensation of employees** includes wages and salaries, and other compensation relating to work and some payments by corporations which are not work-related such as payments not involving any established funds for special needs of employees and their dependents, such as educational allowances, health, death and accidents benefits, pensions, etc. The payments that are

[47]Trade margins normally include holding gains or loss on stocks. To obtain SNA trade margin, holding gains or loss must be eliminated. The elimination can be accomplished by measuring inventories properly, in this case by revaluing the cost of goods bought for resale at current market prices.

not work-related are called by the SNA *imputed unfunded social contribution* (SNA, paras. 7.45-7.46). Compensation of employees is part of value added in table 1.9(d).

(d) **Depreciation and depletion** must be identified since they are not treated as intermediate consumption by the SNA. These items are part of gross value added in table 1.9(d).

(e) **Other taxes on production** include property taxes, levies on use of equipment, payment for business licenses, stamp taxes, taxes on pollution, taxes on employment, etc. Other subsidies on production are the opposite of the taxes mentioned above. These items are part of value added in table 1.9(d).

(f) **Current transfers** include charitable contributions, insurance premiums, insurance claims, fines and penalties. Current transfers may be classified in business accounts as operating expenses, other income and extraordinary gains and loss. Minor compensation payments not covered by insurance and awarded in or outside of court are also included here (SNA, para. 8.98). These items are part of value added in table 1.9(d).

(g) **Capital transfers** rarely appear in business accounts. However, in some developing countries, they may appear, as corporations receive donations of equipment, or funds to purchase equipment, large gifts or have debts written off voluntarily by creditors. In developed countries, they include investment grants paid by central, state or local governments to the enterprises; commercial debt cancellation by direct bilateral agreement between enterprises or through indirect compensation paid by government (SNA, para. 11.23). Capital transfers should also include irregular and infrequent taxes on the values of assets or net worth of corporations and on capital transfers. In addition, major compensation payments for serious and extensive damage not covered by insurance and awarded in or outside of court are included here (SNA, para 10.141). No example is given of capital transfers in table 1.7, but if they appear, it should be part of value added in table 1.9(d), similar to capital gains and losses.

(h) **Property income** includes interests, dividends, rents on non-produced assets, equity earning. Property income is part of value added in table 1.9(d).

(i) **Revaluation** includes capital gains and loss, write-downs of inventories, bad-debt write-offs[48] when they result from a unilateral decision, if not they are recorded as capital transfers.

(j) **Other changes in volume** include depletion of natural resources.

1.47. Table 1.7 shows the link between items in business income statements and items in SNA accounts. For this purpose, the income statement in table 1.3 is broken down in greater detail. Some details in cost of goods manufactured, however, are combined since there is no need to break them down into overhead labour and direct labour. Discontinued operations of segment (category m), extraordinary gains or loss (category n), cumulative effect of change in accounting principle (category o) appear only infrequently and therefore are not detailed. It is sufficient to say that these special categories must be spelt out in detail in terms of sales, cost of goods sold, cost of goods manufactured, taxes paid on net income and tax savings so that they can be identified with SNA transactions and treated like the transactions in the categories that are above them (a to k).

[48]Bad debt write-offs are not the same as allowances for bad debts.

In other income (category f) and other expenses (category g), interest receivable and payable should, in principle, be broken down into transactions with financial intermediaries, which require an imputation of service charges paid to the intermediaries (to be treated as intermediate consumption of the corporation) and transactions with others that do not result in the production of any output of service charges. The distinction is not shown in table 1.7 so as not to overcrowd it.

3. Intermediate production and income account

1.48. Information from table 1.7 allows the setting up of intermediate accounts in table 1.9 to be used later in deriving the final SNA accounts. The intermediate account derived from business income statements consists of only the production account, but it provides almost all the information needed for the compilation of other accounts up to the use of disposable income account.

1.49. The intermediate account consists of three parts: output at basic prices (table 1.9(a)), intermediate consumption in purchasers' prices (tables 1.9(b) and (c)) and value added (table 1.9(d)). Value added is calculated in two ways: as the difference between output and intermediate consumption and as the sum of other components in the business income statement. This is an important point as one can directly compile value added and/or gross operating surplus for the intermediate account from the income statement.

1.50. The format for the intermediate account of a non-financial corporation used here is generic and has the following characteristics:

(a) The corporation is involved in both the production (or manufacturing) of goods and the marketing and selling of its own products as well as products produced by others. Because of the activity of reselling products produced by other producers, the output of this corporation must include trade margins, which are calculated together with manufactured output in table 1.9(a) by deducting the cost of goods bought for resale from the net sales.

(b) Only the output of the corporation as a whole is of concern here and no attempt was made to separate out its discrete outputs. Otherwise, the identification of trade margins would require the separation of net sales of goods bought for resale from other net sales.

(c) Discontinued operations of segment (category m in table 1.3) and extraordinary gains or losses net of taxes (category n) are assumed to be non-existent, otherwise the information from these two categories would have to be broken down into various components and included in either other incomes, other expenses, taxes on income or capital gains net of loss.

1.51. The setting up of the intermediate account can be more easily checked for errors if the business income statement is rearranged in a T-account as shown in table 1.8 on page 40. Uses are shown on the left side and resources are shown on the right side. Total uses have to be equal to total resources. Table 1.8 shows only a general framework, otherwise it has to be elaborated on to include all detailed items in table 1.7. When items are moved from one side to another to form a particular part of the intermediate account shown in table 1.9, the items in table 1.8 will have to change signs. For example, in table 1.9, when the cost of goods bought for resale is brought to the right side to calculate output, its value becomes negative. If table 1.8 is not prepared, another way to check for errors is to see whether value added calculated by two different methods is the same.

1.52. In table 1.9(d), value added at basic prices is calculated in two alternative ways: (a) as a residual, i.e. the difference between output and intermediate consumption or (b) directly as the sum of compensation of employees, other taxes on production net of other subsidies on production and gross operating surplus. Gross operating surplus in turn is the sum of depreciation, addition to retained earnings, property income payable, current transfers payable, depletion, write-down of inventory and bad-debt allowance minus the sum of property income receivable, current transfers receivable, and net gains from selling financial and non-financial assets. The gross operating surplus of the corporation is the net income derived from its own production activities. To arrive at the operating surplus, one can begin with addition to retained earnings in table 1.7(c). But as a part of addition to retained earnings comes from non-production incomes such as property income, current transfers receivable and net capital gains, this part must be deducted from addition to retained earnings. Income from production but paid out (property income, current transfers payable) must be added back to retained earnings in order to derive operating surplus. In addition, depreciation, depletion, write-down of inventory and bad-debt allowance are part of the gross operating surplus.

4. Adjustment of intermediate accounts to obtain SNA production and income accounts

1.53. As discussed previously, the intermediate account needs to be adjusted in order to arrive finally at SNA accounts. General principles used for adjustments are shown in table 1.10on page 43 and the detailed impacts on production accounts and income accounts are shown in tables 1.11 (a)-(e). Following are the major adjustments in addition to minor adjustments that have already been discussed.

(a) Inclusion of output for intermediate consumption and capitalized output for own final use

1.54. There are four additional types of products (goods or services) that need to be included as output of a corporation according to the SNA but not treated as such by business accounts (see also tables 1.10 and 1.11(a) for illustration):

(i) **Output of goods and services which are produced by an establishment and used in another establishment, all within a corporation**: Business accounting disregards (or nets out) these transactions. For the SNA, the values of these transactions are entered as output and also as intermediate consumption of the corporation, so the value added is not changed by the adjustment. This adjustment is more cosmetic for income accounts since it does not change the value added but it is quite important for input-output analysis as the latter focuses on studying the cost of production per unit of output.

(ii) **Cost of research and development (R&D) used internally**: Business accounting in the United States and many countries treats this cost as an expense. According to the SNA (para. 6.164), it is desirable to treat R&D for internal use as an output of the corporation which produces it. This output is then consumed by the corporation internally. The cost of R&D is to be added to both output and intermediate consumption of the corporation, so value added does not change after the adjustment. If business accounts of other countries treat this item differently, the final adjustment may be different. With the adjustment, it looks like that cost of R&D was counted twice. The reason is that output of R&D is first produced by the corporation so the whole cost of R&D has to be counted, then the output of R&D is internally consumed for the production of other goods and services, thus making it again a part of intermediate consumption. The treatment of R&D by the SNA does not change the value added of corporations.

(iii) **Cost of own construction, major repairs**: Normally, business accounting capitalizes these expenditures. The SNA also treats them similarly. However, business accounting in some countries[49] does not count own-account capital expenditures as part of revenues (sales to itself) because they are seen as capital expenditures, not revenue expenditures. Own-account capital expenditures are capitalized in the balance sheets and the statement of changes in financial position. To balance the sources of these capital expenditures, a negative value of the same magnitude is entered in current assets. In the SNA, the full cost of construction and major repairs has to be entered as output which is used by the corporation as capital formation. The adjustment would affect output, intermediate consumption, value added and operating surplus.

(iv) **Costs of developing software and entertainment, literary and artistic originals**: Business accounting treats these costs as revenue expenses. The SNA treats them as both output and capital formation. So these costs must be entered as output and also as capital formation. The treatment is the same as in (iii) if business would capitalize them. The capitalization would increase business=s addition to retained earnings by the full costs. The adjustment, therefore, would require an increase in operating surplus and thus value added. Tables 1.11(a)-(b) illustrate this adjustment.

1.55. Information needed for the above adjustments is not normally shown on published business accounts but can be obtained from business ledger accounts.

(b) Adjustment of interest receivable and interest payable

1.56. The SNA treats interest incomes differently from business accounts depending on whether they result from transactions with financial intermediaries or not:

(i) When no financial intermediation is involved, i.e. when money is borrowed from non-financial institutions or lent by non-financial institutions, interest is wholly treated as property income. All interest payable or receivable on bonds, bills, notes or loans from non-financial institutions (households, non-profit institutions, government, non-financial corporation) is treated as property income.

(ii) When financial intermediation is involved such as a loan from banks, a service charge for financial intermediaries is assumed to be implicitly imposed on interest receivable and payable as follows:

Interest receivable is equal to the "pure interest" minus service charges by financial intermediaries.

1.57. "Pure interest" stands for property income which is transferred from borrowers to lenders through banks and the like. From now on, "pure interest" is called net interest. Assuming a ratio of service charges to interest payable and a ratio of service charges to interest receivable, we can split interest payable and interest receivable into service charges and property income, i.e.:

[49]The European Union and those African countries that adopt the "Plan Comptable OCAM" record at least a part of those expenditures imputed revenues with counterpart as increase in assets.

(i) For interest payable

Service charges = Interest payable x (ratio of service charge to interest payable)
Net interest payable = Interest payable - Service charges.

(ii) For interest receivable

Service charges = Interest receivable x (ratio of service charge to interest receivable)
Net interest receivable = Interest receivable + Service charges.

1.58. The sum of service charges paid on interest receivable and on interest payable are treated as part of the intermediate consumption of the corporation. With this treatment, the value added of the corporation will be adjusted downward from the value of the intermediate account.

1.59. The ratios of service charges to interest receivable or to interest payable have to be calculated by using information from all financial intermediaries. Therefore, the adjustment can only be made by national accountants. This adjustment can be applied to (i) an individual corporation or (ii) the institutional sectors into which the individual corporation is classified and aggregated. Adjustment (ii) is more convenient since one only needs information on interest payable and receivable between financial intermediaries and the institutional sectors. However, with that adjustment alone, one will not have information for sub-sectoring of an institutional sector.

(c) Adjustment for insurance premiums

1.60. Like interest income, payment of insurance premiums includes one part which is a service charge paid to insurance companies and another part which is a *current transfer* from the buyer of the insurance policy to claimants. Again, given that the ratio of insurance service charges to insurance premiums is known, it is possible to estimate insurance service charges paid by the corporation. Service charges paid are treated as a part of intermediate consumption by the corporation. The residual is treated as a current transfer from the corporation to insurance companies. With this adjustment, the value added of the corporation is adjusted downward from the value of the intermediate account.

(d) Adjustment for consumption of fixed capital

1.61. Consumption of fixed capital in the SNA is not the same as depreciation in business accounts. Consumption of fixed capital is defined as the current value of fixed assets owned and used up during the accounting period. Depreciation in business accounts has two major deficiencies: (i) fixed assets are not revalued at current market prices but always at book values, (ii) methods of depreciation are based on consideration for tax payment and not economic reasons. Thus, consumption of fixed capital needs to be estimated independently by national accountants normally with the perpetual inventory method. Consumption of fixed capital, therefore, has a value which is different from depreciation, thus making net operating surplus different when depreciation as shown in table 1.9 is replaced by consumption of fixed capital. As long as consumption of fixed capital is not available, one can only obtain gross operating surplus.

1.62. Consumption of fixed capital is not easy to estimate unless one is provided with a long series of annual investment in fixed assets by type of goods. In that case, one can use business depreciation but it should be adjusted from historic costs to current prices (SNA, para. 6.184). On the other hand, depreciation without adjustment also is of great analytical value in financial analysis in that the value is part of cash

available to the corporation, an institutional sector or the whole economy to be used for investment in financial and non-financial assets.

(e) Adjustment for property income attributed to insurance holders

1.63 Property income received by insurance companies to invest their technical reserves is allocated by the SNA to insurance policy holders. This property income, in fact, is not held by insurance policy holders, so it has to be imputed as a back payment to insurance companies as part of the net premium payment in the secondary distribution of income account. The property income attributed to corporations holding insurance policies according to the insurance premiums paid can only be obtained by studying business accounts of insurance companies. Thus the attribution can be done more readily by national accountants.

(f) Adjustment for taxes

1.64. Taxes on income may include taxes on net income as well as tax deductions, capital taxes. Some of the tax deductions may actually be subsidies such as subsidies on employment, pollution reduction, etc. If there is a need to study taxes versus subsidies, then taxes payable should be separated from subsidies on production, otherwise only net taxes paid should be recorded since the separation requires full cooperation of business accountants of corporations. The SNA also recommends to use pay-as-you earn taxes (SNA, para. 8.52).

(g) Comments on final SNA accounts

1.65. Overall, gross value added in the production account is adjusted upward by the capitalized costs of developing software and entertainment, literary and artistic originals and downward by the service charges paid for insurance and financial intermediation.

1.66. The allocation of primary income account (table 1.11(c), page 45) is just a simple rearrangement of items shown as part of operating surplus in table 1.9(d) with interest receivable replaced by *net* interest receivable and non-life premiums payable replaced by *net* premiums payable since service charges on interest and insurance premiums are treated as intermediate consumption in the production account.

1.67. The secondary distribution of income account (table 1.11(d)) requires additional identification of certain items that are classified in the SNA: imputed, unfunded social contribution and charitable contributions. The latter are allowed neither by law nor by accounting standards to be treated as cost of production and normally recorded in business accounts as other expenses. The former is normally included in compensation of employees.

1.68. **Imputed, unfunded social contribution**: This covers payment by employers to employees or dependents out of their own resources without involving an established fund for special needs such as educational allowances, ill health, accidents, pensions for employees and their survivors which are not related to work. This contribution is also part of compensation of employees (SNA, para. 8.74). The SNA assumes that an *imputed* fund owned by the corporation is created so that:

(i) The contribution is first paid to the employees as compensation of employees (shown in generation of income account);

(ii) The employees then pay the same amount into the imputed fund in the secondary distribution of income account (see resources side of the account in table 1.11(d));

(iii) The imputed fund pays the same amount to the employees as *social benefits* (see uses side of the account in table 1.11 (d)).

1.69. **Charitable contributions**: charitable contributions by corporations are, in principle, not part of the cost of production and therefore must come out of the net income after taxes of the corporation even though tax deduction may be allowed for a part of the contribution. The partial deduction is allowed by United States law. Other countries' laws may be different.

1.70. The use of disposable income account for corporations always puts final consumption expenditures as equal to zero by definition so saving is always equal to disposable income.

5. OCAM: A case of income statement mandated to serve national account compilation

1.71. The OCAM general accounting plan, the business accounting standards for the countries in the now defunct Organisation Commune Africaine, Malgache et Mauricienne, was developed by an international commission of accountants and macroeconomists in 1970. The income statement and balance sheet of OCAM in general format are presented in tables 1.24 and 1.25 in appendix 2 to this chapter (p.70). The business accounting format of OCAM was inspired by the French system. This standard, though allowing for national flexibility, has the following key features:

(i) The general formats for both the balance sheet and income statement are compulsory;
(ii) Valuation rules for assets are common;
(iii) Statistical needs of national accounting are integrated in the business accounting schemes.

1.72. It is clear from table 1.24 that the format allows national accountants to use information directly for the compilation of national accounts up to the financial accounts even though additional information and adjustments are needed to make business concepts compatible with SNA concepts. The adjustments are similar to those previously discussed.

6. Strategies for compilation of production and income accounts

1.73. Below are the ways of compiling the corporate non-financial institutional sector from business account:

(a) Option 1

1.74. Get all necessary information from all corporations through full annual coverage or surveys. The number of transactions to be surveyed are the same as those shown in table 1.7 with some supplementary data on:

- Cost of capitalized own construction and major repairs;
- Inter-establishment transactions of produced goods and services within the corporation;
- Cost of research and development;
- Cost of developing copyrights, software;
- Unfunded social contributions;
- Interest payable and receivable broken down into those transacted through financial intermediaries and those transacted through others.

1.75. This option is only applicable to countries where there already are laws requiring the submission of data on business accounts or where corporations are willing to cooperate. Further elaboration of the content of the accounts and the submission of supplementary data would be a minor additional requirement. However, even given the compliance of corporate enterprises in submitting data, this option would not provide data early enough for the purpose of closely monitoring the economy since it may take 6-12 months after the reference

date for enterprises to prepare business accounts and for national accountants to process data. In addition, it would be less costly if the focus for full information were put on large enterprises and surveys were used to cover medium and small corporations, which is in fact option 2. Strategies for surveying establishments are discussed in the United Nations publication *Strategies for Measuring Industrial Structure and Growth* (Sales No. E.94.XVII.11).

(b) Option 2

1.76. In countries where no laws require the submission of data on business accounts except for publicly traded corporations, the focus should be on the following:

- Getting published accounts of all publicly traded, and publicly owned or regulated corporations;
- Cooperating with tax administration for tabulation of necessary items from business accounts submitted such as sales or revenues, cost of goods and services, components of compensation of employees, net income (or profit) of the financial year, interests payable and receivable, dividends receivable, current transfers, gross capital formation, etc.;
- Surveying privately held corporations for supplementary data.

This option would not allow one to get full information on many transactions such as payments and receipts of interest, insurance premiums, insurance claims, but this information may be obtained from financial intermediaries and insurance companies. Interest on bonds and bills and dividends on stocks are outside financial intermediaries and therefore more difficult to obtain. However, the latter data may be collected by regulatory agencies. In using information from various sources, this option is more cost-effective.

1.77. Our experience has indicated that even financial intermediaries would not classify their clients clearly into corporate enterprises, quasi-corporations, unincorporated enterprises and households that meet the exact requirement of national accountants. Therefore some rough rules of allocation must be devised. For example, banks currently are more interested in classifying their customers by economic activities (i.e. agriculture, mining, construction, manufacturing, commerce, private individuals) or insurance companies are interested in the types of non-life insurance (i.e. fire, automobile, etc.) rather than in institutional units. To improve national accounts by reducing costly surveys of corporations, one may try to seek the cooperation of financial intermediaries and insurance companies. A classification of transactions of their customers by institutional units would help national accounting immensely.

1.78. Another way of requesting less information and thus of increasing compliance from respondents is to focus on value added and income distribution and not on output and intermediate consumption. Table 1.9(d) on page 42 shows that gross operating surplus and gross value added can be compiled directly without knowing output and intermediate consumption.

(c) Option 3

1.79. Countries may adopt standards for business accounts similar to those of France and OCAM (see appendix 2 to this chapter for OCAM standards) which would greatly facilitate the compilation of national accounts.

Table 1.7(a). Linking business income statement to SNA accounts

Cat.	BUSINESS INCOME STATEMENT	Example value		SNA ACCOUNTS
(A)	**Sales, net of discounts, returns, VAT and sales taxes**		**850**	The splitting is necessary for two purposes: classification of the enterprise into trade or manufacturing as 2 distinct outputs
A1	Sales of goods bought for resale	120		
A2	Sales of goods manufactured	730		
(B)	**Cost of goods sold**		**586**	Cost of goods sold is split into cost of goods for resale and cost of goods manufactured
B1	Cost of goods bought for resale		100	Cost of goods for resale is needed to calculate trade margins (output)
B2	Cost of other goods sold		486	Detailed cost of goods manufactured which are partly intermediate consumption, partly value added
B3	(+) Finished goods beginning inventory		70	For calculating output
B4	(+) Cost of goods manufactured		492	
B5	(+) Cost of materials[50]	153		Intermediate consumption
B6	(+) Cost of services, rentals	40		Intermediate consumption
B7	(+) Direct and overhead manufacturing labour cost	285		Compensation of employees
B8	(+) Depreciation of plants and equipment	16		Part of value added
B9	(+) Depletion of natural resources	0		Other change in volume in balance sheets
B10	(+) Goods in process beginning inventory	21		For calculating output
B11	(-) Goods in process ending inventory	-23		For calculating output
B12	(-) Finished goods ending inventory		-76	For calculating output
(D)	**Operating expenses** (refer to selling and administrative expenses)		**222**	
D1	Cost of materials, services including commissions and rentals	30		Intermediate consumption
D2	Property taxes and other taxes on production	50		Other taxes on production
D3	Non-life insurance premiums payable	22		Intermediate consumption and current transfers
D4	Direct selling and general labour cost	110		Compensation of employees
D5	Depreciation of office equipment	10		Part of value added
(E)	**Operating income**		**42**	

[50] Direct manufacturing cost and overhead cost on materials, services are combined. It is already assumed here that changes in inventory of manufacturing materials and supplies have been utilized to arrive at cost here. See table 1.9(c) for the derivation.

Table 1.7(b). Linking business income statement to SNA accounts

Cat.	BUSINESS INCOME STATEMENT	Example value	SNA ACCOUNTS
(F)	**Other incomes**	**9**	
F1	Interest receivable	2	Property income receivable plus service charges of financial intermediaries
F2	Rents of non-produced assets such as land, patents, subsoil assets	1	Property income receivable
F3	Rentals of buildings, equipment	3	Secondary output
F4	Royalties receivable on copyrights (books, films, records, etc.)	1	Secondary output
F5	Dividends receivable	0	Property income receivable
F6	Equity in net income of non-consolidated subsidiaries	0	Property income receivable
F7	Net gains from selling financial and non-financial assets[51]	2	Revaluation in balance sheets
F8	Non-life insurance claims	0	Current transfers
(G)	**Other expenses**	**17**	
G1	Interest payable to financial intermediaries	10	Property income plus service charges of financial intermediaries
G2	Rents payable for non-produced assets such as land, patents, sub-soil assets)	0	Property income
G3	Royalties payable on copyrights (books, films, records, etc.)	0	Intermediate consumption
G4	Write-down of inventory	0	Revaluation
G5	Bad debt allowance	5	Ignored
G6	Charitable contribution	2	Current transfers
(K)	**Taxes on income**	**12**	Current transfers
(L)	**Income from continuing operations after tax**	**22**	

[51]The entry of this item assumes that capital gains or loss are treated by tax authorities as other incomes and taxed the same way. In some countries, they may not be taxed or taxed at different rates; the item net of taxes may be then entered between line (O) and line (P) in table 1.7(c).

Table 1.7(c). Linking business income statement to SNA accounts

Cat.	BUSINESS INCOME STATEMENT	Example value	SNA ACCOUNTS
(M)	**Discontinued operations of segment**	**0**	
	Net income from discontinued segment	0	This part of the account must be broken down into components similar to those in A-K
	Loss on disposal of segment, net of taxes	0	Revaluation in balance sheets. Income taxes paid or saved should be identified and separated
(N)	**Extraordinary items**	**0**	Income taxes paid or saved should be identified
	Extraordinary income	0	Current/capital transfers
	Extraordinary gains or losses	0	Revaluation in balance sheets
(O)	**Cumulative effect of change in accounting principle**	**0**	Revaluation in balance sheets
(P)	**Net income after taxes**	**22**	
(Q)	**Dividends payable**	**12**	Property income payable
(R)	**Addition to retained earnings**	**10**	Part of operating surplus

Table 1.7(d). Cost of goods sold for all activities

	Beginning inventory		**161**	
	Goods in process	21		See table 1.5
	Finished goods	70		See table 1.5
	Goods for resale	20		See table 1.4
	Materials	50		see table 1.9(c)
Plus	**Purchases**		**615**	
	Raw materials	180		See table 1.9(c)
	Labour, services, overhead cost (285+40)	325		See table 1.7(a)
	Goods bought for resale	110		See table 1.4
Plus	**Depreciation and depletion**		**16**	See table 1.7(a)
Less	**Ending inventory**		**-206**	
	Goods in process	23		See table 1.5
	Finished goods	76		See table 1.5
	Goods for resale	30		See table 1.4
	Materials	77		See table 1.9(c)
Equal	**Cost of goods sold**		**586**	

Note: Table 1.7 (d) is the normal way the cost of goods is presented in business accounts. Table 1.7(a) has been reorganized so that information can be easily obtained for the purpose of national account compilation.

Table 1.8. **Reorganization of the income statement into T-account**

Uses	Resources
Beginning inventory of finished goods and goods in process	Sales and other revenues
Cost of goods bought for resale	Other production income (rentals, royalties)
Cost of materials and services	Ending inventory of finished goods and goods in process
Compensation of employees	
Depreciation and depletion	
Other taxes less subsidies on production	Net gains on sales of assets
Write-down of inventory	
Bad debt allowance	Capital transfers receivable
Current transfers payable	Current transfers receivable
Property income payable	Property income receivable
Retained earnings	

Table 1.9. Intermediate accounts

Table 1.9(a)

OUTPUT AT BASIC VALUES equals	Category of table 1.7	**762**
Sales, net of discounts, returns, VAT and sales taxes	A	850
Less Cost of goods bought for resale	B1	-100
Plus Finished goods ending inventory	B12	76
Less Finished goods beginning inventory	B3	-70
Plus Goods in process ending inventory	B11	23
Less Goods in process beginning inventory	B10	-21
Plus Selected items of other income		4
Rentals of building, equipments	F3	3

Royalties receivables on copyrights	F4	1

Table 1.9(b)

INTERMEDIATE CONSUMPTION equals	Category of table 1.7	**223**
Plus Cost of materials (part of cost of goods manufactured)	B5	153
Plus Cost of services, rentals (part of cost of goods manufactured)	B6	40
Plus Cost of materials, services including commissions and rentals (part of operating expenses)	D1	30
Plus Royalties payable on copyrights (part of other expenses)	G3	0
Plus Similar material and service cost (part of discontinued operations)	Part of M (infrequent)	0

Table 1.9(c)

COST OF MATERIALS equals	**153**
Materials beginning inventory	50
Plus Materials purchased net of discounts, returns	160
Plus Freight cost	20
Less Materials ending inventory	-77

Table 1. 9(d). Value added

GROSS VALUE ADDED AT BASIC PRICES equals		Cat. of table 1.7	**539**
	OUTPUT at basic prices		762
Less	Intermediate consumption at purchasers' prices		-223
or GROSS VALUE ADDED AT BASIC PRICES equals			**539**
Other taxes less subsidies on production		D2	**50**
Compensation of employees which includes:			**395**
	Direct and overhead manufacturing labour cost	B7	285
	Direct selling and general labour cost (part of operating expenses)	D4	110
Gross operating surplus			**94**
Gross operating surplus equals:			
	Depreciation which includes:		**26**
	Depreciation of plants and equipment (part of cost of goods manufactured)	B8	16
	Depreciation of office equipment, buildings (part of operating expenses)	D5	10
Plus	**Addition to retained earnings**	R	**10**
Less	**Property income receivable** which includes:		**-3**
	Interest receivable	F1	-2
	Rents of non-produced assets such as land, patents, subsoil assets	F2	-1
	Dividends receivable	F5	0
	Equity in net income of non-consolidated subsidiaries	F6	0
Plus	**Property income payable** which includes:		**22**
	Interest payable	G1	10
	Rents payable for non-produced assets	G2	0
	Dividends payable	Q	12
Less	**Current transfers receivable** which include:		**0**
	Non-life insurance claims, non-insured compensation payment for damages		0
Plus	**Current transfers payable** which include:		**36**
	Non-life insurance premiums payable	D3	22
	Income taxes and net taxes on capital gains	K	12
	Charitable contribution	G6	2
Less	**Net gain from selling financial and non-financial assets**	F7,N	**-2**
Plus	**Depletion**	B9	**0**
Plus	**Write-down of inventory**	G4	**0**

Plus **Bad debt allowance**	G5	**5**

Table 1.10. Adjustment of intermediate business accounts to SNA accounts

	INTERMEDIATE ACCOUNTS	SNA ACCOUNTS					
		Output	**IC**	**Value added**	**Capital formation**	**Property income**	**Current transfers**
Output of intermediate accounts	O	=					
Inter-establishment transactions of goods and services within corporation	NA	+	+	=			
Own-account cost of research and development (not capitalized by both business and SNA)	IC	+	+	=			
Cost of own capital formation (capitalized by business and SNA)	K	+	++	++			
Cost of own-account development of copyrights, software (not capitalized by business but capitalized by SNA)	IC	+	=	+	+		
Interest payable						-	
Net interest payable	P					+	
Plus Service charges	O		+	-			
Interest receivable						-	
Net interest receivable	P					+	
Minus Service charges	O		+	-			
Insurance premiums payable						-	
Net premiums payable	CT					+	
Plus Service charges	O		+	-			

Explanations:

O: Output
IC: Intermediate consumption
K: Included in capital formation and balance sheet, but neither in output (or sales) nor IC
NA: Non-existent
P Property income
CT: Current transfers
+ Value increases by the same amount
- Value decreases by the same amount
= Unchanged
++ Production cost is separated between value added and IC. Value is dependent on value of IC.

Table 1.11. Final SNA production and income accounts after adjustments

1.11(a)PRODUCTION ACCOUNT

Uses		Resources	
Intermediate consumption	**251**	**Output at basic prices**	**792**
Intermediate consumption of intermediate accounts	223	**Output at basic prices of intermediate accounts**	762
Inter-establishment transactions of goods and services within corporations	10	Inter-establishment transactions of goods and services within corporations	10
Cost of research and development (not capitalized in business accounts)	9	Cost of research and devel. (not capitalized in business accounts)	9
Service charges on interest payable and receivable	2	Own-account formation (capitalized in business accounts)	5
Service charges on insurance premiums	3	Cost of developing originals (not capitalized in business accounts)	6
Intermediate cost of own capital formation	4		
Gross value added at basic prices	**541**		
Value added of intermediate accounts	539		
Adjustment for capitalizing cost of developing originals	6		
Value added of own capital formation	1		
Service charges on interest payable and receivable	-2		
Service charges on insurance premiums	-3		

1.11(b) GENERATION OF INCOME ACCOUNT

Uses		Resources	
Compensation of employees of intermediate accounts	395	Gross value added at basic prices	**541**
Compensation of employees (own capital formation)	1		
Other taxes less subsidies on production of intermediate accounts	50		
Gross operating surplus (adjusted)	**95**		

Notes on tables 1.11(a)-(b):

1. The relationship between the SNA gross operating surplus and the operating surplus of intermediate accounts is as follows:

	Operating surplus of intermediate accounts	94
Less	Service charges on interest and insurance	-5
Plus	Cost of developing software, originals (not capitalized by business)	+6
Equal	**SNA operating surplus**	95

2. Own-capital formation does not affect the SNA operating surplus since it is assumed that its operating surplus is zero.
3. Own-capital formation is capitalized in business accounts, but not included in the income statement which deals only with current transactions. When expenditures for own-capital formation occur and the construction is completed, they are treated in the balance sheet as an increase in fixed assets and a reduction in net current assets.
4. Costs of developing originals, software, etc. are not capitalized in business accounts and therefore are included as part of cost and thus as part of intermediate consumption of intermediate accounts. If they were capitalized in business accounts, retained earnings would be higher by the full costs. The second part of table 1.11(a) shows how adjusted value added can be obtained directly.

1.11(c)ALLOCATION OF PRIMARY INCOME ACCOUNT

Uses		Resources	
		Gross operating surplus	**95**
Property income payable	20	Property income receivable	3
Net interest payable	8	Net interest receivable	2
Rents payable for use of non-produced assets	0	Rents of non-produced assets	1
Dividends payable	12	Dividends receivable	0
		Equity in net income of nonconsolidated subsidiaries	0
		Property income attributed to insurance holders (estimated by national accountants)	0
Balance of primary income	**78**		

1.11(d)SECONDARY DISTRIBUTION OF INCOME ACCOUNT

Uses		Resources	
		Balance of primary income	**78**
Current transfers payable	33	Actual social contribution	0
Net non-life insurance premiums[52]	19	Imputed unfunded social contribution	0
Charitable contributions	2		
Income taxes	12		
Imputed social benefits (= imputed unfunded social contribution)	0	Current transfers receivable	0
Disposable income	**45**		

1.11(e)USE OF DISPOSABLE INCOME ACCOUNT

Uses		Resources	
		Disposable income	**45**
Final consumption expenditures	0		
Gross saving	**45**		

[52]Net non-life insurance premiums = (non-life insurance premiums - service charge) = 22 - 3. Note that 3 is shown in table 1.11(a).

C. Changes in financial position and balance sheets

1.80. The balance sheet and the statement of changes in financial position of a corporation are both required financial statements. The purpose of the balance sheet is to show the financial condition of a corporation at a particular time while the statement of changes in financial position shows more explicitly the nature of transactions that create changes in the balance sheet in terms of the sources and uses of funds or working capital by the corporation such as the sale of stock, refund of bonds, etc. The statement of changes in financial position and the balance sheets for two consecutive years, at the end of the reference year and the preceding year, are crucial for the compilation of not only the balance sheet but also the capital account and the financial account of the non-financial corporate sector according to the SNA. The financial statement of changes in financial position gives further explanation for the changes obtained from two consecutive balance sheets. Without the former, it may not be possible to compile the capital account and the financial account for the SNA. Following is a detailed discussion of the balance sheet and statement of changes in financial position of a corporation. The latter will from now on be referred to as the financial statement for short.

1. Description of a business balance sheet

1.81. The balance sheet presents a view of the business as a collection of resources or assets belonging to a corporation that is equal to the total of sources of, or claims against, those assets at a particular date, normally as at 31 December. The assets are derived from two sources (creditors and owners) and must equal the contribution of creditors and owners in the following relation:

Assets = Liabilities + Owners' equity.

1.82. A representative balance sheet shown in table 1.13 consists of two parts: assets and liabilities. To be meaningful for analysis, the balance sheets for at least two consecutive years must be presented. For the purpose of national accounts, the balance sheets of the accounting period and previous period must be available.

1.83. Below in table 1.12 are explanations of the categories shown in table 1.13 and the necessary adjustments these categories need to be compatible with national accounts. There is no exact standard form of balance sheets, except that they are normally separated into current and long-term assets with property, plant and equipment clearly specified. The information from the financial statement and the balance sheets will be reorganized to derive information for the capital and financial accounts. Together with information from final production and income accounts of the SNA, one can immediately obtain the final capital and financial accounts of the SNA. It is necessary to create an intermediate balance sheet before the final balance sheets can be derived in conformity with the SNA. The final balance sheet requires drastic changes, not merely adjustments, since it involves estimates of stocks of fixed assets, accumulated depreciation, and revaluation of all financial assets and liabilities, which requires information for a long period of time. In order to help readers follow easily the problem of valuation in the business balance sheets and the SNA balance sheets, table 1.12 is set up to show the basic differences.

1.84. In the balance sheet of table 1.13, for assets and liabilities, values stand for acquisition less disposal. In an accounting period, land, for example, is the accumulated land acquired less land disposed of or sold up to the time the balance sheet is prepared. Similarly, long-term debt stands for long-term debt outstanding after deducting debts retired during the period.

Table 1.12. Valuation in business accounts and SNA

Concepts	Business accounts	SNA	Adaptation to SNA
Gross fixed capital goods (assets)	Book values. Book values are historic acquisition costs less accumulated depreciation	Current market acquisition costs	Perpetual inventory method where yearly investment goods are revalued by price indexes and depreciated. Needs long series of yearly investment classified by types of goods. The length of a series depends on the average useful life of a good
Depreciation/ consumption of fixed capital	Many methods used: straight line, accelerated, production, sum-of-the-year's digits; 94% in USA used straight line which equals (historic acquisition cost - salvage value) / (years of useful life)	Methods of depreciation similar to business may be applied	Similar to above
Non-produced assets and intangibles	Book values. Book values are historic acquisition costs less accumulated depletion (non-produced) or accumulated amortization (intangibles)	Current market acquisition costs	Present value of expected future net incomes
Inventories	Entry: acquisition costs Exit: historic costs. LIFO at the cost of last item acquired. FIFO at the cost of first item acquired	**For output calculation**: Entry: acquired costs at time of entry Exit: acquired costs at time of exit **For balance sheet**: revalued to current market acquisition costs	No clear short-cut method exists
Current asset/current liabilities	Historic values	Historic values. For securities with interest, revaluation may be needed if market interest rate differs from face value interest rate. Revaluation may be ignored if difference is small	
Bonds and the like	Book values. Book values are based on historic values from (or to) which amortization of discounts (or premiums) is deducted (or added). Amortization would affect values of interest paid or received in income statements	Current market acquisition costs	With current market interest rates and historic coupon rates, current market prices can be calculated. Too much information is required however. No clear short-cut method exists
Other long-term debts	Historic values	Historic values	
Capital stocks (i.e. ownership shares)	Capital stock held as assets: historic values. Stockholders' equity = total assets less total liabilities (book values)	Market acquisition costs of traded stocks. For non-traded equity, equity = total assets less total liabilities (current market values)	Present value of expected future net income

Balance sheet*

Table 1.13(a) ASSETS		SNA classification	Year t	Year t-1	Changes
(A)	**Current assets**		**309**	**256**	**53**
A1	Cash and short-term securities	Financial	50	40	10
A2	Receivables	Financial	40	45	-5
A3	Inventories	Produced, fixed	206	161	45
A4	Prepaid expenses	Financial	13	10	3
A5	Others	Financial	0	0	0
(B)	**Property, plant and equipment**		**474**	**222**	**252**
B1	Buildings	Produced, fixed	408	230	178
B2	Own capital formation	Produced, fixed	5	0	5
B3	Improvements of (or additions to or betterment of) buildings	Produced, fixed	2	0	2
B4	Less accumulated depreciation of buildings and improvements	Produced, fixed	-59	-44	-15
B5	Equipment and improvement	Produced, fixed	150	60	90
B6	Less accumulated depreciation and improvement	Produced, fixed	-32	-24	-8
(C)	**Land and natural resources**	Non-produced	**41**	**41**	**0**
C1	Land	Non-produced, fixed	41	41	0
C2	Natural resources	Non-produced, fixed			
C3	Less accumulated depletion, nat. resources	Non-produced			
(D)	**Other long-term assets**				
D1	Investments	Financial			
D1.1	Bonds	Financial			
D1.2	Stocks (equity)	Financial			
D2	Valuables				
D3	Intangibles				
D3.1	Non-produced intangibles (goodwill, patents, trade marks)	Non-produced			
D3.2	Less accumulated amortization of non-produced intangibles				
D3.3	Produced intangibles (organizational costs, copyrights, mineral explorations, computer software, artistic originals, etc.)	Produced, fixed			
D3.4	Less accumulated depreciation of produced intangibles				
D4	Others				
	TOTAL ASSETS = (A) + (B) + (C) +(D)		**824**	**519**	**305**

* For definitions of items (A) through (H) see below paragraphs 1.87 through 1.128.

Table 1.13. Balance sheet (continued)

Table 1.13(b) LIABILITIES		Year t	Year t-1	Changes
(E)	**Current liabilities**	**100**	**70**	**30**
E1	Notes payable	35	30	5
E2	Accounts payable	50	40	10
E3	Unearned income			
E4	Current portion of long-term debt and capitalized lease obligations	5		5
E5	Other accrued liabilities	10		10
(F)	**Long-term liabilities and other items**	**341**	**246**	**95**
F1	Long-term debt			
F1.1	Loans	150	150	0
F1.2	Bonds	191	96	95
F1.3	Capitalized lease obligations			
F2	Employee compensation and benefits			
F3	Deferred income taxes			
F4	Preferred stock with mandatory redemption			
(G)	**TOTAL LIABILITIES = (E) + (F)**	**441**	**316**	**125**
(H)	**Shareholders' equity**	**383**	**203**	**180**
H1	Preferred stock			
H2	Common stock	260	110	150
H3	Paid in capital in excess of par value, common stock	22	2	20
H4	Retained earnings	101	91	10
	TOTAL LIABILITIES AND SHAREHOLDERS' EQUITY = (G) + (H)	**824**	**519**	**305**

1.85. In terms of classifying business assets into SNA categories of assets, it is important to note that only fixed assets which are produced make up gross fixed capital formation in the SNA and consumption of fixed capital (an SNA concept) is calculated only for long-term produced fixed assets.

1.86. The following will explain items in the business balance sheets:

(a) Current assets

1.87. Current assets refer to assets that are liquid, i.e. easy to convert to cash, at least within one year. Current assets are normally listed in the balance sheet in order of liquidity. They include cash, marketable securities (short-term), short-term receivables, inventories and short-term prepaid expenses. Some other items may also be included here if they are held for immediate disposal such as land or equipment. The critical difference between current assets and long-term assets depends not only on the nature of the assets but also on whether the owners intend to hold them for more or less than one year. Instead of going into details so that each category of current assets can be matched with SNA classification, the discussion is more genera,l in line with common business reporting. To match up with SNA classification, more detailed information is needed.

1.88. **Cash** includes cash on hand, negotiable checks, unrestricted balances in checking accounts and savings accounts, even though the latter may not be released by banks for a specified period of time.

1.89. **Short-term marketable securities** include debt instruments that can be readily converted into cash and are held by the management with the intention to do so during the current period.

1.90. **Notes and accounts receivables** include receivables that are expected to be collected during the current period and notes that are receivables credited with interests. They must be net of allowances for bad debts or uncollectible accounts and expected sales discounts.

1.91. **Inventories** include inventories of raw materials, supplies, work in process and finished goods. One should be aware that different valuation methods yield quite different values for inventories and consequently also for output as defined in the SNA. When changes in inventories are calculated, the SNA recommends that incoming inventories be valued at basic prices prevailing at the time of entry and withdrawals at the prices at which they are sold. But for the balance sheets the SNA recommends that inventories be valued at market price at the time the balance sheet is prepared.

1.92. **Prepaid expenses** include advance payment by the corporation for the use of goods and services such as advertising, taxes and insurance.

(b) Property, plant and equipment

1.93. Property, plant and equipment are long-term assets unless earmarked for disposal in the same accounting period and therefore classified as inventories, a component of current assets. Another exception in business accounts is that land held for speculative reasons, or buildings abandoned and no longer used in ordinary business operations are not included in the property, plant and equipment category; instead, they are treated as long-term investments. These items are always measured at acquisition cost (i.e. book values) but with the following adjustments:

(i) Accumulated depreciation in business accounts for buildings and equipment is deducted from accumulated book values;

(ii) Accumulated depletion is deducted from resources such as mineral deposits, timberland, etc.; depletion is calculated by business like depreciation (See chapter VIII for the methodology);

(iii) Improvements or additions to original values of land, buildings, plants and natural resources that extend their life or increase the quantity or quality of their services are added to stocks of fixed assets; these values, which are treated as fixed assets, must also be depreciated.

(iv) Disposal of the assets mentioned is deducted.

1.94. Land is not depreciated but improvement on land is (See item (iii) above).

1.95. Capital leased assets are capitalized, i.e. treated like assets which are purchased in the SNA. This accounting rule is followed by the business community in the United States of America and Canada, Japan, Australia, South Africa but not in most European countries. To be compatible with the SNA, financial leases must be capitalized. This cannot be done without direct cooperation from the corporations concerned.

1.96. Valuation of capital goods at acquisition cost or book value is incompatible with the SNA which requires valuation at market prices. Thus the value of capital goods cannot be used in the SNA balance sheets. One possibility, which was practised in some former socialist countries, is to ask businesses to revalue them at market prices with information on methods and market prices (or price indexes) by types of goods and vintages. Another possibility, which is practised by most national statistical offices, is the use of the perpetual inventory method which is applied overall on data collected for the whole country in terms of annual investment on capital goods classified by types and by institutional sectors for at least 20 years.

(c) Land and natural resources

1.97. Land and natural resources are non-produced tangible assets. Land is not depreciated but natural resources are depleted. SNA consumption of fixed capital (or depreciation in business accounting) is a factor cost of production. However, depletion is treated by the SNA as part of operating surplus, and other changes in volume in the balance sheets which are not due to production.

(d) Other long-term assets

1.98. Other long-term assets include investments in stocks and bonds, valuables, intangible assets and others**.** Most are financial assets but some that belong to intangibles such as copyrights of artistic originals, software, mineral explorations and organization costs are fixed assets according to the SNA. These long-term assets are not valued at market prices in business accounting, except for stocks when their market prices fall below book values. The valuation in business accounting obviously deviates from that of the SNA.

(d1) Investments

1.99. Long-term investments refer to long-term financial assets which are mostly in the form of stocks, bonds and bills. To be classified here, the management must plan to keep them as long-term investments, otherwise they should be classified as marketable securities in current assets.

(d1.1) Bonds

1.100. In the SNA, bonds must be valued at market prices at the time the balance sheet is prepared. Methods for the revaluation of bonds will be discussed in appendix 1 to this chapter.

(d1.2) Stocks

1.101. Equity investments are valued at the lower of cost or market if there is no substantial control. This means that when stocks continue to grow in prices, they will not be revalued by business accountants. For investments in other corporations, the rule is that, if control is evident, equity investments are valued at equity, which means that their value is adjusted for the proportionate share of rise in retained earnings of the subsidiary corporations whose shares the corporations own.

(d2) Valuables

1.102. Valuables such as jewelry and works of art are not used for production, but are collected by corporations, particularly the latter. Corporations may include them in the value of property, plant and buildings, but conceptually they are not fixed assets and should be separated and no consumption of fixed capital should be calculated for them, though they may be depreciated in business accounts.

(d3) Intangibles

1.103. Intangibles are also valued or recorded in business accounts at historic cost or book value which is either development or acquisition cost, and then reduced by amortization over their useful life. Amortization used in business accounting is conceptually the same as depreciation, except that it is called differently when applied to intangibles.

1.104. The SNA adopts the principle of market valuation when sold or at development cost plus a mark-up (see SNA, para. 6.144). The SNA does not provide any rule to set the mark-up and since it is not easy to do so, national accountants may take the values from business accounts for granted. In addition, since market values of intangibles such as copyrights are the present value of expected streams of future net incomes, it would be beyond the ability of national accountants to revalue them without a detailed understanding of the nature of each intangible and its expected income. Intangibles must be identified either as produced or non-produced assets according to the SNA, because consumption of fixed capital must be calculated for long-term produced assets.

(d 3.1) Non-produced intangibles

1.105. The identification of non-produced assets is important in the SNA since payments for the right to use them are rents and therefore classified as property income. This type of transactions does not create additional output to the economy or enter into intermediate consumption. Non-produced assets are amortized in business accounting while the SNA does not need any concept close to amortization since it adopts their market prices which take it into account. Non-produced assets include goodwill, patents, trade marks and transferable leases (including leases of land, buildings and structure but not capital or financial leases which are not transferable) and contracts:

1.106. **Goodwill**: Goodwill is measured by the difference between the acquisition cost of a business and the sum of all physical asset values.

1.107. **Patents:** Patents are exclusive rights granted to an investor for a period of 17 years (in the United States of America). They are valued at development or acquisition cost. The cost of developing a patent is *not* the cost of research and development. This treatment is the same in both business accounting and the SNA in that there is no linkage between patent and research and development. The SNA considers patents unproduced assets.

1.108. **Trade marks**: Trade marks and brand names are registered symbols or names that give the holder the right to use them to identify a product or service. They are valued at cost of acquisition.

1.109. **Franchises, licenses, formulas, processes:** Rights to exclusive territory, formula, technique or design. They are valued at cost of acquisition or development cost.

(d3.3) Produced intangibles

1.110. **Copyrights**: Copyrights are exclusive rights granted to the holder to publish and sell literary, musical, and other artistic materials (which are called originals by the SNA) through the author's life plus 50 years (in the United States of America). Copyrights, which are produced fixed assets, are measured at acquisition cost. The cost of developing copyrights is treated as current costs by business accounting but as gross capital formation and assets by the SNA. Since copyrights when own-produced are not treated as capital goods by

business accounting, they do not appear in the balance sheets of the corporation. In table 1.11(a), the value of copyrights is added as output of the corporation in the adjustment process to obtain the SNA production account. This output must also be treated as capital goods in the SNA balance sheets. However, in the business balance sheets, they are not included. As can be seen in our example, 6 as the output value of copyright (i.e. the cost of developing originals) shown in table 1.11(a) does not yet appear in the business balance sheets of table 1.13(a). The adjustment of the balance sheet for this item to conform with the SNA would require an increase in line D3.3 by a value of 6 and this increase in assets would have to be matched by an increase in liabilities (table 1.13(b) in retained earnings, line H4). The adjustments are incorporated in the intermediate balance sheets shown below in table 1.19 on pages 61 and 62.

1.111. **Organizational costs**: These include all legal and service costs incurred when a business is organized. These costs normally are written off over a period of years. The SNA does not explicitly discuss how they should be treated. So far they have been treated by many countries as intermediate consumption for the year in which they were incurred. In this case, organizational costs must be taken out of the balance sheets. However, since organizational costs are capitalized by business, one may prefer to leave them as part of the assets in the balance sheet.

1.112. **Mineral explorations**: The value of expenditures on exploration for petroleum, natural gas, mineral resources, whether successful or not, is treated by the SNA as produced fixed assets. But until now business accounts in most countries only treat successful exploration as produced fixed assets and unsuccessful explorations' costs as current expenditures.

1.113. **Computer software**: In business accounting, the acquisition costs of software are treated as gross capital formation and assets but the costs of development within corporations are treated as current costs. The SNA treats costs of developing software as gross capital formation for own use. The adjustment is similar to what was discussed in the treatment of copyrights.

(d4) Others

1.114. Other long-term assets may include non-current receivables and non-current prepaid.

(e) Current liabilities

1.115. Liabilities are probable future sacrifices of economic benefits arising from present obligations. Liabilities are also classified as either current or long-term. Current liabilities require the obligation to be met within one year of the accounting period.

(e1), (e2) Notes and accounts payable

1.116. These include notes payable that require payment of interests, and other accounts payable without interest. They are created by the acquisition of goods and services as well as by wages, taxes, etc. that are payable during the accounting period.

(e3) Unearned income

1.117. Unearned income includes future services or goods that are due to customers.

(e4) Current portion of long-term debt and capitalized lease obligations

1.118. The terms speak for themselves.

(e5) Other accrued liabilities

1.119. Accrued liabilities include other short-term obligations such as dividends, etc.

(f) Long-term liabilities and other items

(f1) Long-term debt

1.120. Long-term debt includes all debts that are due in a period exceeding one year such as notes payable, bonds payable, mortgages, loans, bonds and capitalized lease obligations. The capitalized value of a lease is its net present value.[53]

(f2) Employee compensation and benefits

1.121. Vested benefits such as earned pension benefits that are not contingent upon the employee's continuing to work for the employer are treated as long-term liabilities.

(f3) Deferred income taxes

1.122. See the remarks under "Note on accounting income and taxable income" (paras.1.32 and 1.33 above).

(f4) Preferred stock with mandatory redemption

1.123. Preferred stock that is subject to mandatory redemption requirements or has a redemption feature beyond the control of the issuer is more like debt than equity. In 1979, the Securities and Exchange Commission of the United States of America required that stocks be separated into redeemable preferred stocks, non-redeemable preferred stocks and common stocks, and that redeemable preferred stocks be treated as debts.

(h) Shareholders' equity

1.124. Shareholders' equity is the difference between total assets and total liabilities. It should also be equal to paid-in capital and retained earnings.

1.125. Paid-in capital includes preferred and common capital stock at par value and paid in capital in excess of par value. Preferred stock has a claim to income after bondholders, but prior to common stockholders. Par value indicates the amount per share that is entered into the corporation's capital stock account and constitutes its legal capital. The legal capital is the minimum amount that can be reported as contributed capital. A corporation may not declare a dividend that would cause stockholders' equity to fall below its legal capital. If

[53]For example, if the lease is to be paid in six years, which is the life of the machine, with an annual payment of $3,000 at a fixed 10% interest rate, then the present value of the lease to be recorded in the balance sheet is $X = \$3{,}000\ (1/1.1 + 1/1.1^2 + 1/1.1^3 + ... + 1/1.1^6) = \$3{,}000 \times 4.355 = \$13{,}065$.

the stock is issued for a price greater than par, the excess is called paid-in capital in excess of par value, common. If it is issued for less than par value, the difference is called discount on capital stock, common.

1.126. The book value of a corporation-s stock represents the total assets less liabilities. It is the stockholders' equity. The book value per share is the net equity of common stockholders (net of value of preferred shares plus outstanding preferred shares dividends) divided by the number of common stocks. Market value per share has little relationship to book value per share. It is the price investors are willing to pay for a share on the open market.

1.127. Also included in paid-in capital are the corporations' own stocks which are repurchased but not retired. They are called treasury stocks, and capital arising from the donation of assets to the firm. Accumulated retained earnings also make up part of owners' equity. These are net income that is not distributed as dividends.

2. Description of statement of changes in financial position

1.128. From the balance sheet, it is not possible to know what a corporation has done to create a net change since it can simultaneously purchase new equipment and dispose of old equipment and of bonds. The statement of changes in financial position which will be called for short the financial statement would give this information. Thus it is important to understand it. The financial statement is broader in scope than the cash flow statement because it focuses on working capital (current assets minus current liabilities) which spans the entire range of a firm's liquid assets, whereas the cash flow statement concentrates on a single asset: cash. The preparation of the financial statement is a common practice in the United States of America, but since 1987 the Financial Accounting Standards Board there (FASB) has replaced the requirement for companies to produce a financial statement with a requirement for them to produce a cash flow statement because it is useful for creditors to evaluate the liquidity of a company. This position was adopted in Britain by the Accounting Standard Committee (ASC) for the corporate reports. In other countries, the financial statement is optional. The European Union does not require it. Though the cash flow statement gives useful information for national accountants, the financial statement is more complete and therefore only it will be discussed below.

1.129. Table 1.14 shows the financial statement. For changes in current assets and current liabilities, changes in the financial statement are the same as changes in the balance sheets, with the main differences in long-term assets and liabilities. This is particularly true for the treatment of accumulated depreciation, fixed assets and long-term debts. The reason behind the differences is that changes in the balance sheets are aggregates which reflect the acquisition of new assets at market prices but disposal of old assets at historic prices. The statement of changes in financial position, however, better reflects the changes and therefore should be used to prepare capital accounts and financial accounts for the reasons that will be explained below.

Table 1.14. Statement of changes in financial position

	Sources of working capital	
1.1	Net income (from income statement)	22
1.2	Less capital gain on equipment sold[54]	-2
	Charges not requiring current outlay of funds	
1.3	Depreciation, depletion, amortization[55]	26
1.4	Sale of equipment	9
1.5	Issuance of long-term debt (loans, bonds, etc.)	100
1.6	Issuance of stocks and paid-in capital	170
1.0	**Total**	**325**
	Uses of working capital	
2.1	Cash dividends	12
2.2	Acquisition of equipment	100
2.3	Acquisition of buildings	178
2.4	Improvements of buildings	2
2.5	Own-account capital formation	5
2.6	Reclassification of long-term bonds as current assets	5
2.0	**Total**	**302**
3.0	**Increase (or decrease) in working capital (1-2)**	**23**
	Also equal to **Increase (decrease) in current assets**	**53**
	less **Increase (or decrease) in current liabilities**	**-30**

(a) Recording of fixed assets and depreciation in business balance sheets

1.130. The mixing of historic values for old assets and market values for new assets, though of the same types, creates differences in changes in the balance sheets and financial statement and provides data in the business balance sheets that are not appropriate for the preparation of the capital accounts and financial accounts of the SNA. For example changes in equipment in the balance sheets (table 1.13(a), line B5) give the value of 90, which might have been used as gross capital formation. In fact, gross capital formation in equipment is 91 (100-9) in table 1.14. Similarly, changes in accumulated depreciation do not reflect only depreciation in the period, but also the reduction in depreciation due to the elimination of old fixed assets. We can see that depreciation, under gross operating surplus in table 1.9(d) or in the statement of changes in

[54] This realized capital gain must be subtracted as it has already been included in sale of equipment that is shown in item 1.4.

[55] If an intangible asset is amortized, then the amortization is entered with a positive sign. If a credit term is amortized, it is negative because the amortization increases income but does not provide funds.

financial position (table 1.14), is 26, but changes in accumulated depreciation in the balance sheets are 23 (15+8, B4 and B6 in table 1.13(a))). Below, the differences are explained in detail.

Table 1.15. Recording of fixed assets and accumulated depreciation in business balance sheets

	Year t-1	**Transactions during the year**		**Balance sheet at end of period t**
	Balance sheet at end of t-1	Acquisition of new assets	Disposal of old assets	
Buildings	230	178		408
Improvements	0	2		2
Equipment	60	100	-10	150

	Year t-1	**Transactions during the year**		**Balance sheet at end of period t**
	Balance sheet at end of t-1	Deduct accumulated depreciation of equipment sold	Add depreciation of new and current equipment	
Accumulated depreciation, buildings	44		15	59
Accumulated depreciation, equipment	24	-3	11	32

1.131. Table 1.15 shows how fixed assets and accumulated depreciation are recorded in business balance sheets. In the upper part of table 1.15, the value of new fixed assets is added to, and the value of old assets sold is subtracted from, the old balance to find the value of fixed assets at the end of the period. But new assets are valued at current market prices and old assets that are sold are valued at **historic cost**. In the example, we see the following relationship for the total value of equipment:

Value of equipment sold at historic cost	10
Accumulated depreciation of equipment sold	3
Remaining value of equipment sold	7
Sale value of equipment sold	9

Capital gain realized	2

1.132. The information above must be recorded in the financial statement of table 1.14 if details are shown. In our example, the disposal of equipment is at historic cost, which is 10, while the current market value is only 9. In the SNA, as everything is valued at current market prices, gross capital formation for equipment which is equal to acquisition less disposal, is 100 - 9 = 91 (In table 1.14 line 2.2 minus line 1.4). Change in equipment in the business balance sheet is only 90 (table 1.13(a), line B5). Thus the statement of changes in financial position (table 1.14) provides information on market values of new fixed assets acquired and old fixed assets sold.

1.133. Similarly, changes in accumulated depreciation of equipment in the business balance sheets reflect not only depreciation in the accounting period but also the deduction of the accumulated depreciation of the old

equipment that was disposed of from the total accumulated depreciation. To get information on depreciation, which is a part of production costs, one needs to look at the statement of changes in financial position or in the income statement if we want to use the information before consumption of fixed capital can be calculated. Depreciation in business accounts is measured at historic values of fixed assets and therefore cannot be easily revalued at market prices unless all equipment bought in past periods is revalued at present market prices. Given that depreciation is revalued at current market prices and depreciation methods are the same, then depreciation in business accounts should be the same as consumption of fixed capital. However, the revaluation is normally made by national accountants using the perpetual inventory method. But it does not exclude revaluing by business accountants using methods they use in inflation accounting.

(b) Recording of bonds in business balance sheets

Table 1.16. Recording of bonds in business balance sheets

	Year t-1	**Transactions during the year**		**Balance sheet at end of period t**
	Balance sheet at end of t-1	Issuance of new bonds	Conversion of long-term bonds to short-term for repay (reclassification)	
Bonds payable	96	100	-5	191

1.134. The recording of bonds in business accounting is the same as that of fixed assets, which normally causes changes in the balance sheets to differ from changes in the financial statement. There is another problem that is highlighted in table 1.16, i.e. the reclassification of long-term bonds into current liabilities (or assets) in preparation for retirement (or sale). In the financial statement of table 1.14, long-term bonds payable are 100 - 5 = 95 (line 1.5 minus line 2.6). In our example, values of bonds are assumed not to change, so that changes in the balance sheets are the same as changes in the financial statement. Normally, however, values do not stay the same as bonds are also sold at market prices that are not the same as historic costs. If bonds are sold with a capital gain (or loss), their disposal is entered as a negative value at historic prices in the business balance sheets, but in the statement of changes in financial position, like the sale of old equipment, they are shown in current market prices.

1.135. In short, statements of changes in financial position should be the basis for the preparation of the capital and financial accounts of the SNA. In our example of the financial statement, current assets and current liabilities are not spelt out to save spaces, but normally business accounts show as much detail as in the balance sheets. It should be pointed out that, by definition, change in working capital must be the same as the difference between change in current assets and change in current liabilities. The balance sheets allow the checking of the information.

3. SNA capital and financial accounts

1.136. Table 1.17 and table 1.18 show respectively the capital account and financial account. The capital account must rely on the use of disposable income account table 1.11(e) for the value of gross savings. The financial account relies only on the business financial statement. This is an important check on the accuracy of the SNA accounts up to the capital account as net lending (or net borrowing) in the capital account has to be equal to net lending (or net borrowing) in the financial account.

1.137. Though net savings is an important concept in economics, gross savings is not less important as it represents internal sources of funds that can be used for investment.

Adjustment of capital and financial accounts

1.138. For the SNA capital account, gross savings from the SNA use of disposable income account (table 1.11(e)) and the statement of changes in financial position (table 1.14) would provide most of the information, assuming that other adjustments such as revaluation of inventories, consumption of fixed capital, etc., have been taken into account while preparing the production and income accounts. Table 1.17 shows the SNA capital account. In it, own development of software, copyrights of artistic originals not capitalized in the financial statement must be included in the SNA capital formation.

1.139. For the SNA financial account (table 1.18), only one adjustment is needed to conform data from business accounts to SNA accounts. This one adjustment is *reserves against outstanding claims* attributed to non-life insurance holders, which can only be estimated by national accountants. In principle in the SNA, for non-life insurance, net premiums are equal in total to claims. However, there are claims that still need to be settled and therefore are kept in reserves. These reserves may be known by the corporations and recorded as assets. If they are not known, allocation of reserves to the non-financial sector as a whole would be performed wholesale by national accountants. No allocation is done at the corporation level.

1.140. Table 1.25 in appendix 2 to this chapter shows the OCAM balance sheet that includes the financial statement.

Table 1.17. SNA capital account

Uses		Resources	
Gross fixed capital formation	282	Gross savings	45
Acquisition of buildings	178		
Improvement of buildings	2		
Acquisition of equipment	100		
Disposal of equipment	-9		
Own capital formation	5		
Own development of software, copyrights, artistic originals	6		
Changes in inventories	45		
Acquisition less disposal of valuables	0		
Acquisition less disposal of non-produced non-financial assets	0		
Net lending (+)/net borrowing (-)	**-282**		

Table 1.18. SNA financial account

Uses		Resources	
Changes in assets		**Changes in liabilities**	
Net incurrence of assets	**13**	Net incurrence of liabilities	**295**
Cash and short term securities	10		
Accounts receivable (gross)	0	Notes payable	5
Accounts receivable, net	-5[56]		
Bad debt allowance	5		
Prepaid expenses	3	Accounts payable	10
Others	0		
Securities other than shares		Current portion of long-term debt	5
Loans		Other accrued liabilities	10
Shares and other equity		Loans	0
Addition to insurance technical reserves	0	Bonds	95
Prepayment of premiums and reserves against outstanding claims		Stocks and paid-in capital	170
		Net lending (+)/net borrowing(-)	**-282**

[56] In business balance sheets, accounts receivable are net of bad debt allowances but in the SNA, accounts receivable include bad debt allowances, hence this adjustment is needed.

Table 1.19. Intermediate balance sheets

SNA classification	Table 1.19(a)ASSETS	Categories in table 1.13(a)	Year t	Year t-1	Changes
(AF)	**FINANCIAL ASSETS**				
	Financial assets, short term		**103**	**95**	**8**
AF.2/AF.3	Cash and short-term securities	A1	50	40	10
AF.2	Receivables	A2	40	45	-5
AF.2	Prepaid expenses	A4	13	10	3
	Financial assets, long term	**0**	**0**	**0**	**0**
AF.3	Bonds	D1.1			
AF.5	Stocks	D1.2			
AF.7	Others	D5			
(AN.11)	**PRODUCED FIXED ASSETS**		**480**	**222**	**258**
AN.1111.1	Buildings	B1	408	230	178
AN.1111.2	Own account capital formation (construction)	B2	5	0	5
AN.1111.3	Improvements of (or additions to or betterment of) buildings	B3	2	0	2
AN.1111.4	Less accumulated depreciation of buildings and improvements	B4	-59	-44	-15
AN.1113.1	Equipment and improvement	B5	150	60	90
AN.1113.2	Less accumulated depreciation of equipment and improvement	B6	-32	-24	-8
AN.112.1	Copyrights of artistic originals, software (adjustment item)		6	0	6
AN.112.2	Organizational costs	D3.4			
AN.112.3	Mineral explorations	D3.3			
AN.112.4	Less accumulated depreciation of produced intangibles	D3.4			
AN.12	**INVENTORIES**	A3	**206**	**161**	**45**
AN.13	**VALUABLES**	D2			
(AN.2)	**NON-PRODUCED NON-FINANCIAL ASSETS**		**41**	**41**	**0**
AN.211	Land	C1	41	41	0
AN.212-4	Natural resources	C2			
AN.21	Less accumulated depletion, nat. resources	C3			
AN.22.1	Non-produced intangibles (goodwill, patents, trade marks)	D3.1			
AN.22.2	Less accumulated amortization of non-produced intangibles	D3.2			
(A)	**TOTAL ASSETS**		**830**	**519**	**311**

Table 1.19. Intermediate balance sheets (continued)

SNA classification	Table 1.19(b) LIABILITIES	Cat. in table 1.13 (b)	Year t	Year t-1	Changes
	Current liabilities		**100**	**70**	**30**
AF.4	Notes payable	E1	35	30	5
AF.7	Accounts payable	E2	50	40	10
AF.7	Unearned income	E3			
AF.7	Current portion of long-term debt and capitalized lease obligations	E4	5	0	5
AF.7	Other accrued liabilities	E5	10		10
	Long-term liabilities and other items		**341**	**246**	**95**
	Long-term debt	F1			
AF.4	Loans	F1.1	150	150	0
AF.3	Bonds	F1.2	191	96	95
AF.4	Capitalized lease obligations	F1.3			
AF.6	Employee compensation and benefits	F2			
AF.7	Deferred income taxes	F3			
AF.4	Preferred stock with mandatory redemption	F4			
(AF.5)	**Share and equity**		**389**	**203**	**186**
	Preferred stock	H1			
	Common stock	H2	260	110	150
	Paid-in capital in excess of par value, common stock	H3	22	2	20
	Retained earnings	H4	101	91	10
	Adjustment for retained earnings for developing originals		6	0	6
(AF)	**TOTAL LIABILITIES AND EQUITY**		**830**	**519**	**311**

4. SNA balance sheets

1.141. Business balance sheets are different from SNA balance sheets in the following fundamental ways:

(a) Long-term assets and liabilities, whether financial or non-financial, are recorded at book value, i.e. at historic cost and are not revalued to market prices when their prices change. The SNA values them at current market prices.

(b) Accumulated depreciation and depletion are calculated in business accounts on the basis of historic costs of assets and therefore would be different if all fixed and financial assets are revalued at current market prices according to the SNA.

(c) Inventories are valued by either FIFO, LIFO or other methods in business accounts, which are not the same if they are valued at current market prices as recommended by the SNA unless there are no changes in prices.

(d) Some items are considered part of assets and liabilities only by the SNA. Specifically, they include:

(i) Share in the reserves against outstanding claims of non-life insurance reserves;
(ii) Own-production output of originals, copyrights and software;
(iii) Capitalized leased property, plant, equipment.[57]

1.142. The business balance sheets after being reorganized according to the SNA are shown above in table 1.19. The reorganization of table 1.13 into table 1.19 is a straightforward exercise as the business and SNA balance sheets are conceptually similar. However, this reorganization includes two additional adjustments:

(a) Like own capital formation, the costs of developing copyrights, software, artistic originals, etc., that are produced by the corporation must be treated as capital goods by the SNA;

(b) In business accounts, this adjustment requires an increase in fixed assets as well as a matching increase in retained earnings.

1.143. To turn the intermediate balance sheets in table 1.19 into SNA balance sheets, items in the balance sheets must be revalued which requires data on all financial and non-financial assets that are still being held in terms of historic costs, date of acquisition, price indexes, historic and current market interest rates, etc. It is common to follow a short-cut method to calculate stocks of fixed assets by using the perpetual inventory method with data on historic series of annual gross capital formation (classified by types of capital goods), price indexes, assumed lifetimes and assumed depreciation curves of fixed assets. To date, there seems to be no acceptable short-cut method to revalue financial assets and liabilities for the whole economy as has been done for fixed and produced assets. Revaluation of bonds requires a knowledge of their acquired and maturity dates, the coupon interest rates and the current interest rates. The revaluation of tradable stocks may be based on their market prices. However, the revaluation of privately held stocks or owners' equity must be based on the present value of expected net income for the corporations under consideration. To come up with a reasonable estimate of future net income would require more information from them.

1.144. In fact, it is unclear whether there is any country that does compile full balance sheets with an elaborate method of revaluation of financial assets and liabilities. However, France prepares national balance sheet accounts to value financial assets and liabilities at their market prices not by starting the revaluation from business accounts but from the overall statistics of the financial market. These values are then distributed among institutional sectors on the basis of information from the financial institutions, general government and estimated shares for non-financial corporations and households. In Canada, financial liabilities are revalued, but assets are valued at both market prices and historic costs. However, it should be pointed out that the revaluation to current market prices of business accounts by business accountants, which satisfies the SNA conception, is possible. This revaluation at the corporation level is, in fact, attempted in *inflation accounting*. It is adopted and published by many corporations in the United States of America. More research should be done to see whether there is any appropriate short-cut method for revaluation of financial assets and liabilities. Part D will now cover the practices of revaluation in business inflation accounting. Its method may be used as a second-best approach to revaluation.

[57] Some countries do require the capitalization of capital leases like the SNA.

D. Revaluation in business and national accounts

1.145. Part D will discuss the revaluation of business accounts, or inflation accounting, that is now practised in the United States of America. Since 1979, with the Financial Accounting Standards Board (FASB) statement No. 33, "Financial Reporting and Changing Prices", large publicly traded enterprises are required to publish partial statements on both a **constant cost** and **current cost** basis, unless current cost income is not materially different from constant dollar income. The published data are, however, not audited. The regulation is applied to public firms with either (a) a total value of inventories, plant and equipment over $125 million, or (b) a total value of assets of over $1 billion.

1.146. Inflation accounting involves a restatement of business accounts which are based on historic costs, taking into account the effects of changes in general or specific price levels. An increase in general price level refers to a loss of purchasing power. For instance, a 50% price increase will lower the purchasing power of cash held in hand by 50%. A change in specific price level refers to a change in the price of a specific good.

1.147. Two methods are used in business accounting to account for the effects of changes in prices:

(a) **Constant cost (or dollar) accounting** restates historic cost financial statements for changes in the general price level. This method is simple to apply but it is not reliable for a specific enterprise as general prices may increase but prices of the assets the enterprise owns may decline.

(b) **Current cost accounting** attempts to restate historic cost financial statements for changes in both the general price level for monetary assets (or liabilities) and specific prices for non-monetary assets (or liabilities). Current cost accounting may, however, be implemented in two ways:

(i) **Net realizable value** which is an *exit value* representing what the company could sell its assets for; and

(ii) **Replacement cost** which is an *entry value* representing the cost of replacing assets which are equivalent in operating and productive capacity. This method is the revaluation principle recommended by the SNA (SNA, para.13.27).

1.148. Current cost accounting can only be implemented by the enterprises themselves since only they know the kind of assets they own and liabilities they incur and their market prices.

1.149. Following is the presentation of the constant cost accounting method. The current cost accounting method is similar except that it relies on specific information on market prices of assets and liabilities owned or incurred by the enterprise. The constant cost accounting method may be relevant for revaluation given that no specific information is available and the attention of analysts is on the whole economy and not on a specific enterprise. However, the method still needs to be tested.

1.150. The revaluation in the balance sheet in table 1.20 page 66 relies on the following information and assumptions:

(a) A general price index is used to inflate historic values to the values at the end of the year, i.e. 31 December. This general price index is normally the consumer price index but to be more accurate, more specific price indexes may be used as follows:

31 December 1991	120
31 December 1992	144
Average index for 1992	134

(b) All non-monetary assets are revalued individually, using the ratio of price index of the last day of the current year 31 December 1992 to the price index at the time the asset was acquired. In the example in table 1.20, it is simply assumed that all fixed assets were acquired at the time the enterprise was established and when the price index was 108. Given this simple assumption, historic current and accumulated depreciation can be easily restated to current cost since they are all based on capital goods historically valued when the price index was 108 at the time the assets were acquired. Realistic statements like those previously shown in tables 1.7 and 1.13 are more difficult to revalue since that requires a record of information on the value, price index of fixed assets at the time they were acquired and on the date of acquisition in order to revalue current and accumulated depreciation.

(c) Monetary assets and liabilities including long-term liabilities (long-term debts and bonds) are not revalued since $100 held in cash or owed to someone 10 years ago is still $100 today (the purchasing power of that $100 is a different issue).

(d) Capital stocks are revalued like non-monetary assets.

(e) Stockholders' equity is revalued residually, i.e. as the difference between total assets and monetary liabilities. Retained earnings are also revalued residually, i.e. as the difference between stockholders' equity and capital stocks.

(f) Revalued retained earnings can also be calculated directly, as the sum of revalued retained earnings of all previous periods and the additions to retained earnings of the current period obtained by revaluing the current income statement.

1.151. The revaluation of the current income statement to the end of the year, 31 December 1991, is shown in table 1.21, following these principles:

(a) For items valued at 31 December 1991, the index 144/120 is used to revalue them to 31 December 1992. (No items in table 1.21 are revalued as such).

(b) For items that are bought or sold throughout the year, the index 144/132 is used to revalue them to 31 December 1992 because it is assumed that purchases and sales are spread over the whole year.

(c) Revalued current depreciation depends on revalued fixed assets. In this simple example, it is revalued by the index 144/108.

1.152. In table 1.21, it is important to see that the revaluation affects not only the balance sheets but also the income statement and therefore the SNA output, intermediate consumption, GDP, etc. The new revalued addition to retained earnings brought about the value of purchasing power gain (+) or loss (-) by holding net monetary liabilities. This purchasing power gain or loss is calculated in table 1.22. The principle applied to the calculation is as follows:

(a) Monetary assets (cash, receivables) held would suffer a purchasing power loss due to a general price increase;

(b) Monetary liabilities owed would induce a purchasing power gain due to inflation, because the debt can be paid with cheaper money;

(c) Other monetary inflows and outflows as a result of sales or purchases also face a purchasing power gain or loss.

1.153. Revalued retained earnings in the balance sheets when calculated directly should be equal to:

Revalued retained earnings at end of last period 81,333
Addition to retained earnings of current period 8,667
Total revalued retained earnings 90,000

1.154. Normally, the revaluation in business accounts does not take into account changes in the value of bonds as a result of changes in interest rates. The SNA must take changes in bond prices into account.

1.155. Current cost accounting uses the market prices of assets and liabilities to replace historic values instead of using a general price index to inflate historic costs. Current cost accounting may also be carried out by using specific price indexes that are appropriate for specific assets as a second best approach. Constant cost accounting will be closer to the SNA valuation when more specific price indexes for specific types of assets and liabilities are used. Again, the valuation may be acceptable for the economy as a whole, and possibly for aggregate industry activities, but certainly not for a specific enterprise. Even with general evaluation, much more information is needed on a specific enterprise than is publicly available as one may observe in the simple example given here. More research should be carried out before a recommendation of short-cut methods can be made for the revaluation of the balance sheets.

Table 1.20. Balance sheet

	Historic value, 31 Dec. 1991	Historic value, 31 Dec. 1992	Notes on method of restatement: Price index and others	Restated value, 31 Dec. 1992
Assets				
Monetary assets (current or long-term)		20,000	1 (No change)	20,000
Plant, equipment	300,000	300,000	144/108	400,000
Depreciation	-80,000	-90,000	144/108	-120,000
Total	**220,000**	**230,000**		**300,000**
Liabilities				
Monetary liabilities	10,000	10,000	1 (No change)	10,000
Stockholders' equity	210,000	220,000	Calculated residually	290,000
Capital stocks	150,000	150,000	144/108	200,000
Retained earnings	60,000	70,000	Calculated residually	90,000
Total	**220,000**	**230,000**		**300,000**

Table 1.21. Income statement

		Historic value	Price index	Restated value
	Sales	300,000	144/132	327,273
Less	Expenses	290,000		317,455
	Depreciation	10,000	144/108	13,333
	Other expenses	280,000	144/132	305,455
Plus	Purchasing power gains (+)/ loss (-)			182
Equal	**Additions to net earnings**	10,000		**8,485**

Table 1.22. Purchasing power gains (+) or loss (-) in holding money

		Historic values	Price index	Restated values	Purchasing power gains/loss
	Monetary assets				
	Beginning balance, 31 Dec. 1991	0	144/120	0	0
	Ending balance, 31 Dec. 1992	20,000	1 (no change)	20,000	0
	Purchasing power gains/loss on monetary assets held				**0**
	Monetary liabilities				
	Beginning balance, 31 Dec. 1991	10,000	144/120	12,000	2,000
	Ending balance, 31 Dec. 1992	10,000	1 (no change)	10,000	0
	Purchasing power gains/loss on monetary liabilities				**2,000**
	Purchasing power gains/loss on monetary flows				
	Monetary inflows				
	Sales	300,000	144/132	327,273	-27,273
	Monetary outflows	280,000	144/132	305,455	25,455
	Expenses excluding depreciation				
	Purchasing power gains/loss on monetary flows				**-1,818**
	Total purchasing power gain/loss				**182**

Appendix 1

REVALUATION OF BONDS

1.156. Bonds and bills are treated similarly. Bonds are valued from the purchasers' point of view at cost plus commission charges, but from the sellers' point of view at cost only. The difference is commission charges. Thus, in the SNA, for the whole economy, bonds sold would reconcile fully with bonds purchased if commission charges are separated from purchased value of bonds.

1.157. In business accounts, bonds are valued at book value. But there is a problem with getting this book value. In preparation for sale, bonds have a face value (par value) and an interest rate (coupon interest rate) which is written on them. But after they are sold, the market interest may be different from the coupon rate, which requires the selling of bonds at a price different from par value. If the market interest rate is higher than the coupon interest rate, bonds have to be sold at a discount so as to make the two rates equal. Bonds purchased at a discount, at any time, would be valued at face value less the discount on the unamortized bond (i.e. at cost). Interest earned (or in business accounting, effective interest) is equal to actual interest received plus the amortized amount.

1.158. On the other hand, if the market interest rate is lower than the coupon interest rate on bonds, they have to be purchased at a premium. The amortized amount of the premium has to be deducted from actual interest received as interest earned is less than the coupon interest. The value of bonds bought at a premium, at any time, is equal to par value plus the premium on the unamortized bond. Because of amortization, interest in the income statement is effective earned interest, not interest that is regularly received from bond issuers, which is based on the coupon interest rate and par value.

1.159. An understanding of bond treatment in business accounts is important for an accurate interpretation of changes in balance sheets and in the statement of changes in financial position in order to use them accurately to prepare the financial account of the SNA. The example in table 1.23 will show how the value of bonds and interest received is shown in business accounts of bond holders for bonds sold on discount. Bonds sold on premium are treated in a similar way except *minus* will become *plus*. The example assumes that bonds purchased have a face value of $100,000 at 9% interest, with a five-year maturity and interest paid semi-annually. If the market interest rate is 10%, as assumed in this example, the bonds have to be sold at a discount for $96,139.[58] Let the discount be $3,861. In business accounts, bond transactions are shown in such a way that for each period, the value of bonds reflects their market value, i.e. the value that bonds can find in the market, assuming that *historic* market interest rate does not change. This *market* value is called *carrying value* of bonds. The discount is then spread out to every period to be treated as part of interest income effectively earned. The act of spreading out is called amortization of discount.

1.160. Table 1.23 shows the value of bonds at the end of the first period (**2** year later). In each period, interest received is the same but effective interest earned is different as the amortized amount is different. With the scheme used by business accountants shown in table 1.23, at the end of year 5, the discount is fully

[58] Given that bonds have a face value of X that matures in n years, with interest paid semi-annually being y, and the market interest rate is r, then the present value of the bonds is calculated as equal to: $X/[(1+n/2)^{2n}] + y\,[1/r + 1/r^2 + ... + 1/r^{2n}]$. If the present value is lower than the face value, bonds are sold at a discount. If the reverse is true, bonds are sold at a premium. Discount or premium is the difference between the present value and the face value. This rule of valuation is also used by financial analysts or national accounts to revalue bonds whenever market interest at the time of revaluation changes in comparison with the market rate at the time bonds are acquired.

amortized so that the unamortized bond discount is zero, and the value of bonds will be face value. The amount of unamortized bond discount plays the same role as accumulated depreciation.

1.161. Conceptually, amortization is similar to depreciation. In terms of valuation at market prices, whenever market interest rate deviates from face-value interest rate, the market carrying value of bonds will change. The SNA recommends the use of market carrying value. However, business accountants treat bonds only by book value, and they are not revalued when market interest rates change after they are bought or sold except for some analytical purposes. In the example, the amortization is based on the historic market rate at the time of purchase, not the current market rate.

1.162. Bonds can be secured, giving their holders a lien on certain assets of the seller, or unsecured (*debenture* bonds).

Table 1.23. Treatment of bonds in business accounts

Income statement of bond holders

	At end of period 1	At end of last period
Interest earned	4,807	4,978
Interest received	4,500	4,500
Less amortization of bond discount	307	478

Balance sheet of bond holders

	At end of period 1	At end of last period
Carrying value of bonds	96,446	100,000
Bonds at face value	100,000	100,000
Less unamortized bond discount	3,554	0
Remaining unamortized bond discount	3,861	478
Less amortization of bond discount	-307	-478

Appendix 2
OCAM INCOME STATEMENT AND BALANCE SHEET
Table 1.24. OCAM income statement

DEBIT					CREDIT		
ITERMINATION OF GROSS PROFIT	Operating[59]	Non-operating	Total			Operating	Non-operating
t of goods sold				C1	Sales of goods bought for resale (trading activities)		
ıss profit (Total C1-D1)							
ITERMINATION OF VALUE ADDED							
rmediate consumption				B1	Gross profit		
.aw materials and supplies consumed				C2	Output of goods and services produced		
ransport					Output sold		
ther services					Change in output stocked		
					Fixed asset formation for own account		
ue added (B1+C2-D2)					Expenses for capitalization, transfer[60]		
ITERMINATION OF PROFIT OR LOSS							
er expenses				B2	Value added		
liscellaneous expenses and losses				C3	Other revenues		
ersonnel expenses					Sundry revenue and profits		
.ates and taxes					Subsidies and grants		
ıterest expenses					Interest and dividend earned		
epreciation and provisions					Depreciation and provisions written back[61]		
dit balance: Operating profit ($B31^+$=B2+C3-D3 if $B31^+ > 0$)				$B31^-$	**Debit balance: Operating loss** ($B31^-$=B2+C3-D3 if $B31^- < 0$)		
dit balance: Non-operating profit ($B32^+$=B2+C3-D3) if $B32^+ > 0$)				$B32^-$	**Debit balance: Non-operating loss** ($B32^-$=B2+C3-D3 if $B32^- < 0$)		
ITERMINATION OF PROFIT/LOSS ON DISPOSAL OF FIXED ASSETS							
ginal value of assets sold				C4.1	Price realized on disposal		
enses in connection with the sale				C4.2	Accumulated depreciation on disposal		
dit balances: Gains on disposal ($B4^+$=C4-D4 if $B4^+ > 0$)				$B4^-$	**Debit balance: Losses on disposal** ($B4^-$=C4-D4 if $B4^- < 0$)		
ITERMINATION OF NET PROFIT/LOSS BEFORE TAXATION							
it balance: $B31^-$ if < 0				C5.1	Credit balance: $B31^+$ if > 0		
it balance: $B4^-$ if < 0				C5.2	Credit balance: $B32^+$ if > 0		
dit balance: Net profit before taxation ($B5^+$ = C5-D5 if $B5^+ > 0$)				C5.3	Credit balance: B4 if > 0		
				$B5^-$	**Debit balance: Net loss before taxation** ($B5^-$=C5-D5, if $B5^- < 0$)		
ITERMINATION OF INCOME TAX PAYABLE							
vision for income tax balance due				C6	Income tax overpaid		
				$B6^-$	**Debit balance: Income tax payable** (B6=D6-C6)		
ITERMINATION OF NET PROFIT/LOSS FOR ALLOCATION							
profit/loss before taxation ($B5^-$ if < 0)				C7	Net profit/loss before taxation ($B5^+$)		
ıme tax payable (B6)							
dit balance: Net profit for appropriation ($B7^+$ = C7 - D7 if $B7^+ > 0$)				$B7^-$	**Debit balance: Net loss for appropriation** ($B7^-$=C7-D7 if $B7^- < 0$)		

[59] Operating refers to transactions of day-to-day, ordinary activities, non-operating refers to extraordinary transactions or to transactions relating to previous periods.

[60] Transfer includes payment in kind or chargeable to third party.

[61] To adjust excessive provisions for depreciation or bad debts in previous periods (non-operating).

Table 1.25. OCAM balance sheet

	Debit balances at beginning of period	Balance sheet movements during the period				Debit balances at end of period	Credit balances at beginning of period	Balance sheet movements during the period			Credit balances at end of period
		External movement		Internal movement				External movements		Internal movements	
	Balances brought forward	+	-	"Transfers between accounts		Balances carried forward	Balances brought forward	-	+	"Transfers between accounts	Balances carried forward
ıngibles assets and deferred charges					**Net profit or loss for appropriation**						
ɔd assets					of the period						
					of preceding period						
and											
ther than land					**Accumulated depreciation and provisions**						
ixed assets in progress					Amortization of intangible assets and deferred charges						
					Depreciation of fixed assets						
ɔks					Provisions for long term liabilities and contingencies						
oods for resale					Other provisions for loss						
aw materials and consumable goods											
ecoverable scrap											
acking materials											
artly finished and finished goods											
roducts in progress and work in progress											
tocks in transit, awaiting reception or on consignment											
er long term assets					**Equity**						
dvances and payments on account for fixed assets					Capital						
on order					Reserves						
oans and other long-term receivables					Profit and loss account balance brought forward						
ıvestments (other than short term)					Investment grants and subsidies						
rent assets					**Long term liabilities**						
uppliers advances and payments					Bonds, debentures						
hareholders and group companies (debit balances)					Other long term borrowing and liabilities						
ther debtors											
oans of less than one year					**Current liabilities**						
hort-term securities					Suppliers						
ills of exchange and trust receipts receivable					Customer advances and payments on account						
heck and dividend warrants awaiting collection					Shareholders and group companies (credit balances)						
ank and postal check account					Other creditors						
ash in hand					Loans repayable within one year						
ccounts receivable and documentary credits					Bills of exchange and trust receipts payable						
ustment accounts (debit)					Bank advances repayable within one year (credit balances)						
					Adjustment accounts (credit)						
als					**Totals**						

II. USE OF BUSINESS COST ACCOUNTING TO DETERMINE THE COST OF A PARTICULAR PRODUCT IN A MULTI-PRODUCT ENTERPRISE

Francis Rousse, Consultant
Vu Quang Viet, Statistician
United Nations Statistics Division

2.1 The basic functions of business cost accounting are to determine the cost of a segment of activities of an enterprise under the responsibility of a manager - which is also called a cost centre, an activity,[46] a batch of products[47] or a product's unit cost. These functions are important to an enterprise in four respects: (a) they help determine an adequate selling price for a product or batch of products in a competitive environment; (b) they provide the means to value ending inventories of finished goods, goods in progress and fixed assets produced for own use; (c) they serve as the basis for forecasting, budgeting and controlling operations and costs; (d) they help the enterprise to decide if an ancillary or secondary activity should be provided internally or acquired from outside (i.e. subcontracting) or even if these activities can be made into legally separate entities, e.g. as subsidiaries.

2.2 The methodology used in cost accounting needs to be understood not only by statisticians who try to collect production data on establishments but also by statisticians who try to collect input data for homogeneous products in the compilation of a product-by-product input-output table. It seems that statisticians, particularly input-output table compilers, are less well informed about this area of business accounting than general accounting. This is one of the reasons why research and debates on how to separate secondary products from principal products in an input-output table have been dominated by mathematical methods.[48] This chapter aims at exposing the methodology used by cost accounting so as to facilitate the collection of data that are appropriate for national account compilation, particularly the construction of a product-by-product input-output table.

2.3 The chapter will review first the different purposes of general accounting and cost accounting, the concepts used in the SNA and finally the methodology used in cost accounting as well as implications for data collection for national accounts.

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[46] In cost accounting terminology, an activity can be found in the performing of a given task such as supplying, training, maintenance, industrial cleaning, etc.

[47] As in the SNA, products include either goods or services.

[48] See *Handbook of Input-Output Table Compilation and Analysis* (ST/ESA/STAT/SER.F/74, Sales No. E.99, XVII.9, United Nations), chapter 5.

A. General accounting and cost accounting

2.4 General accounting applies to record the external and internal transactions of an enterprise for a period and at the end of it, usually a year, to present the resulting income statement, the statement of changes in financial statement and the balance sheet. These statements must be submitted to the tax authorities and/or made public if the enterprises are publicly held. National accounts in many countries to date rely mainly on general accounting for information.

2.5 Cost accounting deals with the cost analysis of the goods manufactured in an enterprise and/or the services sold, as well as with the expenses of selling and administration. Partial cost analysis of a segment of activities in the enterprise can also be done. Some segment costs are ancillary and can as such be allocated to other segments. Similarly, in determining the unit cost of a product in a multi-product enterprise, accountants need to identify the direct costs relating to each type of product and to allocate indirect factory overheads as well as ancillary costs to each product. ATransfer price@ from one department to another (or from one establishment to another) is an important element in cost calculation to be used in management decisions.

2.6 Cost accounting is different and separate from general accounting, though also using the double entry method. Basically, it is presented as a new combination of the adjusted expenses laid out according to their nature in the columns of the "trial balance after adjustments" in the worksheet[49] used by accountants to prepare the financial statement at the end of the period. The objective is to allocate these expenditures by nature to the related finished and sold products - or to activities - or to machine/labour cells - or to cost centres for which a manager is responsible. The period between two allocations of expenses to cost centres is generally one month.

B. Enterprise and establishment

2.7. Since cost accounting has to deal with assigning costs to each segment of operation of an enterprise, it is important to clarify the SNA concepts of enterprise and establishment so as to be able to determine if a segment of operation in an enterprise is an establishment or an ancillary unit.

2.8. In the SNA (para. 4.2), an enterprise as an institutional unit is defined as "an economic entity that is capable, in its own right, of owning assets, incurring liabilities and engaging in economic activities and in transactions with other entities". In this sense, both the holding corporation and the corporations it owns, each producing diverse products (either goods or services), may be classified as enterprises. Henceforth, in order to increase the homogeneous character of output produced by an enterprise without affecting the properties of an institutional unit as defined above, the SNA recommends that "each individual corporation should be treated as a separate institutional unit" (SNA, para 4.38).

2.9. However, even with this qualification, the smallest legal unit may still engage in the production of more than one product. To further increase the homogeneousness of an economic activity, the SNA recommends the **establishment** as the statistical unit for data collection for production accounts. "An

[49]The worksheet includes credit or debit items of expense items, inventories, sales, incomes, cash, accounts receivable, etc. that need to be adjusted and then classified into debit and credit of the statement of costs of goods manufactured, income statement or balance sheet. These items are also grouped into broad categories by economic nature like goods consumed, services consumed, labour costs, depreciation.

establishment is defined as an enterprise or part of an enterprise, that is situated in a single location and in which only a single (non-ancillary) productive activity is carried out or in which the principal productive activity accounts for most of the value added" (SNA, para. 5.21). The establishment is thus identified with a specific location, which is statistically observable in terms of its output and associated costs but may produce more than one product.

1. Cost accounting in the general framework of business accounts

2.10. The hypothetical example given in table 2.1 shows a manufacturing enterprise[50] with five departments where the department (or segment) managers are able to regulate or influence a cost or revenue item because they have the authority to acquire or supervise the use of a particular resource or service. Production departments (or factories) or a sequence of production departments produce outputs intended for sale. Service departments may provide the following services or engage in the following activities: research and development, maintenance, warehousing, transport, marketing, selling, etc. These production and service departments are called **cost centres**. Measuring these costs assists the enterprise managers to control them, i.e. to determine unit costs, to evaluate the performance of the department and to implement budgeting and responsibility accounting in various departments in a business firm. Activity analysis has become more and more important. For example, in a multi-product firm where many costs are caused by activities that are consumed by a particular product, cost accounting may show that the elimination of that particular product may greatly reduce resource spending and increase profitability.

2.11. In the diagram in table 2.1, if a factory segment produces more than one product, accountants have to split the factory costs into separate product costs and associated overheads in order to calculate the unit cost of each product (see table 2.2).

2.12. Cost accounting in relation to the general accounting of the Anglo-American tradition is reflected in the diagram. Costs incurred by an enterprise are functionally broken down into three parts:

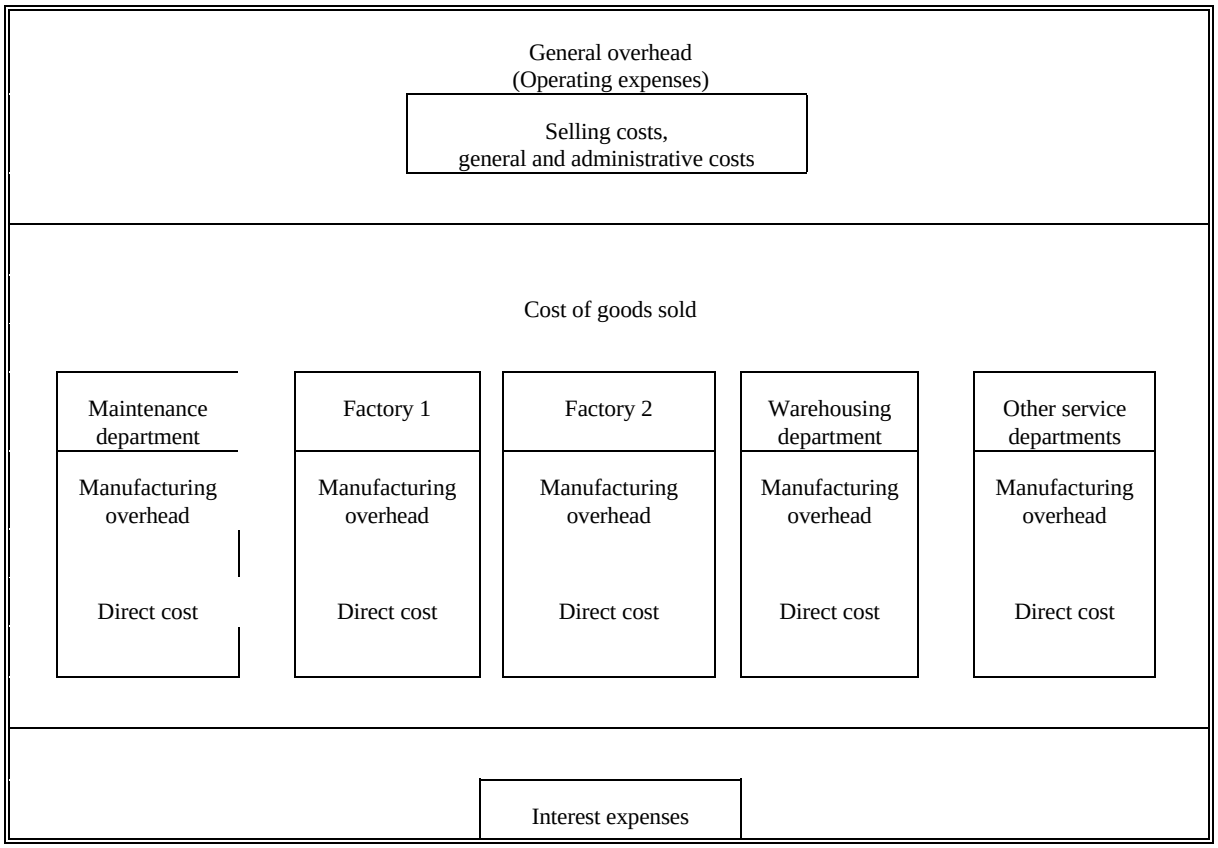
(a) Operating costs (which may be called general enterprise **overheads** though they are not called that by accountants) usually consist of general, selling and administrative expenses;

(b) Cost of goods sold consist of all net expenses shown in the five departments and changes in inventories; these costs are further divided into **direct costs** (cost of raw materials used, direct labour) and in table 2.1 associated **manufacturing overheads** which include department supervision, power, building, machinery leased or its depreciation, miscellaneous expenses; and

(c) Financial expenses such as interest paid.

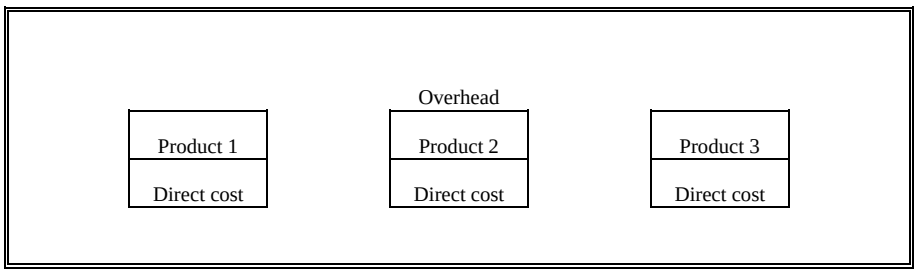
[50] For enterprises that produce services for sale, the identification of various segments of operation is similar though it may be more complicated. Equivalent to "factory" is the cost centre that directly generates services for sale.

Table 2.1. Diagram of costs incurred by a fictitious enterprise



2.13. In each cost centre, costs are distinguished in terms of direct costs and manufacturing overheads. Direct costs are costs that can be undoubtedly traced to a specific good or service produced. Manufacturing overheads can only be allocated indirectly. Within a production or factory department that produces more than one product, the situation is the same. Materials, wages and salaries paid to production workers are direct costs traceable to a specific product. Indirect labour, heating, electricity, repairs to buildings and machinery, supplies, insurance, etc. cannot be assigned to a specific product without using an indirect method of allocation.

Table 2.2. Diagram of costs incurred in a factory shown in table 2.1



2.14. Costs are also grouped into variable and fixed costs by accountants. Variable costs vary directly with the output (either value or a volume measure) but fixed costs do not vary within a certain range of output. Rent paid, property taxes, building depreciation are normally fixed costs because they can function within a range of output between zero and normal capacity. Their costs per unit of output decline as output increases within the relevant range.

2. Cost accounting in the SNA framework

2.15. The SNA uses the establishment as the statistical unit for data collection in the compilation of production accounts in national accounting. In the particular example in table 2.1, only two of five departments (factories 1 and 2) may be classified as establishments, with the other **ancillary** services (SNA, para. 5.9). General overheads at the enterprise level or central services (i.e. operating expenses) are also treated as ancillary services. To obtain data for the establishment costs, it is clear that costs of ancillary and central services must be allocated to factory segments if they are considered as the establishments. The implication of cost accounting to SNA compilation will be further discussed at the end of this chapter.

C. General methodology used in cost accounting

2.16. Costing decisions by businesses have to be made within the context of consumer demand and price pressure of competitors in the market. The example in appendix 1 below will give some flavour to the difficulty of determining unit cost for business accountants. Fortunately, the problem of product costing for statisticians is much simpler since national accounting is subsequent to the event and prices are given. However, it is important to understand the costing approaches by business accountants so that product costing in national accounting can be done properly.

2.1_ Generally, enterprises try to choose a consistent system to calculate the costs bound up with the activities or products, though the adopted system varies from one enterprise to another. In appendix 1, costs so determined contain both an objective element (for direct costs - costs of buying cabbages and carrots) and a subjective element (for ancillary costs - transport cost). Any method applied to the subjective element can be criticized. There are also other important cost elements such as subsidies, externality cost on environment (for example, accounting for the environment cost would increase prices and reduce profitability), possible loss of prestige, etc. that need to be taken into account by management, but these issues will be ignored in the discussions below.

2.1_ There are basically two principal ways of implementing cost accounting: the direct costing system and the full costing system.

1. Direct costing

2.1_ In direct costing, costs are grouped into variable costs and fixed costs. Variable costs are production costs that change in proportion to production level (materials, direct labour, energy, etc.). On the contrary, fixed costs remain constant over a given range of output (for example normal capacity of the enterprise which is determined by its fixed assets) regardless of the amount produced within that range. Since fixed costs cannot be changed in the short run, managers cannot do much about them. Variable costs, however, are within their control. Both direct costs and overheads contain variable and fixed costs. The direct costing system aims at calculating the unit variable cost of each product. The difference between the market price and the unit variable cost of a product is called **contribution margin**. To get to a break-even point, the product of the contribution margins and the quantities planned to be produced must equal the sum of fixed costs. The direct

costing approach is used in Cost-Volume-Profit (CVP) analysis in management planning in order to project profit, sales and production level (see table 2.3) by using the following general formula:

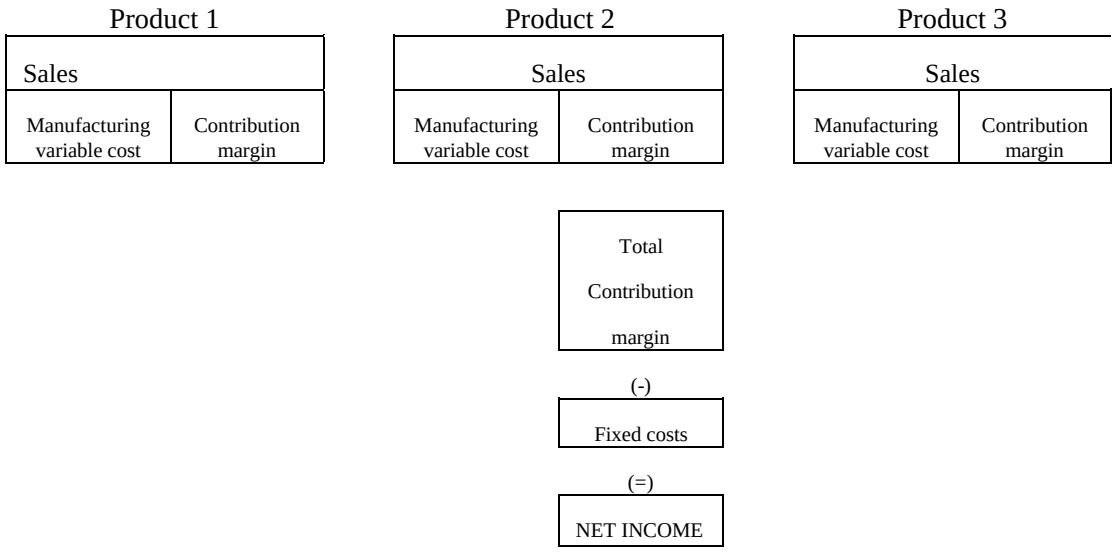
Net income = **j** unit contribution margin x quantity - Fixed costs

2.20. Because of its usefulness, the direct costing approach is used by most medium and large enterprises. The information on unit prices, unit variable costs, total fixed costs, quantity of output and sales could be valuable to statisticians. But, as noted, to get to the full cost of a unit, fixed costs must be allocated to the unit.

2. Full costing

2.21. The full costing system provides a complete and detailed accounting for any segment of business, any product for sale (a good or service) and any ancillary activity. A segment of business is a **cost centre** for which a manager is responsible. It normally follows the organizational chart of the enterprise. An activity may be a department or part of one. This costing approach is particularly important for enterprises that may decide if a particular line of product, or ancillary activity should be farmed out to an outside contractor at home or abroad. The commonly-used ABC system (Activity Based Costing) is based on the full costing system. Its particularity is to analyse some operations which are called activities. They are elements of cost which represent an action and are encountered in all or various cost centres. These activities can also be sourced to outside contractors. The alternatives - either carrying out an activity in the enterprise or contracting it out - have a great place in modern management. The frequency of observation for full costing is normally one month. The information obtained can also be used for the direct costing approach.

Table 2.3 . Direct costing approach



2.22. Full costing requires an intricate system of allocation especially when the output or service of one department is used in another one and vice versa. For instance, in a manufacture of glass products, two cost

centres were found among others: (a) a melting department the task of which is to liquefy silicium, recycled glass and additives, (b) a department of lamination to produce window glass. There are evidently other cost departments. Now, when all orders are fulfilled, the cost of a production unit is known. Products from the melting department flow into the lamination department, and products of the lamination department which are judged defective flow back to the melting department. This example gives an idea of the complex interaction between departments. The costs that can be directly assigned to a department as shown in table 2.1 do not cover all the costs as it also receives goods and services provided by other departments. To fully cover the costs, those of other departments must be allocated to each department in question. However, this chapter will not detail how full costing is applied. Suffice it to say that normally full costing can simply be done by allocating the costs of one department to another one, disregarding the interaction effects in the cross delivery, assuming they are insignificant (**direct costing approach)**, or it can be done in a sophisticated way by trying to capture the direct and indirect effects of the interaction (**sequential approach**). For the latter, simultaneous equations must be formulated and solved. Fortunately, in large corporations, computation by computers allows the application of sequential approach in an iterative form (**concentric costing**).

3. Allocation techniques

2.23. For full costing, direct costs and overheads must be identified according to their nature and allocated to the cost centre to which they correspond. For direct costing, the same are allocated to a well-defined product. For activity-based costing (ABC), the elements of analysis are found in all or various cost centres and grouped by activities that management considers important.

2.24. The process of allocating costs to production departments and products is summarized in table 2. 4. An example of how costs of ancillary service departments are allocated to the production departments is shown in appendix 2 to this chapter.

Table 2.4. Allocation of costs in cost accounting

General allocation process to production departments	
1.	Classify costs in the **adjusted trial balance** (i.e. a worksheet used in accounting) according to their economic nature (i.e. grouping in terms of materials consumed, services consumed, wages and salaries and other social contribution, taxes, net interest, depreciation, insurance, etc.)
2.	Allocate service department costs to production departments by some preconceived method
Selection of allocation keys	
3.	Select an activity-based allocation key that has a causal or beneficial relationship to the cost being allocated and the product or job to which it is allocated
4.	Decide on the method of allocation: simple allocation relies on the ratio of costs to be allocated over the activity base; more sophisticated techniques rely on regression analysis
General allocation process to products	
5.	Repeat steps 2-4 for the allocation of department costs to type of products

2.25. The most important task in the allocation work is the selection of the appropriate activity-based allocation keys. Below are some commonly used ones:

C Maintenance department: work-hours spent in other departments by personnel of the department;

C Equipment department (repairs): the percentage of value of equipment in each department;

C Building department (rent or depreciation): the percentage of surface occupied by each department;

C Machinery depreciation: the share of hours the machines are used;

C Car department: the share of hours cars are used;

C Administration: the share of administrative work done in each department or the work hours spent at headquarters on each department;

C Selling: the share of sales;

C Interest paid: interest paid for loans linked to the purchase of factories or office buildings, office equipment, machinery, etc.

D. Implication of cost accounting for SNA data collection

2.26. As previously noted, to get the full information on establishments, not only must the overheads at the enterprise level be allocated to the production departments (which are establishments in the SNA concepts) but so must the costs of ancillary service departments, unless the enterprise has only one production department. For the SNA production accounts including the supply and use tables, information on the establishments is of special importance.

2.27. For the product-by-product input-output table, additional information is needed on product input costs for multi-product factories. This information may be prepared by many enterprises for their cost analysis, product pricing and budget planning purposes. Unfortunately, it is internal to the enterprise and might be kept as an enterprise secret.

2.28. Since a product-by-product input-output table is, under current practice, created from the supply and use tables, compilers need to resort to mathematical techniques to transfer secondary products to the industry in which the products are principal products. With the cooperation of some enterprises and the understanding of cost accounting, statisticians may be able to get input structures of certain products that are not independently available and then use them to transfer secondary products. This effort would be helpful for the cases in which the secondary products create a negative input structure when mathematical techniques are used.

2.29. With respect to data collection for the SNA, the use of establishments as statistical units is not as straightforward as it might seem. In general, statisticians may be able to pursue the following possibilities:

(a) Surveys may be sent directly to enterprises to provide information on their own establishments. In this case, the enterprises would do all the allocation of costs of ancillary

service departments and headquarters overhead costs to the establishments (or production departments).[51] It is important to note that the data provided by businesses will be reliable only if processed by cost accountants.

(b) Surveys are sent directly to local units which may be either production departments or ancillary departments. In this case, data on the local economies would be available. For establishments, though both output and direct production costs are available, ancillary costs to support their production are not included and therefore these surveyed costs do not yet reflect the SNA concepts. For ancillary departments, only costs but no output are available. The use of this information to recreate production data on the establishments in the SNA sense for the whole economy would not be an easy task. The ISIC of each production department may be correctly identified, but that of ancillary departments must be identified either with the ISIC of the main production departments they serve or with the ISIC of the parent enterprise (which is identified by the principal product it produces). The result is that if ancillary costs and headquarters overhead costs are not properly allocated, they would be mostly allocated to the ISIC industry under which the enterprise is classified, i.e. its principal activity.

(c) Options (a) and (b) may be combined in one survey. In this case, local units classified by ISIC should be identified as either production unit or ancillary unit and also with the enterprise to which they belong. With the information, statisticians may allocate costs of ancillary units to production units in order to arrive at establishment data simply by using value of sales as an allocation key or some other allocation keys collected from enterprises. This option would reduce the reliability of the data on establishments, but also the burden on businesses. It shows the importance of keeping a business register in which the status of local units within the enterprise's production process must be identified as mentioned above.

[51]When business accountants allocate headquarters overheads to manufacturing cost centres, various allocation are possible. One possibility is allocation by sales.

Appendix 1

AN EXAMPLE OF MICRO COSTING DECISION

2.30. Suppose I go to the market. I buy 5 kg of cabbages for F10 (Franc or F = French monetary unit) and 5 kg of carrots for F20, but I spend F3 on bus fares on that round trip. What then is the cost of my carrots? And that of my cabbages?

(1) Do I have to allocate my transport cost at a ratio of 1/3 for the cabbages and 2/3 for the carrots? That is fair, considering that out of my purchase cost of F30, I paid 1/3 for cabbages and 2/3 for carrots.

(2) Do I have to allocate this cost equally to cabbages and carrots? That would also be fair, since I purchased the same weight of both and they shared the same transport.

(3) Well, I only had wanted to buy cabbages in the first place, and if I bought carrots as well because their price seemed a bargain, why not charge the total of my bus expense to the cabbages? After all, it was to be spent fully on buying cabbages when I went to the market.

2.31. Consequently there are three true and fair ways of allocating my expenses. According to the methods that I have adopted, the cabbages will have a final cost of F2.20 (1), or F2.30 (2), or F2.60 per kilo (3), and the carrots: F4.40 (1), or F4.30 (2), or only F4 (3). What is their respective actual value?

2.32. Let us be rational! Transport cost cannot be variably linked with the worth of what is carried, or with its nature. The only true and fair linking, for a known distance, can be the net weight transported. It would be right and rational to charge the bus expenses to the cabbages and carrots according to their weight.

2.33. Supposing that I can usually carry 15 kg, the cost per unit will be F3 / 15 kg = F0.2 / kg. I will charge F1 to the cabbages and the same to the carrots. The remaining F1 will be the sub-activity cost.

2.34. Now, there are two of us, Peter and I, each making the same purchases with a view to selling cabbages and carrots for a profit of 10%. Peter chooses the first cost method (1). He is offering his cabbages for F2.40 and his carrots for F4.85. I choose the last cost method (3). Consequently, I am offering my cabbages for F2.85 and my carrots for F4.40. Nobody wants to buy my cabbages, or Peter's carrots. Finally, we both decide to sell the carrots at my price and the cabbages at Peter's price. The 10 kg of cabbage will be sold for F24, the 10 kg of carrots for F44, that is to say a total of F68. Now we both spent F33 x 2 = F66 and we get a profit of 3%. If we had chosen the same cost method, (1) or (2) or (3), any one of them, we could have sold everything for a profit of 10%. All three methods are logical. In the end, there are different costs, different margins, a decision and regrets. The example reveals the importance of costing decisions and the impact of price and market demand on costing methods. National account statisticians will not have to face the difficulty of setting price since national accounting is subsequent to the event and prices are given.

Appendix 2

EXAMPLE OF AN ALLOCATION PROCESS TO PRODUCTION DEPARTMENTS

PRODUCTS CLASSIFIED BY ECONOMIC NATURE		Total Accounts	Administration Department	Maintenance Department	Transport Department	Factory 1 Department	F De

Goods consumed		9,420	150	30	200	4,000
Services consumed		1,165	20	10	15	300
Value added						
Compensation of employees		5,000	1,500	200	500	1,200
Social contributions						
Taxes						
Depreciation		26,000			1,000	
Total cost (A)		41,585	1,670	240	1,715	5,500
ACTIVITY ANALYSIS	**Allocation keys**				**percentage**	
Administration	Number of workers served	1.00	0.30	0.04	0.10	0.24
Maintenance Department	Labour hours worked	1.00	0.04	0.01	0.07	0.40
Transport Department	Ton-km service worked	1.00	0.02	0.02	0.00	0.45
Building/machinery Department	Square metres and	1.00	0.01	0.03	0.03	0.43
	no. machines used					
Allocated cost (B)						
Maintenance Department		240	9	4	18	97
Transport Department		1,715	31	31	0	776
Building/machinery Department		25,760	277	831	831	11,080
Total activity cost (A+B)		**69,300**	**1,987**	**1,106**	**2,563**	**17,453**
PRODUCT ANALYSIS	**Allocation keys**					
Total overhead costs						
Administration	All are allocated by	1,670				752
Maintenance Department	factory labour hours	240				108
Transport Department		1,715				772
Building/machinery Department		25,760				11,592
Total product cost						18,723

Notes to appendix 2

1. The example is very simple: overheads of factory 1 and factory 2 departments are not given separately but as part of the administration department. Value of taxes is not given.

2. The allocation in cost centres is based on the allocation key applied to ancillary units. With the allocation key, the percentage of cost charged to each department is then derived. These percentages are shown in the upper part of the second row block. The lower part of the same block gives the allocated cost charged to each department. The total activity cost is the sum of the "total cost" in row block one and all the allocated costs. Costs by item can be also allocated but this was not done in the example.

3. For product analysis, all the ancillary costs including the costs of the administration department are allocated to factory 1 and factory 2 departments. Direct labour hours worked in each factory are used as the allocation key of all ancillary costs. This approach is much simpler than that used by business accountants.

III. RECORDING OF CHANGE IN INVENTORIES IN THE SNA AND IN THE BUSINESS ACCOUNTS A CASE STUDY OF CANADIAN PRACTICES

Kishori Lal, Statistics Canada[52]

A. Overview

3.1 In the System of National Accounts (SNA), intermediate inputs are recorded and valued at the time they enter the production process, while outputs are recorded and valued as they emerge from it. The SNA rule that inputs must be valued at the prices current at the time they are consumed, and outputs at the prices when they are produced, is equivalent to valuing the goods in question as if they never spent any time in inventories, thereby ensuring that the values of intermediate consumption and output do not include any holding gains. Typically in business accounts, intermediate inputs are recorded and valued at the time of purchase, while outputs are recorded and valued when sold. Thus the values of inputs used in production and of outputs produced in the SNA have to be derived by adjusting the corresponding purchases and sales for changes in inventories as reported in the business accounts.

3.2 The purpose of the adjustment is not simply to derive the correct quantities but also to ensure that the inputs and outputs are correctly valued. The SNA valuation rules require both entries to, and withdrawals from, inventories to be valued at the prices prevailing when they take place. When a good is put into inventory at one price and subsequently withdrawn at a higher price, the values of the acquisition and disposal do not cancel out, so that the monetary value of the change in inventories is not zero, even though the quantity change may be zero. When a good is withdrawn from inventory at a higher price than that at which it was entered, a nominal holding gain accrues to the owner of the enterprise, equal to the difference between the two prices. This holding gain cannot be part of value added as it does not result from productive activity.

3.3 Thus the first task of the national accountant is to examine the business account of an enterprise with respect to the reported value of inventories in the opening and closing balance sheets, the basis of valuation, the turnover period of inventories (the duration between the entry and withdrawal points), and of course the price statistics at the entry and withdrawal points. In the business accounts, the reported book value of change of inventories equals the value of inventories in the closing balance sheet less the value of inventories in the opening balance sheet of an enterprise. In the SNA, this reported book value change needs to be split between a value of (volume/quantity) change in inventories and the holding gains. The current price value of change in inventories and the nominal holding gains at period t with given volume/quantities (q) and prices (p) at period t and t-1 are formulated in the 1993 SNA as follows:

[52]Director General, System of National Accounts, Statistics Canada. This chapter includes details on Canadian practices in inventories from notes by John Butterill of the National Accounts and Environment Division, Statistics Canada and comments by Abe Tarasofsky of the System of National Accounts Branch.

Change in inventories = $(q_t - q_{t-1}) p_t$
Nominal holding gains = $(p_t - p_{t-1}) q_{t-1}$

3.4 In the business accounts of an enterprise, only the aggregate value of inventories in the opening and closing balance sheets is usually recorded rather than values or quantities of individual commodities. In such a situation, volume must first be estimated using price indices; only then a calculation of change in inventories and nominal holding gains can be made. In the Canadian System of National Accounts (CSNA), change in inventories is called **Value of Physical Change in inventories** (VPC) and nominal holding gains are called **Inventory Valuation Adjustment** (IVA).

B. Canadian practices

3.5 In the CSNA, inventory data are estimated for the government sector and for the farm and non-farm business sectors. Inventories of natural resources (e.g. ores in the ground, uncut trees) are not included. Only inventories owned and located within Canada are included.

3.6 Government inventories are a very small part of total inventory holdings. They include inventories held by government marketing agencies such as the Canadian Dairy Commission. All inventory changes recorded in the Accounts relate only to the federal Government. Estimates are based on the accounting records of the agencies.

3.7 Farm inventories are calculated separately from non-farm business inventories. Farm-held inventories and grain in commercial channels are estimated by crop and by livestock using quantities obtained from monthly surveys of farms. These are valued using the market prices prevailing during the reference period.

3.8 Non-farm business inventories represent by far the largest part of total inventory holdings in the economy. They include all inventories of raw materials, goods-in-process, and finished products, including goods purchased for resale, held by corporations, non-farm unincorporated businesses, and government business enterprises. By industry, the major part of non-farm business inventory stocks is held in manufacturing and in wholesale and retail trade. Non-farm business inventories are estimated mainly from book value data reported by businesses in various Statistics Canada surveys.

3.9. Inventories include**:**

(a) Finished goods available for sale by manufacturers, wholesalers, retailers or other industries. Such goods may have been produced by the industry or purchased for resale;

(b) Raw materials, i.e. goods intended to be used for intermediate consumption;

(c) Goods-in-process, i.e. partially finished goods which must be processed further before they can be used;

(d) Construction ›work put in place‹ is classified as capital investment. Consideration is being given to putting ›speculative‹ construction (i.e. construction done before a purchaser has been found) into inventories in order to conform with the 1993 SNA;

(e) All gold bullion, including that owned by persons, is supposed to be included in inventories since such gold is resaleable for use in production and estimated by using the supply and

disposition method. Compared to other inventories, the database for inventory of gold bullion is weaker and hardly involves linking business accounts to national accounts.

1. Farm inventories

3.10. The value of physical change for farm inventories is estimated in three parts: farm-held grains, other farm-held inventories (livestock, tobacco and potatoes) and grain in commercial channels.

3.11. The farm-held grains component is estimated by calculating additions to, and withdrawals from, inventory separately for each of eight crops: wheat, oats, barley, rye, flax-seed, canola, corn and soybeans. The estimates are derived using raw data on physical quantities, which are valued in both current period and base period prices. Additions to grain inventories represent the value of the harvest. They are zero in the first and second quarters and positive in the third and fourth quarters. Withdrawals represent sales from inventory plus amounts accounted for as feed, seed and wastage and occur in a relatively steady stream through the course of the year.

3.12. The other component of farm-held inventories comprises potatoes and special crops (lentils, mustard, sunflower, etc.) and livestock and tobacco. Potatoes and special crops are treated like farm-held grains. But for livestock and tobacco, the VPC is derived by valuing changes in stocks directly; additions and withdrawals are not treated separately.

3.13. Finally, the grain in commercial channels component is calculated by valuing the change in the physical grain holdings of the Canadian Wheat Board and the grain that is held privately by commercial dealers.

3.14. Additions to farm-held grain inventory (the harvest) are seasonally adjusted. Before 1989, the quarterly grain production was seasonally adjusted by dividing the annual harvest value by four and spreading it equally over the four quarters of the year. The main virtue of this procedure was its simplicity. Its main deficiency was that it concentrated the entire transition from one year's crop to the next between the fourth and first quarters of the two years. For periods with large swings in the size of the crop, the January and first quarter real GDP growths were seriously under- or over-stated. At the same time, variations in the crop size had no influence on the other eleven months' or three quarters' real GDP growth rates. A new approach to the seasonal adjustment problem was implemented with the first quarter of 1989. Under it, the transition between annual crops is smoothed over a number of quarters instead of being concentrated in the first quarter. The seasonally adjusted monthly and quarterly values for grain production are now calculated using a quadratic minimization technique. A more smoothly evolving series of quarterly production values is thereby derived which sums to the given annual crop while minimizing squared quarter to quarter changes. For more details, refer to *Technical Paper on the Treatment of Grain Production in the Quarterly Income and Expenditure Accounts***,** Technical Series 2, National Accounts and Environment Division, Statistics Canada, 1989.

3.15. The sales portion of withdrawals from farm-held grain inventory is seasonally adjusted using Statistics Canada's standard X11-ARIMA method. The remainder (feed, seed and wastage) is distributed over the four quarters using a quadratic minimization technique. Seasonally adjusted estimates of the VPC for other farm-held inventory and grain in commercial channels are derived using the standard X11-ARIMA method.

2. X-11-ARIMA

3.16. The X-11-ARIMA method of seasonal adjustment was developed at Statistics Canada by E.B.Dagum and published as *The X-11-ARIMA Seasonal Adjustment Method***,** Ottawa, Statistics Canada, 1980, Catalogue No. 12-564. Typically, the seasonally adjusted series are obtained by using some type of moving averages. A limitation inherent in any seasonal adjustment procedure based on moving averages is that the last few

observations cannot be smoothed with the same set of symmetric weights (moving averages) applied to central observations. Because of this, the estimates for current observations must be revised as more data are added to the original series. It is desirable to have a method which yields estimates with maximum reliability, which is equivalent to estimates with revisions at a minimum to avoid confusing the users of the data. It is the criterion of minimum revisions which led to the introduction of ARIMA extrapolation when seasonally adjusted. By adding a year of extrapolated data obtained from ARIMA (Auto-Regressive Integrated Moving Average) models fitted to the series, the current observation becomes more central and thus the seasonally adjusted estimate undergoes smaller revisions.

3.17. Note that sales/production, operating surplus and change in inventories for the farming sector of the Canadian economy are calculated using physical volume of crops and livestock: thus no IVA needs to be calculated. The only IVA calculated is for private grain dealers whose profits are reported rather than derived.

3. Inventories for manufacturing, wholesale and retail industries

3.18. Inventory book value data and shipment and sales data for the manufacturing, wholesale and retail industries are collected by monthly sample surveys. For the retail industry, inventory data are collected only for large or multi-location establishments and are expanded to the complete industry based on sales data. The data from the monthly surveys are benchmarked to the annual surveys, which are more extensive and detailed.

3.19. The surveys are at the establishment level, defined by Statistics Canada as the smallest operating entity which produces as homogeneous a set of goods or services as possible and from which data can be provided on the value of output together with the cost of materials used and quantity of labour resources employed to produce the output.

3.20. Financial data, including inventory book values, are reported to Statistics Canada as they would appear on the financial statements of the establishments. The common methods of reporting inventories are:

(a) Specific item cost - the actual cost of each item is ascertained separately;

(b) FIFO (first in- first out) - the cost of items sold or consumed during a period is computed as though they were sold or consumed in the order of their acquisition;

(c) Average cost - the cost of an item is determined by applying a weighted average of the cost of all similar items available for sale over a period of time;

(d) LIFO (last in- first out) - the cost of items sold or consumed during a period is deemed to be the cost of the most recent acquisitions or production.

3.21. The method of accounting is not requested on survey forms. An extensive survey of manufacturers in 1975 showed 35% using the FIFO method and 31% using the average cost method. A small 1990 survey of wholesalers and retailers showed 68% using the specific item cost method which was consistent with increased use of computerized inventory control. An annual survey (Financial Reporting in Canada) by the Canadian Institute of Chartered Accountants showed in 1994 that 44% of companies used FIFO, 36% average cost and fewer than 4% LIFO. However, to calculate VPC and IVA, the FIFO method is presumed at Statistics Canada**.**

3.22. For some industries (other than manufacturing, wholesale and retail), sub-annual survey data are not available. In some cases (e.g. logging, gold), changes in inventories are estimated as the difference between supply (production plus imports) and disposition (domestic use plus exports). In other cases (e.g. construction, financial, insurance and real estate), inventory levels are estimated from indicator series such as employment or sales data.

4. Prices

3.23. The deflation and revaluation of inventory data are done by using a variety of prices. For example, industrial selling price indexes are used for manufacturing, industrial selling prices and import prices are used for wholesaling, consumer price indexes are used for retailing, raw material price indexes for logging and mining and other specialized indexes for other industries. These price index series are all monthly and used 1986 as a base year until December 1997 when it was changed to 1992 with the release of the CSNA historical series.

3.24. Most of these index series are created with weights based on sales or shipments; however, what is ideally required are indexes with weights based on inventory levels. Efforts are made to reweight combinations of the price indexes using weights based on inventory levels wherever possible.

3.25. The price series are adjusted when necessary for changes in tax rates or tax structures. The CPI series are adjusted for changes in the various federal and provincial sales taxes. A large change affecting most levels of inventories occurred in early 1991 when the federal sales tax, a manufacturing sales tax which was included in the cost of inventory, was replaced by the goods and services tax, an end-user value added tax which does not appear in the cost of inventory. This change created a ›spike: in the IVA series as the effective prices fell for many series.

5. The calculation at Statistics Canada

3.26. The VPC and IVA are calculated using an eight-line calculation:

(1) B	book values as reported
(2) D	deflator indices to value at base year prices
(3) $K = B / D$	constant dollar values at base year prices
(4) $DK\$ = K_t - K_{t-1}$	constant dollar Value of Physical Change (VPC)
(5) R	revaluer indices to value at current period prices
(6) $VPC = R * DK\$$	current dollar Value of Physical Change
(7) $CB = B_t - B_{t-1}$	change in reported book values
(8) IVA = CB-VPC	Inventory Valuation Adjustment.

3.27. Although the accounts data are published quarterly, these calculations are performed monthly for the manufacturing, wholesale and retail industries and accumulated to quarters. The working level for the calculations includes about 130 manufacturing industries by stage of fabrication, 10 trade groups for wholesale, 18 trade groups for retail, six ›other: industries and gold.

6. Deflators

3.28. Inventory book values are presumed, as noted above, to be reported on a FIFO basis. Therefore, each inventory commodity has a ›turnover period: which is the average length of time that a good spends in inventory (or, equivalently, the number of days or weeks of inventory that an establishment keeps on hand). The inventory book value reported by an establishment for a given reference period is the sum of the costs of goods entering inventory during the turnover period of the reference period. To deflate the book value to base year constant dollars, the deflator price index must reflect price movements during the turnover period. Therefore, the deflator is calculated as the average of a price index series during the turnover period at the end of the reference period.

3.29. For a commodity with a three-month turnover period, the fourth quarter deflator would be the sum of the price index for December, November and October, divided by 3. For turnover periods of less than one month, the deflator series equals the price series.

3.30. The turnover periods used are constant with the exception of those for retail inventories which vary, based on stock-to-sales ratios.

7. Revaluers

3.31. The price index series used to revalue the VPC from constant to current dollar values reflects the average costs of inventories during a period. For monthly calculations, the revaluers are the reference price series themselves. For quarterly calculations, a simple average over the quarter is used.

3.32. At aggregate levels, the implicit revaluer (the ratio of the current and constant dollar VPC) may bear little resemblance to a proper price series. In an extreme case, two series may have equal but opposite constant dollar movements and the implicit revaluer of their sum would not be defined.

3.33. In particular, this is true when aggregating monthly data to quarterly levels and quarterly data to annual levels. The implication is that quarterly VPC, as the sum of months, is different from VPC calculated quarterly and, similarly, for annual VPC. Since the lower-level data better reflect the variances of price over time, published annual data are the sum of quarterly data and, where applicable, quarterly data are the sum of monthly data. However, because the annual data in the input-output tables do not follow this method, a discrepancy exists between the VPC in the input-output tables and that in the accounts published quarterly.

3.34. It should be noted that many monthly indexes are not averages over the month but, rather, spot prices. Usually this is not relevant, but sometimes extraordinary price movements occur within one month. In these cases, extra care is required for deflating and revaluing. Where possible, the reported book value, the deflators and the revaluers are seasonally adjusted using Statistics Canada's X-11 ARIMA seasonal adjustment programme. The seasonally adjusted VPC and IVA series are derived from these.

C. Statistics Canada calculation versus the 1993 SNA calculation

3.35. For a single commodity, the eight-step calculation of Statistics Canada gives an identical value of change in inventories and holding gains compared with the 1993 SNA calculation (see table 3.1, p. 93). Quantities are not usually available and their volume needs to be calculated using steps 2, 3, and 4 in the table. Then one needs a revaluer, step 5 in the table, which has the same value as the deflator for a single commodity. Other steps follow the 1993 SNA .

1. Rebasing

3.36. Constant dollar data were published with 1986 as the base year until December 1997 when 1992 became the base year. Current policy is to rebase the accounts about every five years.

3.37. When converting to a new base year, data points prior to the new base year are linked so as to preserve growth rates. When the base year was changed to 1986 from 1981, the constraints for inventory data prior to 1986 were that (a) current dollar values and (b) the relative movements of the constant dollar VPC series were to remain unchanged.

3.38. Since this calculation was done at the detailed level, the components no longer summed to the aggregates, the traditional non-additivity problem in chain linked constant price series. The differences were entered in the accounts as adjusting entries, a treatment used for most series in the accounts.

3.39. In the new base year, the annual sums of the constant dollar VPC series were forced to equal the annual sum of the corresponding current dollar VPC.

2. Annual input-output tables

3.40. In the Canadian annual input-output tables, VPC is calculated for approximately 200 industries and 464 commodities. An assumption is made that inventories are turned over every three months**.** Reported inventories are thus assumed to reflect the price level of the last three months of the previous year and the reported closing inventories reflect that of the last three months of the current year. Reported values of inventories are distinguished by finished goods, goods-in-process and raw materials but no commodity detail is readily available. It is then assumed that the commodity content of each type of inventories of an establishment bears a close relationship to its corresponding shipments or purchase of raw materials as the case may be. Reported opening inventories are revalued using weighted price indices of the reported closing inventories. The same weighted price indices are used to revalue the closing inventories. The difference between the revalued reported opening inventories and the revalued closing inventories is the measure of VPC. The difference between the nominal change in inventories and the VPC is the calculated IVA. The VPC and IVA calculated by using annual series are not exactly the same as the cumulative annual VPC and IVA using quarterly accounts. The differences are not big because the inflation rate has been quite low in Canada. The two series are not forced to be identical and both are published.

3. Data detail

3.41. The VPC, at both current and constant prices, and the IVA series are prepared quarterly, seasonally adjusted and unadjusted, and of course annually, for:

(a) Manufacturing: 23-industry breakdown;

(b) Wholesale: five-way breakdown - non-durables; machinery and equipment; building materials; motor vehicles; and other durables;

(c) Retail: three-way breakdown - non-durables; motor vehicles; and other durables;

(d) Other industries: logging; mining; utilities; transportation and communications; construction; financial, insurance, real estate; and gold;

(e) Government: as noted above, only inventories calculated are for the federal Government.

3.42. In Canada, an aggregate of holding gains (IVA) is published in the income-based Gross Domestic Product as an adjustment to profits. Typically, in an economy with a rise in prices, holding gains are positive, hence a negative adjustment is made to remove their effect from the reported profits in the business accounts to bring them in line with the SNA concept. An identical adjustment is made to the reported book value change in inventories in the business account in order to value the change in inventories in the expenditure-based GDP.

3.43. The VPC is also published by industry including: agriculture; forestry; mines, quarries and oil wells; manufacturing; construction; transportation, storage and communications; electric power, gas and water utilities; grain in commercial channels; wholesale trade; retail trade; finance, community, business and personal services; and government.

3.44. In the annual input-output tables, changes in inventories are calculated by industry - more than 200 industries - and are published by commodity - about 500 commodities - under two headings: finished goods inventories and raw materials inventories.

3.45. Table 3.1 below provides book value inventories as reported in the business accounts of enterprises. The second column provides the SNA calculation of holding gains. The third column, the SNA concept of value of physical change in inventories is calculated by deducting the calculated holding gains from the reported balance-sheet book-value change in inventories. All this is provided quarterly in the Canadian System of National Accounts. The input-output tables are only produced annually. While there is a difference in value between the input-output calculation and the other accounts, it is not significant given the value of gross flows of inventories.

Table 3.1. Change in inventories in Canada, 1989-1992
(in millions of Canadian dollars)

	Quarterly accounts at annual rates			**Input-output tables**	
	Book value change (1)	**Inventory valuation adjustment/ holding gains (2)**	**Value of physical change in inventories (3) = (1 - 2)**	**Value of physical change in inventories (4)**	**GDP implicit price index 1986 = 100 (5)**
1989 - 1st quarter	4,744	4,940	-196		112.7
1989 - 2nd quarter	8,984	3,108	5,876		114.6
1989 - 3rd quarter	7,192	-584	7,776		115.7
1989 - 4th quarter	-172	-1,144	972		116.5
1989 - Annual	5,187	1,580	3,607	3,806	114.9
1990 - 1st quarter	1,768	3,944	-2,176		117.1
1990 - 2nd quarter	316	140	176		118.1
1990 - 3rd quarter	-1,472	2,916	-4,388		118.8
1990 - 4th quarter	-10,424	-5,472	-4,952		119.8
1990 - Annual	-2,453	382	-2,835	- 4,079	118.5
1991 - 1st quarter	-744	-1,340	596		121.3
1991 - 2nd quarter	-9,660	-2,692	-6,968		122.0
1991 - 3rd quarter	-7,612	-3,400	-4,212		122.1
1991 - 4th quarter	-2,744	-388	-2,356		122.1

1991 - Annual	-5,190	-1,955	-3,235	-4,415	121.9
1992 - 1st quarter	-2,208	2,480	-4,688		122.5
1992 - 2nd quarter	1,164	3,048	-1,884		122.9
1992 - 3rd quarter	-1,180	1,812	-2,992		123.9
1992 - 4th quarter	-2,356	2,884	-5,240		124.3
1992 - Annual	-1,145	2,556	-3,701	-5,583	123.4

Note: Government industries, contributing a very small share of total inventories, are included.

4. Reliability

3.46 Inventory data are considered one of the less steady series in the accounts. By their very nature, inventory data are volatile. They represent values calculated at certain fixed times and do not enjoy the smoothing acquired by other series which are summed over time.

3.47. Although inventory surveys are usually tied to sale or shipment surveys so that the same level of coverage is attained, the fact remains that inventory levels are not tracked as carefully as sales by many companies, particularly small ones. The response rate for reporting inventories is much lower than for sales, resulting in larger blow-up factors and sampling errors and more heroic imputations for missing data. For small retail stores, only sales data are available.

3.48. Nevertheless, data based on surveys are undoubtedly more reliable and detailed than indirectly derived values. However, indirectly derived values using supply and disposition models fill an important gap when directly related survey data are not available. Such calculations also provide additional information to assess the reliability of inventory estimates. The accumulated errors from adding and subtracting many large series, together with the many assumptions required to fill gaps in data availability, leave a high level of uncertainty in the residual representing the change in inventory level.

D. Change in inventories under conditions of high inflation

3.49. Canada is not a high-inflation economy but many countries in the world are. Thus it may be useful to examine how the value of change in inventories should be calculated under conditions of high inflation. Calculation of value of change in inventories and nominal holding gains under conditions of high inflation can best be understood by referring to an example from part D of table 6.1 (p. 79) in a 1996 OECD manual titled *Inflation Accounting, A Manual on National Accounting under Conditions of High Inflation*, called Inflation Manual in this chapter. We have expanded this table to demonstrate that the Canadian eight-step calculation generates the same results. The Canadian VPC in step 6 is identical to the change in inventories in row 6 of the SNA method (see table 3.2). The Canadian IVA in step 8 is identical to row 7 of the SNA method.

3.50. A few comments on table 3.2 may be in order. The balance sheet values are at market prices. Quantities at the 0 quarter (last year's 4th quarter) were 100 and after going down for two quarters, were up in quarters 3 and 4, resulting again in 100 units at the end of the 4th quarter. This is an example of an economy under severe inflation. Prices are rising from 0.4 per unit to 2.5 per unit in a year or from 100 to 625. Changes in value in the closing inventories minus opening inventories for each quarter are calculated. The total for the four quarters of the year is 210, or 250 minus 40, as reported in the book values for the year.

Quantities decline by 40 in each of the first two quarters and then increase by 40 in each of the last two quarters, resulting in a zero change for the whole year. The balance sheet change of 210 is made up of 98 of change in inventories (of course, in current prices) and 112 of nominal holding gains.

Table 3.2 Recording change in inventories and holding gains

Quarters ÷	0	1	2	3	4	Year
1993 SNA method						
Prices	0.4	0.5	0.8	1.25	2.5	
Quantities	100	60	20	60	100	
Book values	40	30	16	75	250	
Change in balance sheet		-10	-14	59	175	210
Change in quantity		-40	-40	40	40	0
Change in inventory = $(q_t - q_{t-1})\, p_t$		-20	-32	50	100	98
Nominal holding gain =$(p_t - p_{t-1})q_{t-1}$		10	18	9	75	112
Canadian method						
Book value	40	30	16	75	250	
Deflators-indices	100	125	200	312.5	625	
Constant dollar value	40	24	8	24	40	
Change in constant dollar value		-16	-16	16	16	0
Revaluers- indices	100	125	200	312.5	625	
Current price VPC		-20	-32	50	100	98
Change in balance sheet		-10	-14	59	175	210
IVA		10	18	9	75	112

3.51. The Canadian method gives the same results, as does the SNA method, for VPC and IVA. The Canadian method, however, does not require data on quantity, as such information is usually not available from the surveys. Volume at base year prices is calculated. Change in volume thus calculated multiplied by the revaluer, which is the same as the deflator, provides the values for VPC. Similarly, the IVA follows the same principles as the SNA method, and the results are identical.

Comment on results

3.52. The results look plausible from the point of view of a business account. The nominal holding gains of 112 are consistent with the cash flow of the enterprise: using the SNA method data, 40 dollars was spent to acquire 100 units in period 0, 40 units were sold in Q1 for 20, another 40 units were sold in Q2 for 32, 40 units were purchased in Q3 for 50, and 40 units were purchased in Q4 for 100, with a total net expenditure of 138 (= 40-20-32+50+100). The market value of 100 units in Q4 is 250, hence a nominal holding gain of 112 (250-138).

3.53. Changes in balance-sheet value (210) minus holding gains (112) equals change in inventory of 98. However, change in inventories at constant prices or change in quantity of inventories for the whole year is zero. The implicit deflator - i.e. current price change in inventories divided by constant price change in inventories - is not interpretable for the whole year. However, the implicit deflator for each quarter behaves as

expected. Aggregate data for the year seem to provide a different interpretation than the data from the four quarters. Where is the problem?

3.54. The problem arises because the underlying principles of aggregation are not satisfied in an inflationary situation. The OECD Inflation Manual very wisely notes (pp. 31-32): "The economic theory underlying the aggregation of the values of different kinds of goods and services is that relative prices should reflect both relative costs of production and relative utilities to users, whether producers or consumers. Market forces may be expected to ensure that relative prices do not diverge very much from these underlying ratios at any given point of time. When there is high inflation, however, the ratio of the price of a given good or service at a later point of time to its price earlier in the same accounting period may simply reflect the general rate of inflation and have nothing to do with relative costs or utilities.@ The Inflation Manual recommends recasting the sub-period (say quarterly) values of a given accounting period (say annual), so that the relative weights of the sub-periods are not distorted by inflation: such recasting is called Constant Price Level (CPL) accounts. If a CPL type account is done for change in inventories, the holding gains **within** the year will disappear. However, the holding gains need to be reflected in the balance sheet as they have occurred in the market. The OECD Inflation Manual does not seem to provide any explicit guideline for handling this problem. One solution could be to add a reconciliation item in the other changes in assets account, this item being the difference between the valuation of changes in inventories as calculated by CPL accounts and in table 3.2.

E. Concluding remarks

3.55. This chapter was a summary description of the Canadian practice for calculating change in inventories and holding gains, and its implementation in the Canadian System of National Accounts. As noted, the reliability of the database of reported book values and estimates of inventory changes and holding gains is not of the same high standard as are many other components of the Canadian accounts. It is a learning process for all. Nevertheless, every country should remove holding gains from both reported profits and book value inventories: otherwise the calculated GDP will remain deficient both conceptually and statistically.

IV. USING BUSINESS ACCOUNTS TO COMPILE NATIONAL ACCOUNTS : THE FRENCH EXPERIENCE

Patrick Augeraud[53]
Institut national de la statistique et des études économiques, France
Jean-Etienne Chapron, United Nations Statistics Division

Note: *In this chapter "non-financial enterprises" means in terms of national accounts "non-financial corporations and non-financial unincorporated enterprises". Furthermore, the statistical tool termed "intermediate system of enterprises" covers only non-financial corporations and non-financial unincorporated enterprises.*

A. From standardized tax statistics to the intermediate system of enterprises: some remarks

1. Origins (1947-1967)

4.1. Since the early attempts to elaborate national accounts in France, a strong priority was assigned to the direct use of business accounts. This priority was endorsed by governmental bodies in charge of the definition and enforcement of business accounts standards. The Business Accounting Standards Commission set up by the French Government in the post-war period defined a general accounting framework, which was issued in 1947 with two goals: (a) to provide an efficient management tool to each enterprise; and (b) to facilitate the collection of reliable data by the Government for national accounting purposes.[54]

4.2. Once the general business accounting scheme was completed and made compulsory to enterprises,[55] data had to be collected and centralized. That was the task of tax authorities. As of 1948 enterprises had to attach to their income statements excerpts from their accounts, to be presented in principle according to accounting standards in force. Of course, national accountants were eager to get these data. Unfortunately that was not as easy as expected. First, basic data did not always follow the required standards. Second, problems of coverage and activity codes damaged the reliability of available data.

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[53]Patrick Augeraud is Head of Non-financial Enterprises Section, Division of General Synthesis of Accounts, Department of National Accounts, INSEE.

[54] It is worth noting that the post-war period was marked in France by an original economic policy, including a planning process which was somewhere between Soviet-type central planning and *laisser-faire*. The French planning, strongly and convincingly advocated by Jean Monnet, intended to assess the current state of the national economy, and to present plausible views of its state five years ahead, depending on governmental economic and monetary policy. Such a process required figures organized in a coherent and exhaustive macro-economic framework. It resulted in a system of national accounts whose first experimental tables were published in 1946.

[55]In fact the 1947 general scheme was not compulsory as such. It became so only through its sectoral specifications designed by ad hoc tasks forces whose members were representatives of enterprises, trade unions, associations of independent auditors and accountants, statisticians, and tax authorities.

4.3. This unsatisfactory situation was remedied over time through a fruitful cooperation between national accountants and the tax administration. The standardization of accounts attached to income statements was substantially strengthened, in particular by a 1965 decree. The creation of a unique inter-administrative register of enterprises (so-called SIRENE register) helped to check the coverage of fiscal data. Moreover, a 1967 official agreement between the tax administration and the national statistical institute organized the annual transmission of individual data from enterprises: income statements to statisticians. A strict commitment to respecting both fiscal and statistical confidentiality rules in force was incorporated in this agreement.

2. The intermediate system of enterprises

4.4. Since 1967, the use of micro-data from business accounts for the national accounts has been expanded and improved. The Ahistorical@ tax/statistics agreement of 1967 was amended many times and even revamped. However, the basic structure was reached since this agreement. It is worth noting that it took twenty years of efforts on both sides. As a matter of fact, our predecessors in the 1950s had no computers, which made centralizing some three million individual sets of data difficult. Furthermore, the network of local tax controllers and the team of national accountants did not spontaneously share the same view of so-called Astandardization@ and Acentralization@. Finally, statisticians and tax administration officials had to be extremely cautious in organizing the transfer of individual data; on both sides, that was a matter of credibility with enterprises. Any lack of confidence from enterprises could result in a dramatic drop of reliability in basic data.

4.5. Thus, since the late 1960s French statisticians have built a database of some three million individual sets of records from enterprises: accounts. At the same time, a comprehensive system of annual enterprise surveys has been developed, covering first mining and manufacturing, then construction, transport, wholesale and retail trade, and finally non-financial market services. The concepts used in the questionnaires are derived from business accounting standards. This system of annual enterprise surveys therefore has the same conceptual frame of reference as the fiscal database. The use of a common identification code for all relations between government and enterprises allows one to compare and finally to merge both sets of data. The outcome is a database named AUnified System of Enterprises Statistics@.

4.6. To summarize, the Unified System of Enterprises Statistics contains individual sets of data. Each of them corresponds to an enterprise on which a number of characteristics are known: principal economic activity, size - measured through sales or number of employees, since both criteria are available -, location, legal status, fiscal status, etc. The mix of business accounts and annual enterprise surveys adds an important feature: the system gives not only the total of sales; it also breaks them down by group of commodities, according to the classification of products used in national accounts (the European Classification of Products according to Activities - CPA).

4.7. One of the most important outputs of the Unified System of Enterprises Statistics is the Aintermediate system of enterprises@. This system provides a framework to analyse the accounts of enterprises. Data are organized according to the conceptual framework of national accounts but they continue to follow accounting rules (timing, valuation, etc.) of business accounts. That explains why this system is labelled Aintermediate@. It is built by simply adding individual enterprises: records, while being conceptually close to national accounts. As a bridge linking individual business accounts and macro-economic national accounts, the intermediate system of enterprises plays a key role in the elaboration of national accounts.

3. The intermediate system of enterprises in national accounts today

4.8. Regarding the area of goods and services and primary distribution of income, French national accounts are compiled according to three classical approaches: production, expenditure, income. Each of them produces an estimate of GDP, and these three estimates must by definition be identical. The intermediate system of enterprises is more or less used as an input to each of the three approaches. It helps therefore in making GDP estimates consistent.

(a) Production approach

4.9. Basically the production approach refers to the technical process of production in each industry. This process consumes goods and services and results in an output whose value is higher than the sum of values of goods and services consumed. The total value added by production processes in domestic industries is the source of GDP according to the production approach.

Value added = Output - Intermediate consumption.

4.10. One of the sources of industries' output is the amount of sales of enterprises. The intermediate system participates in the estimate of sales of non-financial market industries.

(b) Expenditure approach

4.11. The expenditure approach estimates the value of commodities directed to satisfying final demand, net of imports. It relies on an analysis of supply and demand where the following identity holds for each detailed group of goods or services :

Output + Imports + Taxes minus Subsidies on Products + Trade and Transport Margins =

Intermediate Consumption + Final Consumption + Gross Fixed Capital Formation + Changes in Inventories + Exports.

4.12. In this approach, the intermediate system of enterprises is one of the sources for enterprises' gross fixed capital formation and is used through sales of industries in the estimate of output of commodities.

(c) Income approach

4.13. The income approach relies on the identification of production factors' compensation. The value added of institutional sectors is estimated on the basis of their generation of income account. Thus :

Value added = Gross Operating Surplus/Mixed Income + Compensation of Employees + Taxes - Subsidies on Production (except those levied on products).

4.14. Under this approach the intermediate system of enterprises plays the prominent role for two institutional sectors: non-financial corporations and households.

(d) Data production schedule [56]

4.15. Building the database called Unified System of Enterprises Statistics takes time. First, basic statistics have to be compiled and centralized by statisticians. Second, they have to be merged in a self-consistent database. Currently the Unified System of Enterprises Statistics is ready one and a half years after the end of the year of reference. It can therefore be used to compile the definitive version of annual national accounts, produced about two years after the end of the year concerned (and published in the following April).

4.16. Meanwhile a provisional version has been produced three months after the end of the year concerned (and published in the fourth month). At that time a number of enterprises have not even completed their own accounts and no annual enterprise survey questionnaire has been filled in; the use of business accounts for provisional annual national accounts is a priori excluded. A so-called Asemi-final@ version of national accounts has been produced one year after the end of the year concerned (and published four months later). It can use tax statistics based on a sample of profit statements selected by the tax administration but no data yet from annual surveys of enterprises which are available only in the second year after the year concerned. This information is summarized in table 4.1 below.

Table 4.1. Enterprises statistics and national accounts
Production schedule of data on year An@

	Year n + 1	Year n + 2	Year n + 3
Tax statistics	Sample (Autumn)	Exhaustive	-
Annual enterprises surveys	Sending, collecting and processing of questionnaires	Processing and production of data	-
Unified System of Enterprises Statistics	N.A.	Available (July)	-
National accounts	- Compilation (Feb./March) and publication (April) of provisional version - Beginning (Dec.) of compilation of semi-final version	- Compilation (Jan./Feb.) and publication (April) of semi-final version - Compilation (Sept./Nov.) of final version	Publication (April) of final version

[56] The schedule described here reflects the latest development in the production of enterprises: statistics and corresponding databases in France (effective in 1999).

4. Purposes of the intermediate system of enterprises for national accounts

4.17. In national accounts the intermediate system of enterprises is a bridge between micro-data and macro-data on non-financial enterprises. Its building is therefore a crucial stage in the process of assembling national accounts. One can identify three main purposes for this system.

(a) Ensuring an exhaustive coverage, by kind of economic activity, of non-financial enterprises

4.18. Accounting period: Enterprises may, under certain conditions, compile their accounts over more than twelve months. All individual accounts covering more than twelve months have to be identified and adjusted.

4.19. Coverage*:* The Unified System of Enterprises Statistics covers many enterprises but some units are not covered. If this is due to a deficient coverage of basic sources (tax statistics or surveys), appropriate adjustments are made on an individual basis for large enterprises, and with statistical procedures for medium or small enterprises. If it is due to an institutional situation, namely some units not having to pay enterprise income tax, additional sources are tapped to fill this gap.

4.20. Sectorization*:* Within the Unified System of Enterprises Statistics, each enterprise's main activity is coded. This code is checked on an individual basis for large enterprises and eventually validated or changed.

(b) Making individual data cohere, with a view to further aggregation

4.21.As explained above, various statistical sources are handled within the Unified System of Enterprises Statistics as well as outside it. Correspondence tables are built between data from these sources, and business accounting variables are used in the intermediate system of enterprises. Only the most aggregated level of balancing items is common to all sources. More detailed data can be available only from some of the statistical sources.

4.22 In the same way, accounting rules and practices can change from one sector to another, as well as within a sector, sometimes even from one period to another for the same enterprise. Appropriate adjustments are then required for bringing data into line with a common definition. Examples are the recording of taxes on products, of subsidies, of research and development outlays, of own-account fixed capital formation.

4.23 Tax data are not uniform. The coverage and detail of accounting data provided with income statements vary according to enterprise size. Missing data for small enterprises have to be estimated. The purpose is to ensure the internal homogeneousness of the unified system of enterprises statistics. Some additional information is also put on the database (sometimes not from business accounts).

4.24 Data on flows and on assets and liabilities have to be compiled at the same time in order to preserve the balance of elementary accounts in the framework of the intermediate system of enterprises.

(c) Building a preliminary framework for economic analysis

4.25 As stated above, the framework of the intermediate system of enterprises is inspired by national accounts concepts without departing too much from business accounts concepts. It allows an easy return to individual data.

4.26 Under this approach it has been decided to value sales in the intermediate system of enterprises at the prices used by most enterprises, which means in France something very similar to producers= prices. As a matter of fact sales are not valued and recorded by enterprises according to identical rules across industries. Main disparities must be eliminated, as far as possible, to keep the whole database homogeneous.

B. Input to the intermediate system of enterprises: collection and processing of individual accounting data

4.27 The final estimates of non-financial enterprises= national accounts are compiled in absolute terms. That requires an annual collection of business accounting data covering all non-financial corporations and unincorporated enterprises. Given the large number of individual entities concerned, this collection is made possible only by the availability of annual business accounting data attached to tax statements related to profits from industrial and commercial activities and from non-commercial productive activities, which in total cover a vast majority of all non-financial enterprises. Non-financial enterprises not covered by tax data can be classified into two categories : those with specific accounting schemes, close to the one used by governmental bodies, and those whose activities are estimated on the basis of output statistics because accounting data cover only a part of them (e.g. agriculture).

1. Main sources

4.28 Two main sources are used each year :

- Data collected by the tax administration;

- Surveys of enterprises conducted by the French statistical office, INSEE, or by statistical offices of ministries.

(a) Data collected by the tax administration

4.29 The documents sent by enterprises to the tax administration include an income statement and accounting tables appended to it. Those tables are collected and processed by statisticians. They comply with the basic system of the General Accounting Scheme.

4.30. The taxation system of Aindustrial and commercial profits@ includes two main statement systems corresponding to more or less detailed sets of accounting data:

- The so-called Alump-sum system@ includes about 200,000 small enterprises, with a very limited set of data (five data);

- The so-called Aactual profit system@ includes about 1,400,000 enterprises, of which:
  - 850,000 medium-sized enterprises with the so-called Aactual simplified profit system@ (120 data);

  - 550,000 medium/large enterprises with the so-called Aactual regular profit system@ (400 data).

4.31. In terms of turnover, the actual regular profit system amounts to about 95 % of the total, the simplified system to 4 %, and the lump-sump system to less than 1 %.

4.32. The taxation system of Anon-commercial profits@ mainly covers independent doctors, dentists and other medical professionals, lawyers, chartered accountants, authors, performing artists, etc. It includes two statement systems:

- The Aadministrative estimate system@, similar to the lump-sum system, covering about 150,000 small enterprises which provide five data;

- The Acontrolled statement system@, covering about 310,000 medium/large enterprises which provide 60 data.

4.33. Data coming from agricultural profit statements are recent. Until the late 1980s, agricultural profits were ruled by specific regulations. In particular, no data coming from a common business accounting scheme were attached to the profit statement. Nowadays agricultural enterprises are covered by a system similar to the one in force for industrial and commercial profits: lump-sum system and actual profit system. Only actual profit statements are forwarded by the tax administration to statisticians. They include two categories:

- The Aactual simplified profit system@ covers about 85,000 medium-sized agricultural enterprises, providing 120 accounting data each;

- The Aactual regular profit system@ covers about 100,000 large agricultural enterprises, providing 400 accounting data each.

4.34. The individual data coming from the tax administration are not directly usable as such for statistical purposes. A number of preliminary controls and adjustments have to be made first.

(b) Data from surveys of enterprises

4.35. The annual surveys provide annual data according to the general business accounting scheme. Their questionnaires have been designed in order to have the same core data set as accounting tables attached to tax statements.

4.36. These surveys cover all non-financial and non-agricultural market activities. A total of 200,000 enterprises receive a questionnaire. The coverage is exhaustive for enterprises with 20 employees or more. Different sampling rates are used for smaller enterprises, depending on the kind of activity. [57] There are six different surveys on agro-food industry, other manufacturing industry, construction, wholesale and retail trade, transport, and other non-financial market services. Although adapted to their specific field, they have the same general structure. Their purpose is to provide a coherent view of enterprises: activity during the year.

4.37. The main data collected relate to:

- Receipts and expenses, following the same structure as the standard current accounts attached to tax statements;

[57] Since the 1995 survey, the coverage of wholesale and retail trade enterprises with 20 or more employees has ceased to be exhaustive.

- The distribution of sales (including sales abroad) by group of products, according to the official classification of products;

- The distribution of investment by type;

- The list of local units, with a specific questionnaire for each;

- Specific data sub-sets according to the survey, e.g. on activities performed in foreign countries by construction enterprises.

(c) Comparison of sources for large enterprises

4.38. Both sources (see para. 4.28 above) contain common data (current receipts and expenses for instance). At the same time they have specific parts (balance sheet for tax data, distribution of sales by group of products for enterprises surveys). The common parts make it possible to check the overall consistency of the whole. This is done on an individual basis for large enterprises, given the relative concentration of the productive area. It was made possible by the evolution of business accounting rules towards a common compulsory accounting scheme, and the set-up of an inter-administrative register of enterprises with a common identification code for each enterprise.

4.39. The so-called SIRENE register (SIRENE means Système Informatique du Répertoire des Entreprises et des Etablissements) is performing a permanent inventory of enterprises and establishments (about 3 million enterprises and 4 million establishments in 1995). In addition, SIRENE contains two crucial data on each enterprise: the number of employees and the main economic activity, the latter being set by INSEE according to the official classification of economic activities.[58]

4.40. In summary, the general business accounting scheme is the common reference of elementary transactions. The classification of economic activities makes it possible to classify elementary units and their transactions, and therefore to compute appropriate aggregates. Finally, the enterprises' register SIRENE makes it possible to gather all data on a given enterprise and to check their mutual consistency; at the same time, because this register is continuously updated, it is the starting point of all enterprise surveys.

2. Individual data processing

(a) In search of coherence

4.41. For each source, the internal coherence of individual data is checked by ascertaining that accounts are balanced, that data in different tables are consistent and, last but not least, that the main data are economically sound.

4.42. External coherence of both sources is also checked for each year:

[58] The French Nomenclature d'Activités Française (NAF) is derived from the European Nomenclature d'Activités de la Communauté Européenne révisée (NACE Rev.1). At it most detailed level NAF has 700 commodity groups, while more aggregated levels are identical to those of NACE Rev.1. The main activity code is used by all governmental bodies to refer to the economic activity of enterprises concerned. It is a very useful tool for checking the consistency of several statistical sources.

- Identity of current accounts available in both sources;
- Identity of figures for tangible assets' acquisition available in both sources, too.

(b) A selective processing of anomalies and discrepancies at the micro-level

4.43. The general principle is to process all data at the individual level, focusing efforts on the largest enterprises. The processing includes two main phases.

4.44. In the first stage, the various files coming from tax administration and statistical bodies are revamped. The purpose is to get a common format; it is also an opportunity for checking the internal coherence of tax data and survey data. For large enterprises internal discrepancies are reduced on a case-by-case basis. For smaller enterprises any internal discrepancies are eliminated by automatic adjustments.

4.45. In the second stage, files coming from both sources are compared together for each enterprise with 20 employees or more. The purpose is to check the external coherence of different sources. If current accounts from tax administration and surveys differ, statisticians systematically consult accounts and statements issued by the enterprise under existing rules. These documents are available for consultation at the enterprise's executive board or in the database of the National Institute of Industrial Property. For such in-depth controls enterprises with 100 employees or more are given a high priority.

(c) Control of data coverage

4.46. The Unified System of Enterprises Statistics aims at an exhaustive coverage in both time (full year) and space (all domestic activities). This task requires many additional statistics supplementing tax data and annual enterprise surveys. This addition is significant: since 1993 about 3,000 individual accounts of large enterprises have been put into the system annually. As regards territorial basis, if tax data and survey data differ, a systematic preference is given to tax data. Finally, when sources do not refer to identical periods or when they cover less than one year, adjustments are made by the system in order to estimate missing months.

4.47. After all these controls and adjustments, a coherent micro-database is available to build the intermediate system of enterprises.

C. Building the intermediate system of enterprises

1. Introduction

(a) Main features

4.48. The general purposes and features of the intermediate system of enterprises have been outlined at the beginning of this chapter. A brief reminder follows:

- The intermediate system of enterprises is a framework which is very similar to the one of national accounts. It is used to aggregate individual accounts of enterprises without any macro-economic adjustment. It thus makes it possible to work on one enterprise as well as on any grouping of enterprises based on several criteria like main economic activity, number of employees, amount of sales, legal status, taxation mode, amount of income-tax paid, etc.

- The emphasis on the mere sum of elementary business accounts implies that business accounting rules are retained. These are different from macroeconomic accounting rules in many instances, e.g. valuation of inventories and their changes, and investments and corresponding assets. That results in differences from national accounts. Such differences can be negligible when specific prices of goods stored in inventories, equipment goods, buildings, are more or less stable; they can become huge when the specific prices of the same goods change significantly.

4.49. For the purpose of national accounts the intermediate system is simplified and broadened. It covers all non-financial enterprises, corporate or not. Tax data are supplemented with individual accounts of entities not covered by tax statistics, like horse-racing societies, public social-housing entities, market social assistance and social tourism bodies, and some governmental bodies performing market activities with a visible management autonomy.

(b) The conceptual framework of the intermediate system of enterprises

4.50. Given the purpose of this chapter, we shall focus on the actual use of the intermediate system of enterprises in the current building of national accounts. We shall therefore not develop its full conceptual framework. As a matter of fact two important parts of this framework are computed as a stage toward national accounts of non-financial enterprises: the production account and the generation of income account.

4.51. The production and generation of income accounts of the intermediate system have the following structure :

Production account

Uses	*Resources*
Purchases of goods and services	Output not held in stocks
Gross value added	Change in stocks

Generation of income account

Uses	*Resources*
Wages and social charges	Gross value added
Taxes and duties	Subsidies
Gross operating surplus	

4.52. With respect to business accounts, each item of these accounts is defined as follows :

(1) Output not held in stocks = Sales of manufactured goods, services, and goods resold
+ Capitalized production (except intangible research and development assets)
+ Portion of net income on long-term contracts
+ Other income from ordinary activities

(2) Change in stocks = Production in stocks (increase or decrease)
+ Stocks movements (goods for resale, raw materials and consumables)

(3) Purchases of goods and services =	Purchases for stocks / raw materials and supplies, other consumables + Purchases of business services and service charges + Purchases of materials and supplies not for stock + Purchases of goods for resale - Rebates and allowances on purchases + Other external charges + Other ordinary operating costs
(4) Gross value added =	(1) + (2) - (3)
(5) Subsidies =	Operating subsidies
(6) Wages and social charges =	Remuneration of employees + Social security and retirement costs + Other social charges + Other personnel costs
(7) Taxes and duties =	Taxes and similar levies
(8) Gross operating surplus =	Operating profit + Depreciation and provisions (operating) - Reversal of depreciation and provisions (operating) - Transfers of charges (operating).

4.53. It has to be noted that the balance of the production account defines the gross value added. The balance of the generation of income account defines the gross operating surplus as :

$$(8) = (4) +(5) - (6) - (7)$$

or :

$$(4) = (8) +(6) + (7) - (5)$$

4.54. Finally, it is also important to note that the definition of the gross operating surplus preserves the individual balance of operating accounts defined in the general business accounts scheme.

(c) The four intermediate systems

4.55. Up to now the intermediate system of enterprises has been described as a unique conceptual framework. However, the actual building and use of its data must take account of the diversity of basic sources used. Thus it is more appropriate to speak of four intermediate systems of enterprises:

- *The first one* refers to industrial and commercial profits; it covers all enterprises having to produce a tax statement on that kind of profits. It is subdivided according to the taxation

system and the size of enterprises: lump-sum, actual simplified, actual regular small size, and actual regular medium/large size.[59]

- *The second intermediate system* refers to non-commercial profits. It is subdivided according to the taxation system: controlled statement and administrative estimate.

- *The third one* refers to agricultural profits; it will be recalled that, currently, only actual agricultural profit statements are used by statisticians. They are grouped into two intermediate subsystems: actual regular and actual simplified.

- Finally a *fourth intermediate system* covers all remaining enterprise-type units, not in the unified system of enterprises statistics: in general they are not taxed under one of the three taxation systems above.[60] Most are corporate. They include: horse-racing societies, public social housing entities, market social assistance and social tourism bodies, and some governmental bodies performing market activities with a market management autonomy.

2. Intermediate system of enterprises - Industrial and commercial profits

(a) Enterprises with 20 or more employees

(i) Adjustments for absence, main activity, and accounting period

4.56. A first task is to ensure the exhaustiveness of this part of the field. In principle, as stated above, industrial and commercial enterprises with 20 employees or more are exhaustively covered by tax data and survey data. However it happens that some enterprises are absent from tax files, because they sent their profit statement after the deadline. Others are physically present but all data are equal to zero. The latter case is due to three main reasons:

- The amount of taxable profit has been unilaterally set by the tax administration because of lack of statement or irregular accounts ;

- No accounting period ends within the year (which can happen in exceptional cases when the accounting period is longer than 12 months; see below the issue raised by accounting periods);

- The enterprise itself seems to have been inactive, but its presence in tax files shows that this inactivity is questionable from the tax administration's point of view.

4.57. To restore information on these absent enterprises a first resource is the annual enterprise survey, which is exhaustive for enterprises with 20 employees or more. Additional information is provided by public

[59] Taxation systems have been described in B1(a) above.

[60] Some units in this fourth category are taxed in the industrial and commercial profits system, but statisticians prefer to use other available sources for exhaustiveness and reliability reasons. They are public social housing entities and small cooperatives.

reports of the enterprise and the database of the National Institute of Industrial Property. All these adjustments are made individually.

4.58. The main economic activity is controlled by national accountants in charge of commodity flows. Such controls are mainly based on the distribution of sales by group of products. They can result in a request for reclassification for about 100 enterprises in normal years. For 1992 and 1993 this number jumped to almost 4,000: the new European Classification of Economic Activities (NACE Rev.1) came into force on 1 January 1993.

4.59. One difficulty is due to the accounting period. In principle all enterprises must send accounts on a full calendar year. Sometimes the reporting period is different mainly because of the beginning or interruption of activity, merger with another enterprise, or change in the beginning of the accounting period to adapt to a new seasonality. The first two reasons do not require any adjustment. The third one does, *pro-rata temporis*. In 1992, 1993 and 1994 some 1,200 to 1,500 enterprises were subjected to that kind of adjustment each year. Its impact on adjusted enterprises' turnover was - 3 % in 1992 , +5% in 1993, and again + 5 % in 1994. It is worth noting that only the length of the accounting period requires an adjustment; no correction is made to adjust the accounting period to fit the calendar year (i.e. beginning on 1 January). That is a weakness of the system, in particular in a period of growing business cycles.

(ii) Homogeneity of data

4.60. Elementary headings of the intermediate system must be identical whatever basic source has been used. It unfortunately happens that recording practices are not similar from one enterprise to the other. Adjustments are needed to recover accounts' homogeneity. In fact they concern only enterprises with 20 employees or more on which detailed data are available. The main adjustments of this type are due to taxes and subsidies.

- Differences in recording taxes on products

4.61. In the intermediate system of enterprises it has been decided to be as close as possible to business accounting uses, then to give priority to the concept of producer's price. That is not what is recommended by international standards for national accounts, which favour basic prices. The derivation of basic prices from producer's prices will be made later in the transition from the intermediate system to national accounts' central framework.

4.62. Producer's prices include all taxes, net of subsidies, on products except the VAT. In France, all enterprises record their sales net of all invoiced VAT and their purchases net of all deductible VAT. Regarding other taxes on products, however, some are not recorded according to the common rule.

4.63. For instance, the lottery tax is not recorded by the public enterprise managing this game as part of sales and taxes on production, but directly in accounts payable. An adjustment is required: output, value added and taxes on production are increased by this tax's amount, as provided by the enterprise.

4.64. The most important excise duty in France is the tax on refined petroleum products. It is due when petroleum products are sold in the domestic market. It is paid by refineries or wholesale traders, depending on the distribution circuit. It is known that wholesale traders record this excise as part of their purchases and not as part of the taxes they pay on their sales. Here again an adjustment is required: the tax is deducted from purchases and added to taxes on production.

- Differences in recording subsidies on products

4.65. Some subsidies on products are recorded in sales by their beneficiaries. It happens for instance with public transport enterprises. They get subsidies from the Government in compensation for not increasing their prices. They record these subsidies as part of their sales, and not as subsidies. The adjustment here consists in deducting such subsidies from transport companies' turnover and adding them to subsidies received on products. The corresponding amounts are provided by the enterprises.

(b) Enterprises with fewer than 20 employees

(i) Lump-sum taxation system

4.66. As explained above this taxation system applies to very small enterprises. Only few data are available. In fact, the taxable profit is a lump-sum set by tax officials on the basis of data provided by the enterprise. In addition, the tax administration forwards to statisticians the small set of data required for deciding VAT and other taxes on sales due by the enterprise. In total, statisticians can use the following information :

- Turnover (excluding VAT);
- Tax-estimated profit;
- Purchases of materials;
- Invoiced VAT.

4.67. Statisticians then have to estimate a number of items in the intermediate system. The method used is very simple: each missing heading (listed below) is derived by applying the ratio of the same heading over one of the variables listed above within the same economic activity. The ratios are derived from the data observed in enterprises belonging to the actual simplified profits taxation system. Estimated headings are:

- Number of employees;
- Change in inventories of finished goods and work-in-progress;
- Subsidies;
- Interest received;
- Other income;
- Purchases (other than materials);
- Taxes on production;
- Social contributions;
- Depreciation;
- Interest paid;
- Total change in inventories;
- Investment in tangible assets;
- Other expenses.

(ii) Adjustment for missing enterprises with fewer than 20 employees

4.68. The enterprises' register SIRENE is used for exhaustive coverage of non-financial enterprises with fewer than 20 employees. Adjustments are made separately for corporations and unincorporated enterprises, and for each of the 118 economic activities used in national accounts.

4.69. The first stage consists in estimating the number of enterprises incorporated in the intermediate system:

- Enterprises in the unified system of enterprises statistics;

- Enterprises in tax files related to the non-commercial profits taxation system; and
- Other enterprises (tax files of agricultural profits, public social housing entities, etc.).

4.70. This number is then compared with the number of enterprises registered in SIRENE for the same economic activities. For each activity and legal status, this comparison gives the number of missing enterprises.

4.71. The last stage consists in weighting enterprises with their sales. Missing enterprises are assumed to be small ones from the industrial and commercial profits taxation system (see para. 4.30 above). Their number is therefore multiplied by the average turnover of small industrial and commercial enterprises with the same legal status and in the same economic activity. That gives an estimate of the turnover of missing enterprises, which will be used as leading variable to derive current income and outlay of missing enterprises. It has to be noted that this adjustment is made only to small enterprises' data. Medium-to-large enterprises are assumed to be exhaustively covered by the intermediate system. Given that the estimation is on an individual basis in this category, the above assumption is solid. Table 4. 2 below gives some results for France in recent years.

Table 4. 2. Intermediate system of enterprises: Statistical adjustment in industrial and commercial profits for small missing units (i.e. with fewer than 20 employees)

	Year	Number of missing enterprises	Estimated turnover of missing enterprises (million FF)	Percent of adjustment to turnover of small industrial and commercial enterprises	Percent of adjustment to turnover of all industrial and commercial enterprises
Unincorporated enterprises	1992	128,719	154,447	20.3	15.7
	1993	72,706	104,791	14.1	10.8
	1994	55,682	89,790	12.1	9.4
Corporations	1992	183,541	511,297	26.5	4.5
	1993	149,376	378,374	19.3	3.4
	1994	141,627	319,171	16.9	3.3
All non- financial enterprises	1992	312,260	665,744	24.5	5.4
	1993	222,082	483,165	17.8	4.0
	1994	197,309	408,961	15.6	3.9

3. Intermediate system of enterprises - Non-commercial profits

4.72. The services activities covered by this taxation system are varied: independent doctors, dentists and other medical professionals, lawyers, chartered accountants, authors, performing artists, etc.

4.73. Two statement systems have been described in B1(a) above: the Acontrolled statement@ system and the Aadministrative estimate@ system. Individual data are forwarded by the tax administration to statisticians according to a classification of occupations which is much more detailed than the general activity classification.

4.74. In the controlled statement system, the accounting data attached to the profit statement are sufficiently detailed to derive the categories of the intermediate system. However, some difficulties remain. Receipts and expenses are recorded on a cash basis instead of the accrual basis required by national accounts. Sales are often recorded with all taxes included, which makes it necessary to deduct an estimated VAT from sales.

4.75. The administrative estimate system provides very few data, as in the lump-sum taxation system of industrial and commercial profits. The same approach is adopted: starting from those few data and their equivalent in the controlled statement system, the complete structure of an income and outlay account is reconstituted.

4. Intermediate system of enterprises - Agricultural profits

4.76. The agricultural profits taxation system covers agriculture, forestry and fishing. The tax administration forwards to INSEE actual agricultural profit statements, both regular and simplified. Data on the agricultural lump-sum taxation system are not made available to INSEE.

4.77. The agricultural simplified system covers enterprises with an annual turnover from 0.5 to 1.8 million FF. The agricultural regular system covers enterprises with an annual turnover above 1.8 million FF. It has to be noted that some agricultural enterprises below the threshold of 0.5 million FF are opting for the actual profit system. In tax administration=s files forwarded to INSEE in the early 1990s about 200,000 enterprises were present, representing about 50 % of total agricultural value added.

5. Intermediate system of enterprises - Other non-financial entities

4.78. As explained above, the intermediate system of enterprises includes more than enterprises in tax administration=s files. It encompasses all other productive non-financial entities on which individual accounting data can be collected. This category is very heterogeneous. For each of its components, appropriate sources are used in order to replace tax data. The main ones are listed below:

- Small agro-food cooperative enterprises: annual enterprise surveys, conducted by the Ministry of Agriculture;

- Social housing bodies: individual accounts, collected either by the National Federation of Social Housing or by the Ministry of Housing;

- Local public entities producing market services like distribution of energy, collection, purification and distribution of water, passenger transport: individual accounts, collected by the Ministry of Finance.

4.79. Compared with other parts of the intermediate system of enterprises, this category is marginal. However it can have a significant weight in some specific activities. Furthermore, it expands the coverage of an information system that plays a prominent role in the organization and homogenization of basic data on non-financial market activities. The broader the intermediate system of enterprises is, the better the national accountants can master the bridge between micro- and macro-accounting data.

D. From intermediate system to national accounts' central framework

1. Basic principles

4.80. In the central framework of national accounts, the accounts of institutional sectors are consistent with the description of productive areas through the accounting equation :

> Value added of institutional sectors (at basic prices) = Gross operating surplus and mixed income of institutional sectors + Compensation of employees + Taxes less subsidies on production (except on products)

4.81. With respect to non-financial corporations and unincorporated enterprises, their contribution to this equation implies that there are estimates of the gross operating surplus, the mixed income, and the distributive transactions listed above for them. Furthermore, these estimates must be consistent with those included in the other parts of the global framework of accounts.

4.82. The first requirement is met by the intermediate system of enterprises. The balance of the generation of income account presented in C1(b) above guarantees that intermediate system's data are bound by the same equation as in the national accounts' framework :

Gross value added = Gross operating surplus + Wages and social charges + Taxes and duties - Subsidies.

4.83. Regarding the second requirement, it has to be kept in mind that the balance of total uses and total resources of every distributive transaction is not automatically guaranteed. It has to be built. Depending on the type of microeconomic units concerned, the classification of transactions, time of recording, valuation rules may differ. The compliance with national accounts standards, the expected reliability of data, sometimes the mere availability of data lead to a hierarchy of sources. One sector or sub-sector will be privileged with respect to all its transactions. Another will receive a high priority with respect to only some specific transactions.

4.84. In the French case, these priorities have a direct impact on the process of transition from the intermediate system of enterprises to the central framework of national accounts. The basic priorities are:

1. Prevalence of data from the State's budget (after adjustment of time of recording from cash to accrual basis);

2. Prevalence of data from other government units;

3. Strong linkage between the current external balance of the accounts for the rest of the world and the balance of the current transactions account in the balance of payments;

4. Prevalence of characteristic transactions of financial intermediaries (interest) and insurance corporations (net insurance premiums and insurance claims).

4.85. Thus, subsidies received by all producers must equal subsidies paid by government and the European Union institutions. Employers' actual social contributions paid by all producers must equal the total received by government.

4.86. Some data from the intermediate system will therefore be altered. The rule is to record at the same time the alteration and its counterpart in the intermediate system, in order to preserve the initial balance. For instance, part of in-kind salaries is recorded by enterprises as a purchase of goods or services. Wages from the intermediate system are increased by the amount of salaries in kind; the counterpart is a decrease in purchases of goods and services, then an increase in gross value added.

4.87. For the time being, the transition from the intermediate system of enterprises to the central framework of national accounts in France is conducted separately for non-financial corporations and non-financial unincorporated enterprises, and at the most detailed level of the activity classification used in national accounts (118 headings).[61]

2. Concrete adjustments

4.88. Two main kinds of adjustments are made on data of the intermediate system of enterprises.

4.89. The first ones basically consist in changing elementary transactions for conceptual reasons. They are grouped into three categories:

- Adjustments estimated from enterprises' accounts;
- Adjustments estimated from detailed supply and use accounts;
- Adjustments estimated from distributive transactions accounts.

4.90. The second kind of adjustments takes account of the under-reporting of activity by enterprises.

(a) Adjustments estimated from enterprises' individual accounts

4.91. *Wages and salaries in kind:* Enterprises generally record as purchases of goods or services the salaries provided in kind to their employees (housing, transportation, etc.). Salaries are to be increased to include salaries in kind. So is value added.

4.92. *Discounts:* Recorded as financial charges (respectively financial income) in enterprises' accounts, they are recorded as price cuts in national accounts. Gross operating surplus or mixed income is increased or decreased, depending on the balance of discounts got and granted.

4.93. *Transfers to non-profit institutions serving households:* Recorded within various purchases of goods or services, these transfers are recorded as secondary distribution of income in national accounts. They are estimated as a fixed percentage of turnover.

[61] This classification is totally consistent with the European Classification of Economic Activities (NACE Rev.1). It makes it possible to reconstitute all other more aggregated levels of NACE Rev.1.

(b) Adjustments estimated from detailed supply and use accounts

4.94. *Engineering costs*: A part of these costs is recorded by enterprises in their current purchases instead of investments (gross capital formation). It is estimated on the basis of the detail of supply of the corresponding services. It is assumed that engineering enterprises= services are recorded by their clients as investments while the same services provided as a secondary output by other enterprises are recorded by their clients as current purchases. The adjustment consists in increasing the value added and the operating surplus.

4.95. *Establishment costs*: Taxes resulting from incorporation or an increase in capital stock are recorded in intermediate consumption at purchaser=s prices in national accounts while business accounts classify them as assets in the balance sheet. The amount of such costs is estimated on the basis of the output of lawyers. Value added and operating surplus are both adjusted downwards by this amount.

(c) Adjustments estimated from distributive transactions accounts

4.96. This type of adjustment is based on information from other institutional sectors and results from balancing total uses and total resources of each distributive transaction. Many adjustments listed below result from the priority given to information from government accounts. Information from financial institutions or from the balance of payments (through the rest-of-the-world accounts) can also be a source of adjustments to the intermediate system of enterprises.

4.97. *Rents on land:* When paid by non-agricultural enterprises, rents on land in general go to local authorities, for instance when restaurants or cafés set up tables on sidewalks. They are not separated from purchases of commodities in the intermediate system of enterprises while they are part of uses of operating surplus or mixed income in national accounts= central framework. The corresponding adjustment is estimated from local authorities= individual accounts; it consists in increasing both value added and operating surplus (or mixed income).

4.98. *Financial leasing:* Non-financial enterprises record rents on financial leasing contracts in their purchases of services. They do not record the corresponding machines or buildings in their assets. Detailed information is available in financial institutions= individual accounts provided by the Bank of France and an annual survey conducted by INSEE. Value added and operating surplus (or mixed income) are increased by the amount of rents.

4.99. *Current taxes on income, wealth, etc.:* Except for income taxes and taxes on profits of corporations, all other taxes are recorded by enterprises in the same category of current expenses. Given the level of detail available in the intermediate system, taxes on production cannot be separated from current taxes on income and wealth. The latter are available in general government=s accounts. They are deducted from ATaxes and duties@ and added to AOperating surplus@ in the intermediate system.

4.100. *Cancellation of tax debts:* The detailed accounts of general government give the value of taxes due by enterprises but cancelled by the central or local government. It has to be recorded as capital transfers. The corresponding adjustment consists in decreasing the taxes and increasing operating surplus in the intermediate system.

4.101. *Residual discrepancy on taxes:* After all conceptual adjustments and taking account of taxes recorded as uses of financial corporations, non-profit institutions serving households, general government and the rest of the world, there is still a discrepancy between taxes recorded as resources of general government and the

rest of the world coming from non-financial enterprises on the one hand, and taxes recorded as uses of non-financial enterprises on the other hand. This residual discrepancy is imputed to intermediate consumption. The reason is that the concept of taxes is narrower in national accounts than in business accounts. Payments to training or research centres managed by enterprises: guilds, for instance, are generally recorded as taxes in business accounts but as intermediate consumption in national accounts. Therefore, the residual discrepancy coming out of the tax account is imputed as a decrease in taxes in the intermediate system, with a decrease in value added as counterpart.

4.102. *Net insurance premiums:* Individual accounts of insurance corporations are made available to national accountants by the Insurance Control Commission. They contain enough information to allocate insurance services and net insurance premiums to actual users. In business accounts, gross insurance premiums are recorded as purchase of services. In national accounts, gross premiums are divided into insurance services and net insurance premiums. The value of net insurance premiums is then added to both value added and operating surplus (or mixed income).

4.103. *Pre-payment of insurance premiums:* Business accounts record premiums paid in the year. National accounts record premiums earned by insurance companies for the year. The difference is a change in financial assets labelled Apre-payment of insurance premiums@. As explained above, with information from the Insurance Control Commission all items needed by national accounts can be computed. In particular, the adjustment from paid to earned premiums is made available by sector and imputed on value added and operating surplus (or mixed income).

4.104. For the years 1992 to 1994, the three categories of adjustments listed above have, in total, a net impact on non-financial enterprises: value added of about + 2 %.

(d) Adjustment for under-reporting: the underground economy

4.105. In building the intermediate system of enterprises, tax data have already been adjusted for the absence of enterprises in the taxation system of industrial and commercial profits (see C 2(a)(i) and (b)(ii) above). Another type of adjustments is made on the value added of non-financial enterprises by taking account of under-reporting of activity by registered enterprises (tax fraud and evasion) as well as unreported activity of unregistered enterprises (moonlighting economy). They are necessary, of course, because the main source of information is linked to tax statements.[62]

4.106. *Adjustments for tax fraud and evasion:* The adjustment coefficients for output and value added are calculated on the basis of the statistical processing of the checks carried out by the tax administration. The tax administration forwards to statisticians anonymous files of the enterprises checked during four checking campaigns, each campaign covering several years. For each enterprise, its statement of position has been compared before and after the audit, with the reason for any adjustment. Only upward adjustments resulting from the concealment or omission of receipts were taken in account. The average rate of adjustment was estimated according to the legal status, size, and main economic activity of enterprises. In total, that kind of adjustment resulted in a 3% increase of non-financial enterprises: value added.

[62]The link between the fiscal nature of basic sources and the under-reporting cannot be overstated. It is quite possible, as is revealed in the French situation by systematic checks, that the turnover reported by enterprises in statistical questionnaires is remarkably identical to the turnover reported in their tax statements.

4.107. *Moonlighting economy:* Moonlighting economy is the activity of enterprises of which tax and social administrations and formal business associations are unaware. Adjustments for it are estimated from external data at the cost of simplifying assumptions. First, this activity is not incorporated in adjustments for absence used in preparing the intermediate system of enterprises (see part C above), or in the adjustments for tax fraud and evasion. Second, this activity generates only entrepreneurial income and every worker involved, whether or not an employee, is regarded here as an individual entrepreneur. This means that, in terms of national accounts, only output, value added and mixed income will be upwardly adjusted. In total, that kind of adjustment resulted in an increase of about 1.5 % of non-financial enterprises: value added.

3. Before the final synthesis

4.108. At this stage, data on non-financial enterprises have got all possible adjustments before they are subjected to the commodity flow analysis which is based on the supply-and-use tables. For the purpose of this synthesis, adjusted data on non-financial enterprises will be merged with data on accounts of financial corporations, general government, non-profit institutions serving households, and households: productive activities not covered by data on non-financial unincorporated enterprises described above.

4.109. All adjustments performed on data from the intermediate system of enterprises bring them into compliance with accounting rules of national accounts: central framework. Only one difference remains. Inventories are not valued in business accounts as in national accounts. In business accounts, the change in inventories includes nominal holding gains on goods stored in the enterprise (see C 1(a) above). It is not possible to make the appropriate adjustments because data from the intermediate system do not include the detail of inventories by group of commodities.

4.110. As noted in part C above, this discrepancy has little impact on figures as long as prices of goods stored are more or less stable. That is largely the case in France now but was not in recent decades and may not be in the future. Even in the absence of inflation, i.e. with an average growth in prices close to zero, some goods can have specific price rises, for instance because of international markets. Therefore, this conceptual discrepancy in accounting rules between the intermediate system and the central framework of national accounts cannot be ignored.

4.111. The solution currently used in completing the synthesis with detailed goods and services approaches is to use output not held in stocks and replace changes in inventories from the intermediate system of enterprises by changes in inventories resulting from commodity flow analysis and supply-and-use table balancing. That is equivalent to an overall adjustment in total changes in inventories from the intermediate system of enterprises.

E. Conclusion

4.112. This presentation has deliberately focused on the current use of business accounts for national accounts purposes in France. It is obvious that two statistical tools play a crucial role in this process: a business register, SIRENE, and a database, the Unified System of Enterprises Statistics. The business register gives a permanently updated view of the universe of reference for non-financial enterprises. The database provides national accounts compilers with individual data organized according to a common accounting structure.

4.113. One remark can be made at this stage. The so-called tax statistics are used only as a medium for collecting data without adding to the statistical burden of enterprises. Data collected through this channel

have little to do with taxable income as such. They are standard accounts attached to the taxable income statement. They could be collected as well from enterprises themselves through censuses or surveys.[63]

4.114. In addition to these two crucial statistical tools, a conceptual tool has been created: the intermediate system of enterprises. In fact the whole conceptual framework of the intermediate system goes far beyond the two accounts presented in part C above, namely the production and generation-of-income accounts. From production account to the balance sheet and its associated "flows of funds table", the whole intermediate system of enterprises purports to describe all assets and transactions of enterprises.

4.115. As such, the whole intermediate system of enterprises is a very useful tool for micro-macro-analysis of non-financial enterprises' behaviour. However, it requires a comprehensive set of individual accounting data which are not available for all non-financial enterprises in the current Unified System of Enterprises Statistics. Only enterprises depending on the taxation system called "Industrial and commercial profits/actual regular profit system" meet these conditions (see B 1(a) above). They are medium/large non-financial corporations. Their accounts according to the framework of the whole intermediate system have been compiled and published up to recent years. [64]

4.116. An expanded use of intermediate-system accounts for compiling enterprises' national accounts would be very useful. It would help to ensure a good coherence between non-financial and financial accounts, between flows and balance-sheet accounts. Some experiments were made in the past, and again recently.[65] That would be a promising development.

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[63] They actually are collected also as part of the information gathered through annual surveys of enterprises, which helps in merging tax statistics and those surveys within the Unified System of Enterprises Statistics.

[64] "Tableaux d'Analyse Financière des Sociétés en 1992", Marie-Noëlle Suin, *INSEE-Résultats No 485*, INSEE, Paris, August 1996. For the years 1990 and 1991, see *INSEE-Résultats No 411*, September 1995, and *No. 458*, April 1996.

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V. USE OF BUSINESS ACCOUNTS IN THE COMPILATION OF UNITED STATES NATIONAL ECONOMIC ACCOUNTS

Robert P. Parker[66]
Bureau of Economic Analysis
United States Department of Commerce

5.1 Business accounts consist primarily of regularly produced company- or enterprise-level accounting data prepared by private firms. The two most commonly produced types of business accounting data are (a) data prepared in compliance with government tax accounting rules and (b) data prepared following private financial statement accounting principles. Extensive use is made of both types of accounts in the preparation of the United States national income and product accounts (NIPA) by the Bureau of Economic Analysis (BEA) and in the preparation of the United States balance sheets by the Board of Governors of the Federal Reserve Board (FRB).

5.2 This chapter describes the types of business accounts available in the United States, presents the major source data used to prepare both of the components of the national economic accounts (Appendixes 1 and 2), summarizes the use of business accounts as source data, and discusses issues related to the use of these data. The last section describes future work in improving the quality of the United States economic accounts that relate to these business accounts.

5.3 The material presented here reflects the national accounts definitions and detail presented by BEA, which are not always consistent with those of the 1993 System of National Accounts. To facilitate converting from the NIPA to the SNA, major differences are noted in the text. In addition, a short glossary of NIPA and 1993 SNA terms is shown in appendix 1, and differences in the sectoral classification are discussed in appendix 3.

A. Business accounts in the United States

1. Tax return information

5.4 In the United States, all private companies, ranging from sole proprietorships with no paid employees through partnerships to large corporations, are required to file annual income tax returns. All of these returns include a statement of income and expenses. Corporations also report a balance sheet, generally based on financial statement accounting guidelines. For corporations, consolidation is limited to subsidiaries owned 80 percent or more, but the decision to consolidate and which subsidiaries to consolidate is left to the discretion of the controlling corporation.

5.6 For various tax administration and statistical purposes, annual tabulations of the items reported on the major tax returns - corporate, sole proprietorships, and partnerships - are prepared based on a statistically

[66]Chief Statistician. The views expressed in this chapter do not necessarily reflect the official position of the Bureau of Economic Analysis. Helen Stone Tice prepared the section on balance sheets.

edited sample. (These publications are the ?Statistics of Income? reports published by the Internal Revenue Service, United States Department of Treasury.) The data are tabulated by industry and other characteristics. The industry codes assigned to each return are usually the codes assigned by the reporting firm.

5.7 Although most tax return information relates to companies, two other types of tax return information are available. Managers of private pension plans are required to file annual reports, and almost all employers are required to file employment tax reports, which include the number of employees and their wages and salaries. One of these reports related to unemployment insurance provides data at the establishment level.

5.8 Tax return information also plays an important role in the statistical programmes of the Bureau of the Census. Tax return records are made available to develop and update its business registers and to construct census forms for small businesses.

2. Financial accounting information

5.9 The financial accounting guidelines that apply to publicly owned companies require them to prepare annual reports consisting of a full set of accounts, including balance sheets, and also to prepare ?interim? quarterly statements. In addition, there are privately prepared tabulations of these reports, although anyone can purchase in electronic form a file of individual reports from which some tabulations can be prepared. In addition to reports released by publicly owned companies, government regulatory agencies and statistical agencies collect data that are linked directly to these financial accounts. Companies subject to government regulation, like banks and airlines, are required to file such reports, with some variations; most of the regulatory agencies prepare tabulations of these reports. (These tabulations seldom reflect all activities in an industry, because usually not all firms in an industry are covered by these reporting requirements.) In a limited number of cases, statistical agencies collect and tabulate similar information, but for unregulated industries or for specific items, such as expenditures for new plant and equipment.

B. Preparation of the national income and product accounts (NIPA)

5.10 In the United States, the most accurate and timely estimates of gross domestic product (GDP) are prepared as the sum of final expenditures - personal consumption expenditures (the final expenditures of households and non-profit institutions serving households), gross private domestic investment (gross capital formation excluding government), net exports of goods and services, and government consumption expenditures and gross investment. As discussed below, BEA considers these expenditure-based estimates to be the most timely and accurate. In addition, they provide integrated supply-and-use and expenditure estimates, and can be converted readily to real estimates.

5.11 The GDP can be measured in two additional and equivalent ways: (a) as the sum of all the incomes earned in production, or gross domestic income (GDI), and (b) as the sum of gross value added - gross output minus intermediate consumption - of all resident producer units, grouped by industry, or gross product originating (GPO) by industry. Although in theory the sum of GPO from all industries provides an independent measure, in practice the current-dollar GPO estimates are measured as the sum of the components of GDI distributed by industry. Consequently, only the estimates of the SNA concepts of GDP and gross national income (GNI) are discussed below.

5.12 The GDP, as the sum of expenditures (final uses of goods and services), is estimated primarily from statistical surveys of establishments or products and from government budgetary, administrative, and regulatory data. As described below, the benchmark expenditure estimates of GDP are based largely on

detailed input-output accounts prepared using industry and product data from statistical reports, prepared every five years. Annual and quarterly expenditure estimates are prepared by extrapolating and interpolating the input-output benchmarks using establishment industry data.

5.13 The GDI, which is based largely on tax return information, provides an alternative measure of the GDP. It is the sum of the income components of gross value added - compensation of employees, taxes less subsidies on production, operating surplus, and consumption of fixed capital. In theory, the GDI should equal the GDP. In practice, the two estimates differ because their components are estimated using largely independent and less-than-perfect source data. (In the NIPA, the difference between the GDP and GDI is called the statistical discrepancy; it is recorded as an income component that reconciles them.)

5.14 The BEA views the GDP as a more reliable measure of output than the GDI, because it considers the source data underlying the estimates of GDP to be more accurate. For example, most of the annual source data used to estimate the GDP are based on complete enumerations (such as the federal Government=s budget data), or are regularly adjusted to complete enumerations (such as the quinquennial economic censuses and census of Governments). In addition, all the expenditure components of GDP are revised every five years to reflect the BEA's benchmark input-output accounts, which are prepared within an internally consistent framework that tracks the input and output flows in the economy. For the GDI, only the annual tabulations of employment tax returns and the federal Government=s budget data are complete enumerations, and only farm proprietors' income and state and local government=s budget data are regularly adjusted to complete enumerations. For most of the remaining components of the GDI, the annual source data are tabulations of samples of income tax returns.

5.15 The BEA also views the GDP as the more reliable estimate because more of the critical annual source data are available on a timely basis for it than for the GDI. For example, for this year's (1997) annual revision, preliminary 1996 results and final 1995 results were available for more of the GDP source data; among the major source data used for the GDI, final 1995 tabulations of corporate income tax returns were not available.

5.16 In summary, business reports play a very small role in the preparation of the estimates of GDP primarily because they do not provide the type of product detail necessary to compile estimates of real GDP or input data to compile input-output estimates, and they are available only with a considerable lag. The published gross product of the business sector is derived as a residual by subtracting the sector production accounts prepared for the government sector and the households and institutions sector. Separate estimates of the gross product of financial and non-financial corporations are prepared as the sum of the components of gross value added. (Appendix 3 contains additional details.)

C. Use of business accounts

1. NIPA

5.17 The data used to prepare national accounts come from a variety of sources, as shown in appendix 1. Most of these sources fit into one of the following major categories: tabulations of tax return information; government regulatory and administrative reports; establishment censuses and related government annual and monthly surveys; other government censuses and related surveys, other government surveys, and trade association and other private sources.

5.18 Among these categories, business accounts are the underlying source for most tax return information, regulatory reports, and a few government and private surveys. There are several important types of tax return

tabulations. First, quarterly tabulations by establishment of wages and salaries of employees covered by unemployment insurance are used to estimate the level of most wages and salaries and to extrapolate expenses of various non-profit institutions serving households (personal consumption expenditures). Second, annual tabulations by enterprise of income tax returns filed by corporations, partnerships, and sole proprietorships are used to estimate the following: non-farm proprietors income; corporate profits; net interest; capital consumption allowances (depreciation at historical cost); parts of business transfer payments; dividends; and inventories of firms classified in construction, communications, transportation, finance, insurance, real estate, and services. Third, annual tabulations by enterprise of most pension plans for private employees are used to estimate the private pension plan part of compensation of employees.

5.19 Business accounts also are the underlying source for many of the tabulations, by enterprise, for regulated industries, such as banking, insurance, communications, and transportation. Some of the tabulations are prepared by the government agency responsible for the regulation; others are tabulated by private organizations. The most important of these reports are those covering financial institutions. For financial intermediaries, in addition to extrapolating tax-return-based estimates of corporate profits and net interest, they also are the basis for the estimates of imputed financial service charges (personal consumption expenditures and net interest). For securities brokers, they are used to estimate consumer payments of brokerage fees and commissions (personal consumption expenditures). Among the most important of the private tabulations are those for insurance carriers and hospitals, which also are used to estimate personal consumption expenditures.

5.20 There are very few government statistical surveys of enterprise data, and two of them are used to prepare the estimates of the national accounts. The first one is the Quarterly Financial Report, which covers medium-to-large corporations in mining, manufacturing, and trade; it is used primarily to extrapolate from, and interpolate between the tabulations of corporate income tax returns. The second one is the Annual Capital Expenditures Survey, which is a new annual survey of enterprise capital expenditures; at present, it is used only to estimate construction of industrial buildings.

2. Balance sheets

5.21 Appendix 2 shows the major source data derived from business accounts that are used by the FRB to prepare balance sheets for the United States of America and for a variety of sectors (although many of the source data used to prepare these balance sheets are the same as those used to prepare the NIPA, they are not consistent with the NIPA; work has started to develop an integrated set of accounts.) Each of the sources used by the FRB has been classified as to whether it is a statistical report, a trade source, a regulatory source, or a tabulation of tax returns. Tabulations of tax returns, which are considered to be business accounts, are used extensively for the asset detail for non-financial corporate and non-corporate business. Some of the regulatory and statistical reports are taken from business accounts, including the Quarterly Financial Report and the *Focus* report. However, because many corporations engage in both financial and non-financial activities, when source data cannot be broken down by industry, the data on non-financial corporations include an unknown amount of financial activity.

D. Issues in using business accounts

5.22 The use of business accounts is important in the preparation of national economic accounts in several respects. First, business accounts can provide national income accountants with information on items that are difficult to collect at the establishment level, including the components of the gross operating surplus, inventory change and fixed capital formation, and assets and liabilities. Second, they provide statistical agencies with control totals that, with the few exceptions noted in the next section, provide complete and

unduplicated information on establishments. Third, they can provide for unique types of analytically useful information. For example, the BEA collects data on the costs incurred and incomes earned by the United States affiliates of foreign companies and by the foreign affiliates of United States companies. From the information collected on these statistical reports, gross product (i.e. gross value added at producer prices in the SNA terminology) of these firms can be estimated, although the resulting estimates are not completely consistent with the national accounts estimates; they differ because the survey data cannot easily be adjusted to remove inventory profits (holding gains) and subsidies or to add certain transfer payments. (A detailed discussion of the procedures used by Statistics Canada to eliminate holding gains from the change in inventories was provided in chapter III. These procedures are similar to those used in the United States.) Finally, the existence of business accounts makes it possible for government to reduce respondent reporting burden and to reduce the costs to businesses of complying with data reporting requirements.

5.23 The quality of national economic accounts benefits from business accounts. However, their usefulness in compiling United States national economic accounts is limited because of issues relating to availability, coverage, missing information, statistical quality, conceptual adjustments, and timeliness.

5.24 *Availability*: In the United States, universe tabulations of statistically edited tax return information are prepared by the Internal Revenue Service and published in the *Statistics of Income* report series. For financial accounting information, there are no universe tabulations, although tabulations for certain industries are prepared by statistical and regulatory agencies and by private trade associations. The major difference in availability between the two sets of business accounts is that quarterly accounts are only available from financial accounting data.

5.25 *Coverage*: Information in both tax returns and financial statements typically consolidates worldwide activities. Both types of information eliminate, through consolidation, internal company transactions. For example, a firm producing steel would not report the iron ore extracted from a company-operated mine as one of its products. Neither tax return nor financial statement information is available for all companies. In addition, tax return information may exclude all very small businesses, or may require them to provide only minimal information; this is also the case for non-profit institutions and for some government enterprises.

5.26 *Missing information*: There is little or no information on the types of products sold or on the types of intermediate consumption available from business accounting statements. This limitation is critical because this type of information is needed to prepare both real estimates and to prepare input-output accounts and gross product by industry. In addition, business accounts provide little information on industry and have little geographic detail.

5.27 *Statistical quality*: There are significant problems with the quality of both tax return information and financial accounting data. As previously noted, the tabulations of tax returns used to prepare the NIPA are based on a statistically edited sample. In its many years of using these tabulations, the BEA has found several limitations. First, the sample size does not result in uniformly high quality estimates for each industry, because large corporations, all of which are included in the sample, tend to be concentrated in certain industries. Second, because the major interest of the Department of Treasury is taxable income, the detailed types of incomes and expenses are frequently not separately reported on the return, making the use of this detail to adjust the income to a national accounting concept less reliable than desired. Third, the balance sheet detail reported on the tax return frequently is based on financial accounting concepts, resulting in inconsistencies between depreciation expenses and accumulated depreciation. Finally, the tabulations cover accounting periods from 1 July of year t to 30 June of year t+1. In periods of rapid economic growth or of recessions, the calendar year estimates based on a range of accounting periods may not be very reliable.

5.28 The financial accounting data, to the extent they are available, also have significant quality problems. First, financial accounting standards tend to be more flexible on how companies use them. For example, unlike tax return information, there are no guidelines to determine the service lives of fixed assets used in calculating depreciation. Second, not all transactions are recorded the same way by both parties. For example, the standards for finance leasing can result in the lessee using a different imputed interest rate from that used by the lessor. Another problem is that quarterly statements are considered to be interim and are not governed by the same standards as are the annual reports. As a result, any revisions to, or errors in the quarterly reports for the first three quarters of the accounting year are entered into the fourth quarter statement to make the sum of the four quarterly statements equal the annual statement. This practice, of course, reduces the usefulness of the information available in the quarterly reports.

5.29 *Conceptual adjustments*: Both income tax information and financial statement accounts require adjustments to convert them to the concepts underlying the national accounts. Appendix 4, which was prepared as part of the 1997 regular annual revision of the United States NIPA, shows the adjustments needed to convert corporate profits as reported on income tax returns to the United States national accounts measure. For 1994, the largest adjustments include the addition of an estimate of unreported income, the addition of an amount equal to the amount corporations are allowed to deduct for bad debt expense, the subtractions of interest payments of regulated investment companies (mainly money-market and mutual funds) because such payments are not reported as expenses on the tax returns, and the subtraction of capital gains (net of losses). To use financial accounting information, similar adjustments would be necessary. Two adjustments that are unique to the tax return tabulations are the addition of tax-exempt interest income and the subtraction of the entire amount of expenses for meals and entertainment.

5.30 Appendix 4 does not show the adjustments needed to convert depreciation and inventory withdrawals as reported in both tax information or financial statement accounts to a replacement-cost basis. In the NIPA, these adjustments to tax-return-based profits are presented as parts of the corporate profits component of GDP, corporate profits with inventory valuation and capital consumption adjustments.

5.31 *Timeliness*: Appendix 4 shows that complete and final tabulations are available with a roughly two-year lag. Annual financial accounting data, derived as the sum of quarterly estimates, can be compiled approximately four months after the end of the calendar year.

E. Improving the use of business accounts

5.32 Despite their limitations, national accountants should continue to consider the use of business accounts as a way to improve the quality of national accounts. For the United States, there are two efforts under way in this area, both being conducted by the Census Bureau.

5.33 The first effort is the implementation of an annual survey of capital expenditures that provides a representative sample of all businesses, regardless of size, and that incorporates expenditures by new firms in the period the expenditures occurred. When fully operational, the BEA anticipates that the results of this survey will provide a control total for private domestic fixed investment; detail by type of asset will continue to be based largely on commodity-flow method estimates. The BEA also hopes that this survey will be expanded to collect data on purchases of software and on own-account production of software needed to implement the 1993 System of National Accounts.

5.34 The second effort is the periodic collection of purchased services on an enterprise basis. This survey will provide control totals for use in the preparation of input-output accounts which, in the United States,

provide benchmarks for the expenditure components of the GDP and information for the gross product by industry series. Three major unresolved issues with this survey relate to the definitions of the services, the reporting of internal company transactions, and, for multi-establishment companies, the allocation of the purchases among the establishments of the company. For the first issue, product definitions for national accounts purposes are not always consistent with similar definitions underlying business accounts. For example, separate data on purchases of legal services may not be readily available because firms may allocate such purchases to labour costs or to expenditure categories such as advertising. The second issue is how to collect data on captive services, particularly when such services are not provided by a separate establishment. For example, most large firms have their own economists who provide various analytical services to all parts of the company. Some of these firms actually require these economists to Asell@ their services within the company, and it is not clear whether national accounts data should show the production and consumption of such services. Finally, collection of data at the company level requires the conversion of such data to an establishment basis. The United States has used employment matrices to allocate other items from business accounts, such as corporate profits (net operating surplus) as explained above. However, employment is not necessarily the correct distributor, so additional research is needed to identify and collect information on the best distributor.

Appendix 1

UNITED STATES NATIONAL INCOME AND PRODUCT ACCOUNTS (NIPA): SUMMARY METHODOLOGIES

1. Introduction

5.35 Table 5.1(p. 132 et seq.) identifies the principal source data and estimating methods used to prepare the product- and income-side components of current-dollar GDP. (This table appears in the September 1997 *Survey of Current Business*.) Because the United States national income and product accounts (NIPA) are not based on the 1968 or 1993 SNA, the terms used in this appendix may not be consistent with the corresponding SNA ones. For example, the NIPA product-side components of GDP are the equivalent of the SNA expenditure components of GDP, and the NIPA income-side components are the equivalent of the SNA gross value added components. Section 4 of this appendix provides additional information on NIPA and SNA equivalents.

2. Information in table 5.1

5.36 The list of the components of current-dollar GDP shown in table 5.1 starts with the components on the product (expenditures) side and proceeds to those on the income side. The subcomponents, with their dollar values for 1996, are grouped according to the methodology used to prepare them.

5.37 The column in table 5.1 for annual estimates covers the revision cycle for those estimates and notes the major differences in methodology as the estimates move through the three annual revisions to a benchmark revision (see note 1, p. 130). For example, for "most goods" in personal consumption expenditures (the very first item on the product side), the table indicates one methodology for benchmark years and another for all other years.

5.38 The column for the quarterly estimates covers only the advance estimate for the current quarter - that is, the estimate prepared about a month following the end of the quarter. That one estimate, rather than all three of the current quarterly estimates, is described because more attention focuses on the "first look" at the quarter. In addition, the column lists only the source data and methods; it does not indicate how many months of source data are available or whether the data are subject to revision by the source agency. Additional information on monthly source data used for the advance estimate is available on line from the Department of Commerce's Economic Bulletin Board (note 2).

5.39 The source data listed comprise a variety of economic measures, such as wages and salaries, insurance premiums, expenses, interest rates, mortgage debt, tax collections, unit sales, housing stock, and employment. For most components, the source data are "value data"; that is, they embody both the quantity and price dimensions that are required for current-dollar estimates. In these cases, the methodology indicated in table 5.1 covers the adjustment of the value data to derive estimates consistent with NIPA definitions and coverage.

5.40 For those estimates not derived from value data, the table indicates the combination of data with separate quantity and price dimensions that is used to derive the required value estimate, as well as the major adjustments needed to derive estimates consistent with NIPA definitions and coverage. On the product side, a "physical quantity times price" method is used for several components. For example, the estimate for new autos is prepared as unit sales times expenditure per auto (the average list price with options, adjusted for

transportation charges, sales tax, dealer discounts, and rebates). An "employment times earnings times hours" method and variations of a "stock of assets/liabilities times an effective interest rate" method also are used for several components.

5.41 Some of the source data shown in table 5.1 for the annual estimates are used as indicators to interpolate and extrapolate the levels established by source data that are more comprehensive, and all of the source data shown for the advance quarterly estimates are used to extrapolate the level of the preceding quarter. In addition, extrapolation and interpolation may be based on trends, as is the case when "judgmental trend" is listed in the table.

3. Estimating methods

5.42 Table 5.1 refers to four methods - commodity flow, retail control, perpetual inventory, and fiscal year analysis - used by the BEA for estimating specific components.

5.43 The "commodity-flow method" is used to obtain the value of final users' purchases of goods and services (that is, commodities) for the BEA's benchmark input-output accounts. These values serve as the benchmark for the NIPA estimates of personal consumption expenditures (PCE), of producers' durable equipment (PDE), and of the commodity detail for state and local government consumption expenditures and gross investment (note 3). For periods other than benchmark years, the method is used only for PDE, and even there it is implemented in an abbreviated form. An even more abbreviated commodity-flow method is used for current quarterly estimates of PDE.

5.44 The "retail-control method" is used to estimate over one third of the value of PCE for periods other than benchmark years. The method provides the indicator series (based on current-period retail store sales and the commodity distribution of these sales from the benchmark years) used in extrapolating and interpolating the total of "most goods" and the "control" total the PCE categories and residential PDE included in this group must amount to. The PCE categories covered by the "retail-control group" consist of all goods except autos and trucks, food furnished to employees, food and fuel produced and consumed on farms, standard clothing issued to military personnel, school lunches, and net foreign remittances (note 4).

5.45 The "perpetual-inventory" method is used to derive estimates of fixed capital stock, which in turn form the basis for the estimates of consumption of fixed capital. The perpetual-inventory method is based on investment flows and a geometric depreciation formula; it is used instead of direct measurement of the capital stock because direct measurement is seldom statistically feasible on a comprehensive basis (note 5).

5.46 The "fiscal year analysis" method provides the framework for the annual and quarterly estimates of the federal Government=s consumption expenditures and gross investment. The estimates of expenditures are prepared by programme - that is, by activity for a group of line items or for an individual line item in the budget of the United States Government. For most programmes, the fiscal year analysis begins by adjusting budget outlays for coverage and for netting and grossing differences between these outlays and NIPA expenditures. The expenditures total (as adjusted) for a programme is then classified by type of NIPA expenditure - for example, transfer payments and interest paid - with non-defense consumption expenditures and gross investment determined residually. When a fiscal year analysis is completed, the detailed array of NIPA expenditures by programme and by type of expenditure serves as a set of control totals for the quarterly estimates (note 6).

5.47 Balance of payments accounts: The source data for the foreign transactions reflected in most NIPA components - for example, net exports of goods and services and rest-of-the-world corporate profits - are the

balance of payments accounts (BOP), which are also prepared by the BEA (note 7). As noted in table 5.1, for some NIPA components, the BPA estimates are adjusted to conform to NIPA concepts and definitions (note 8). Annual estimates of these adjustments and their definitions are shown in NIPA table 4.5, which usually appears annually in the August issue of the *Survey of Current Business*.

5.48 Other information: in preparing annual estimates of several of the income-side components, the BEA adjusts the source data for various coverage and conceptual differences. For each subcomponent listed below, an annual NIPA table reconciles the value published by the source agency with the NIPA value published by the BEA and identifies the BEA adjustments. The following is a list of the subcomponents and their corresponding reconciliation tables: for wages and salaries, table 8.25; for farm proprietors' income, table 8.22; for non-farm proprietors' income, table 8.21; for corporate profits, table 8.23; for net interest, table 8.24; and for consumption of fixed capital, table 8.20. The most recent data for corporate profits as of this writing appear in appendix 4 of this chapter. All these NIPA reconciliation tables usually appear annually in the September issue of the *Survey of Current Business*.

4. NIPA terms and SNA equivalents

5.49 The NIPA components of the product side of GDP are equivalent to the SNA expenditure components of GDP. Personal consumption expenditures consist of SNA household final consumption expenditures and final consumption expenditures of non-profit institutions serving households. Gross private domestic investment differs from gross capital formation primarily because government capital formation in the NIPA is included in the government consumption expenditures and gross investment component. Exports and imports of goods and services are essentially the same in both systems.

5.50 The NIPA components of the income side of GDP are equivalent to the SNA cost components of gross value added. Compensation of employees, indirect taxes and subsidies, and consumption of fixed capital are essentially the same in both systems. The sum of the remaining NIPA income side components constitutes the SNA operating surplus. For the NIPA the detailed components of the operating surplus are aggregated to calculate GDP; the total operating surplus is estimated directly rather than derived as a residual.

NOTES

1. For additional details on the release schedule for the NIPA estimates, see "A Look at How BEA Presents the National Income and Product Accounts" in the May 1996 *Survey of Current Business,* pp. 33-37.

2. The Economic Bulletin Board, a subscription service operated by STAT-USA of the Commerce Department, provides on-line computer access to news releases and other economic information from a number of federal Government agencies. For more information, call STAT-USA at 1-800-782-8872.

3. For additional information on the commodity-flow method, see United States Department of Commerce, Bureau of Economic Analysis, *Personal Consumption Expenditures, Methodology Paper Series MP-6* (Washington, D.C., United States Government Printing Office, 1990), pp. 31-34; and U.S. Department of Commerce, Bureau of Economic Analysis, *GNP: An Overview of Source Data and Estimating Methods, Methodology Paper Series MP-4* (Washington, D.C., U.S. Government Printing Office, 1987), pp. 16-17. The methodologies described in these papers are subject to periodic improvements, which are typically introduced as part of annual and comprehensive NIPA

revisions; these improvements are described in the *Survey of Current Business* articles that cover each of these revisions, most recently in AImproved Estimates of the National Income and Product Accounts for 1959-95: Results of the Comprehensive Revision" in the January-February 1996 issue of the *Survey*, pp. 22-27 and AAnnual Revision of the National Income and Product Accounts@ in the August 1997 *Survey*, pp. 6-35.

4. For additional information, see *Personal Consumption Expenditures*, pp. 41-54 and *GNP: An Overview of Source Data and Estimating Methods*, p. 17.

5. For additional information on the perpetual-inventory method, see U.S. Department of Commerce, Bureau of Economic Analysis, *Fixed Reproducible Tangible Wealth in the United States, 1925-89* (Washington, D.C., U.S. Government Printing Office, January 1993); and *GNP: An Overview of Source Data and Estimating Methods*, pp. 17-18. For additional information on the capital stock estimates see "Preview of the Comprehensive Revision of the National Income and Product Accounts: Recognition of Government Investment and Incorporation of a New Methodology for Calculating Depreciation" in the September 1995 *Survey*, pp. 9-41 and "Improved Estimates of Fixed Reproducible Tangible Wealth, 1929-95" in the May 1997 *Survey*, pp. 69-92.

6. For additional information and an illustration of the fiscal year analysis methodology, see U.S. Department of Commerce, Bureau of Economic Analysis, *Government Transactions, Methodology Paper Series MP-5* (Washington, D.C., U.S. Government Printing Office, 1988), pp. 19-20. The methodologies described in this paper are subject to periodic improvements, which are typically introduced as part of annual and comprehensive NIPA revisions; these improvements are described in the *Survey* articles that cover each of these revisions, most recently in "Improved Estimates of the National Income and Product Accounts for 1959-95."

7. The estimating methodologies and source data used for these estimates are described in U.S. Department of Commerce, Bureau of Economic Analysis, *The Balance of Payments of the United States: Concepts, Data Sources, and Estimating Procedures* (Washington, D.C., U.S. Government Printing Office, 1990). The methodologies described in this publication are subject to periodic improvements, which are typically introduced as part of the annual revision of the BPA; these improvements are described in the *Survey* articles that cover the annual BPA revisions, most recently in "U.S. International Transactions, Revised Estimates for 1974-95" in the July 1997 *Survey*, pp. 43-55.

8. These adjustments are described in U.S. Department of Commerce, Bureau of Economic Analysis, *Foreign Transactions, Methodology Paper Series MP-3* (Washington, D.C., U.S. Government Printing Office, 1987): pp. 15-25. The methodologies described in this paper are subject to periodic improvements, which are typically introduced as part of annual and comprehensive NIPA revisions; these improvements are described in the *Survey* articles that cover each of these revisions, most recently in "Improved Estimates of the National Income and Product Accounts for 1959-95."

Table 5.1. Principal source data and estimating methods used in preparing estimates of current-dollar GDP

Component (billions of dollars)	Subcomponent (billions of dollars)	Annual estimates: Source data and methods used to determine level for benchmark and other years or used to prepare an extrapolator or interpolator	Advance quarterly estimates: Source data and methods used to prepare an extrapolator
Product side (GDP of $7,636.0 billion for 1996)			

Personal consumption expenditures ($5,207.6)	**Durable and nondurable goods:** ($2,169.2)[67]		
	Most goods (except sub-components listed separately) ($1,821.0)	Benchmark years**C**Commodity-flow method, starting with manufacturers= shipments from Census Bureau quinquennial census and including an adjustment for exports and imports from Census Bureau foreign trade data.	Same as annual for most recent year.
		Other years**C**Retail-control method, using retail trade sales from Census Bureau annual survey or, for most recent year, monthly survey of retail trade.	
	New autos ($86.1)	Physical quantity purchased times average retail price: Unit sales, information to allocate sales among consumers and other purchasers, and average list price with options, adjusted for transportation charges, sales tax, dealer discounts, and rebates, all from trade sources.	Same as annual.
	Net purchases of used autos ($55.2)	Benchmark years**C**For net transactions, change in the consumer stock of autos from trade sources. For dealers= margin, retail sales from Census Bureau quinquennial census and margin rate from Census Bureau annual survey of retail trade.	For net transactions, residual based on net sales by other sectors. For dealers= margin, unit sales of franchised dealers from trade source and sales price from Bureau of Labor Statistics consumer price index for used cars.
		Other years except most recent**C**For net transactions, same as benchmark years. For dealers= margin, franchised dealers= unit sales times sales price, both from trade sources, times margin rate for independent dealers from Census Bureau annual survey; independent dealers= margin from Census Bureau annual survey.	
		Most recent year**C**For net transactions, same as benchmark years. For dealers= margin, for franchised dealers, unit sales and sales price from trade sources; for independent dealers, sales from Census Bureau monthly survey of retail trade.	
	New trucks ($63.7)	Benchmark years**C**Commodity-flow method, starting with manufacturers= shipments from Census Bureau quinquennial census and including an adjustment for exports and imports from Census Bureau foreign trade data.	Same as annual for most recent year.
		Other years except most recent**C**Abbreviated commodity-flow method, starting with manufacturers= shipments from Census Bureau annual survey and including an adjustment for exports and imports from Census Bureau foreign trade data.	
		Most recent year**C**Physical quantity purchased times average retail price: Unit sales and information to allocate sales among consumers and other purchasers from trade sources and average price based on Bureau of Labor Statistics consumer price index for new trucks.	
	Gasoline and oil [68] ($122.6)	Benchmark years**C**Physical quantity purchased times average retail price: Gallons consumed from the Department of Transportation, information to allocate that total among consumers and other purchasers from Federal agencies and trade sources, and average retail price from Census Bureau quinquennial census.	Same as annual for most recent year.
		Other years except most recent**C**Same as benchmark years, except average retail price from the Energy Information Administration.	
		Most recent year**C**Physical quantity purchased times average retail price: Gallons consumed and average price, both from the Energy Information Administration.	

[67]Includes $10.6 billion for food produced and consumed on farm, standard clothing issued to military personnel, and used trucks.

[68]The retail-control method cited under »personal consumption expenditures (PCE) for most goods== is based on retail trade sales data that include sales of gasoline service stations. Estimates of PCE for gasoline and oil are derived separately and are deducted from the retail-control totals (that include goods sold by gasoline service stations) to derive the estimates for »PCE for most goods.=

Table 5.1. Principal source data and estimating methods used in preparing estimates of current-dollar GDP-Continued

Component (billions of dollars)	Subcomponent (billions of dollars)	Annual estimates: Source data and methods used to determine level for benchmark and other years or used to prepare an extrapolator or interpolator	Advance quarterly estimates: Source data and methods used to prepare an extrapolator
Product side (GDP of $7,636.0 billion for 1996)**C**Continued			
Personal consumption expenditures**C** Continued	**Durable and nondurable goods**--Continued		
	Food furnished to employees (including military) ($8.7)	Benchmark years**C**For commercial employees, number of employees of appropriate industries from Bureau of Labor Statistics tabulations times BEA estimate of per capita expenditures for food; for military personnel, outlays from the budget of the United States prepared by the Office of Management and Budget. Other years**C**Same as benchmark years, except per capita expenditures for food based on Bureau of Labor Statistics consumer price index for food.	For commercial employees, same as annual for other years; for military personnel, judgmental trend.
	Expenditures abroad by U.S. residents ($2.6) less personal remittances in kind to non-residents ($1.2)	Estimated as part of the balance of payments accounts; see entry for »exports and imports of services, net,= under net exports of goods and services.	Judgmental trend.
	Services: ($3,038.4)		
	Nonfarm dwellings**C**space rent for owner-occupied and rent for tenant-occupied ($752.0)	Benchmark years**C**Based on data on housing stock and average annual rent from Census Bureau decennial census of housing and residential finance survey, adjusted for utilities billed with rent. Other years**C**Based on data on housing stock and average annual rent from Census Bureau biennial housing survey or on the number of households from Census Bureau monthly current population survey and Bureau of Labor Statistics consumer price index for rent.	Same as annual: For housing stock, judgmental trend; for average rent, Bureau of Labor Statistics consumer price index for rent.
	Rental value of farm dwellings ($6.1)	Benchmark years**C**Based on data on housing stock and average annual rent from Census Bureau decennial census of housing and survey of residential finance. Other years**C**Based on data on net value of real farm housing stock from BEA capital stock series.	Judgmental trend.
	Motor vehicle and other repair, other purchased intercity transportation, legal and funeral services, barbershops and beauty parlors, nursing homes, laundries, employment agency fees, accounting and tax return preparation services, recreation (except cable TV, casino gambling, parimutuel net receipts, and lotteries), hotels and motels, and other education and research ($508.1)	Benchmark years**C**Receipts and expenses from Census Bureau quinquennial census adjusted for receipts from business and governments. Other years**C**Receipts for spectator sports from trade sources; for legitimate theaters and other education and research, tabulations of wages and salaries of employees covered by state unemployment insurance from the Bureau of Labor Statistics; for others in this group, Census Bureau service annual survey.	For nursing homes, other education and research, employment agency fees, and clubs and fraternal organizations, wages and salaries derived from Bureau of Labor Statistics monthly employment times earnings times hours; for legitimate theaters and motion pictures, receipts from trade sources; for radio and TV repair, number of TVs based on stock and sales from trade source times Bureau of Labor Statistics consumer price index for appliance and furniture repair; for hotels and motels, rooms rented times average price per room from trade source; for others in this group, judgmental trend.

Table 5.1. Principal source data and estimating methods used in preparing estimates of current-dollar GDP-Continued

Component (billions of dollars)	Subcomponent (billions of dollars)	Annual estimates: Source data and methods used to determine level for benchmark and other final or used to prepare an extrapolator or interpolator	Advance quarterly estimates: Source data and methods used to prepare an extrapolator
Product side (GDP of $7,636.0 billion for 1996)**C**Continued			
Personal consumption expenditures-- Continued	**Services**--Continued		
	Physicians, dentists, and other professional medical services ($357.6)	Benchmark years**C**For nonprofit professional services, expenses, and for others in this group, receipts, adjusted for government consumption, all from Census Bureau quinquennial census. Other years**C**Receipts and revenues, adjusted for government consumption, from Census Bureau service annual survey.	For physicians and dentists, judgmental trend; for other professional medical services, wages and salaries derived fro Bureau of Labor Statistics monthly employment times earnings times hours
	Private nursery, elementary, and secondary schools, day care, welfare activities, and trade unions and professional associations ($148.6)	Benchmark years**C**For religious-affiliated schools, enrollment from the Department of Education times BEA estimate of average expenditures per pupil; for nursery schools and day care, expenditures from Bureau of Labor Statistics consumer expenditure survey; for others in this group, receipts and expenses from Census Bureau quinquennial census. Other years except most recent**C**For nursery schools and day care, same as benchmark years; for others in this group, annual tabulations of wages and salaries of employees covered by state unemployment insurance from the Bureau of Labor Statistics. Most recent year**C**For nursery schools and day care, judgmental trend; for others in this group, tabulations of wages and salaries of employees covered by state unemployment insurance from the Bureau of Labor Statistics.	For political organizations and foundations, judgmental trend; for othe in this group, wages and salaries derive from Bureau of Labor Statistics monthl employment times earnings times hours
	Financial services furnished without payment by banks, credit agencies, and investment companies[69] ($169.9)	See entry for »imputed**C**banks, credit agencies, and investment companies= under Net interest below.	Judgmental trend.
	Brokerage charges and investment counseling, bank service charges, intercity transportation except other, and private higher education ($148.7)	Years except most recent**C**For private higher education, expenses, and for others in this group, receipts, all from annual reports of government administrative agencies. Most recent year**C**For brokerage charges, bank service charges, and intercity transportation, receipts, from annual reports of government administrative agencies; for private higher education, enrollment from the Department of Education times price index for higher education from trade source.	For stock brokerage charges, stock exchange transactions from trade sources; for income from sales of investment company securities, sales of open-end investment company shares from trade source; for other brokerage charges and investment counseling and for bank service charges, judgmental trend; for intercity transportation, receipts from trade sources; for private higher education, wages and salaries derived from Bureau of Labor Statistics monthly employment times earnings times hours.
	Domestic services ($12.5)	Benchmark years**C**For cleaning services, receipts from Census Bureau quinquennial census; for other domestic services, number of workers times weekly hours times earnings from the Bureau of Labor Statistics. Other years**C**Number of workers times weekly hours times earnings from the Bureau of Labor Statistics	Judgmental trend.

[69]Also referred to as Aservices furnished without payment by financial intermediaries, except life insurance carriers and private non-insured pension plans@.

Table 5.1. Principal source data and estimating methods used in preparing estimates of current-dollar GDP-Continued

Component (billions of dollars)	Subcomponent (billions of dollars)	Annual estimates: Source data and methods used to determine level for benchmark and other years or used to prepare an extrapolator or interpolator	Advance quarterly estimates: Source data and methods used to prepare an extrapolator
Product side (GDP of $7,636.0 billion for 1996)**C**Continued			
Personal consumption expenditures-- Continued	**Services**--Continued		
	Public higher education and hospitals, water and other sanitary services, and lotteries ($157.7)	Years except most recent**C**For lotteries, net receipts from Census Bureau quinquennial census and annual surveys of state and local governments, adjusted to a calendar year basis from a fiscal year basis; for others in this group, receipts from the same sources.	Same as annual for most recent year.
		Most recent year	Judgmental trend
	Insurance, private hospitals, religious activities, cable TV, utilities, and local transport ($720.1)	Years except most recent**C**For life insurance, expenses from trade sources; for medical and hospitalization insurance, premiums and benefits from the Health Care Financing Administration; for other insurance, premiums and benefits from trade sources; for private hospitals, receipts and expenses from Census Bureau quinquennial census (benchmark year), and expenses from trade sources (other years); for religious activities, expenses based on contributions and membership from trade sources; for cable TV and utilities, receipts from government agencies and trade sources; for local transport, receipts from trade source.	For life insurance, hospitals, and religious activities, wages and salaries derived from Bureau of Labor Statistics monthly employment times earnings times hours; for electricity and gas, projected quantities based on degree-da data from the National Oceanic and Atmospheric Administration times pric based on Bureau of Labor Statistics consumer price indexes for utilities; for others in this group, judgmental trend.
		Most recent year**C**For life insurance, tabulations of wages and salaries of employees covered by State unemployment insurance from the Bureau of Labor Statistics; for insurance other than life insurance, judgmental trend; for religious activities, expenses based on population from the Census Bureau and per capita disposable personal income from BEA; for local transport, passenger trips from trade source times Bureau of Labor Statistics consumer price index for intra-city mass transit; for others in this group, same as other years.	
	Foreign travel by U.S. residents ($54.9) less expenditures in the United States by nonresidents ($82.7)	Estimated as part of the balance of payments accounts; see entry for »exports and imports of services, net,= under net exports of goods and services.	Same as annual.
	Other services: Casino gambling, and parimutuel net receipts; other housing except hotels and motels; bridge, etc., tolls; other household operation except repairs and insurance; travel and entertainment card fees; stenographic and reproduction services; and money orders and classified advertising ($85.0)	Various source data.	For casino gambling, receipts from stat agency; for others in this group, judgmental trend.

Table 5.1. Principal source data and estimating methods used in preparing estimates of current-dollar GDP-Continued

Component (billions of dollars)	Subcomponent (billions of dollars)	Annual estimates: Source data and methods used to determine level for benchmark and other years or used to prepare an extrapolator or interpolator	Advance quarterly estimates: Source data and methods used to prepare an extrapolator
Product side (GDP of $7,636.0 billion for 1996)**C**Continued			
Fixed investment ($1,090.7)	**Nonresidential structures:** ($215.2)[70]		
	Utilities: Telecommunications ($11.9)	Value put in place from Census Bureau monthly construction survey.	Same as annual.
	Utilities: Other ($21.4)	Expenditures from federal regulatory agencies and trade sources.	Judgmental trend.
	Mining exploration, shafts, and wells ($16.1)	Benchmark years**C**Expenditures from Census Bureau quinquennial census. Other years**C**For petroleum and natural gas, physical quantity times average price: Footage drilled and cost per foot from trade sources; for other mining, expenditures from Census Bureau surveys on capital expenditures.	For petroleum and natural gas, same as annual for other years; for mining, judgmental trend.
	Industrial buildings ($32.1)	Benchmark years, except 1992**C**Value put in place from Census Bureau monthly construction survey and improvements from Department of Energy commercial buildings energy consumption survey. For 1992, tabulations from Census Bureau annual capital expenditure survey, adjusted for undercoverage. Other years**C**Value put in place from Census Bureau monthly construction survey.	Same as annual for other years.
	Other nonfarm buildings and structures ($129.7)	Benchmark years**C**Value put in place from Census Bureau monthly construction survey and improvements from Department of Energy commercial buildings energy consumption survey. Other years**C**Value put in place from Census Bureau monthly construction survey.	Same as annual for other years.
	Farm buildings ($3.7)	Expenditures for new construction from Department of Agriculture surveys.	Value put in place from Census Bureau monthly construction survey.
	Nonresidential producers' durable equipment: ($566.2)		
	Equipment, except autos ($520.9)	Benchmark years**C**Commodity-flow method, starting with manufacturers' shipments from Census Bureau quinquennial census and including an adjustment for exports and imports from Census Bureau foreign trade data. Other years**C**Abbreviated commodity-flow method, starting with manufacturers' shipments from Census Bureau annual survey or, for most recent year (except aircraft and trucks), monthly survey of manufactures and including an adjustment for exports and imports from Census Bureau foreign trade data. For aircraft, manufacturers' shipments from Census Bureau current industrial report, adjusted for exports and imports. For trucks, domestic and North American imports, physical quantity purchased times average retail price: Unit sales and information to allocate sales among business and other purchasers from trade sources and average price based on Bureau of Labor Statistics producer price indexes; for truck trailers, shipments from Census Bureau current industrial report.	For trucks, see entry for "new trucks" under personal consumption expenditures; for others in this group, same as annual for other years but with less detail.
	New and used autos ($45.3)	For new autos, see entry for "new autos" under personal consumption expenditures; for used autos, change in business stock of autos at least one year old from trade source.	For new autos, same as annual; for used autos, judgmental trend.

[70]Includes $0.5 billion for brokers' commissions on sales of structures and net purchases of used structures.

Table 5.1. Principal source data and estimating methods used in preparing estimates of current-dollar GDP-Continued

Component (billions of dollars)	Subcomponent (billions of dollars)	Annual estimates: Source data and methods used to determine level for benchmark and other years or used to prepare an extrapolator or interpolator	Advance quarterly estimates: Source data and methods used to prepare an extrapolator
Product side (GDP of $7,636.0 billion for 1996)**C**Continued			
Fixed investmentC Continued	**Residential investment**: ($309.2)[71]		
	Permanent-site new single-family housing units ($159.1)	Value put in place based on phased housing starts and average construction cost from Census Bureau monthly construction survey.	Same as annual.
	Permanent-site new multi-family housing units ($20.3)	Value put in place from Census Bureau monthly construction survey.	Same as annual.
	Mobile homes ($12.6)	Benchmark years**C**See entry for »equipment, except autos= under Nonresidential producers: durable equipment above. Other years**C**Physical quantity shipped times price: Shipments from trade sources and average retail price from Census Bureau monthly survey.	Same as annual for other years.
	Improvements ($74.4)	Expenditures by owner-occupants from Bureau of Labor Statistics quarterly consumer expenditure survey and by landlords from Census Bureau quarterly survey of landlords.	Judgmental trend.
	Brokers: commissions ($36.3)	Physical quantity times price times average commission rate: Number of single-family houses sold, mean sales price, and commission rates from Census Bureau monthly construction survey, Census Bureau biennial housing survey, and trade sources.	Same as annual.
Change in business inventories ($25.9)	Producers: durable equipment ($7.5)	See entry for »most goods= under personal consumption expenditures.	Same as annual.
	Manufacturing and trade ($18.0)	Benchmark years**C**Inventories from Census Bureau quinquennial censuses revalued to current replacement cost, using information on the proportions of inventories reported using different accounting methods, on the commodity composition of goods held in inventory, and on the turnover period, all from Census Bureau quinquennial censuses and surveys, combined with prices, largely based on Bureau of Labor Statistics producer price indexes. (The difference between Census Bureau change in inventories and BEA change in business inventories is the inventory valuation adjustment (IVA).) Other years except most recent**C**Inventories from Census Bureau annual surveys, revalued as described above. Most recent year**C**For retail auto dealers, quantities times average prices from trade sources; for all others, inventories from Census Bureau monthly surveys, revalued as described above.	Same as annual for most recent year.
	Other nonfarm industries ($5.0)	Inventories revalued to current replacement cost (except when noted as physical quantity times price) as described for manufacturing and trade: For years except most recent, Internal Revenue Service tabulations of business tax returns; for most recent year, Census Bureau quarterly survey of corporations for mining, monthly quantities from the Energy Information Administration combined with Bureau of Labor Statistics producer price indexes for electric utilities, and for all others, judgmental trend.	For electric utilities, same as annual for most recent year; for all others, judgmental trend.
	Farm ($2.9)	Changes in physical quantities times current prices from Department of Agriculture surveys.	Judgmental projections by BEA and the Department of Agriculture.

[71]Includes $1.0 billion for other structures (dormitories, fratenity and sorority houses, nurses: homes, etc.) and net purchases of used structures.

Table 5.1. Principal source data and estimating methods used in preparing estimates of current-dollar GDP-Continued

Component (billions of dollars)	Subcomponent (billions of dollars)	Annual estimates: Source data and methods used to determine level for benchmark and other years or used to prepare an extrapolator or interpolator	Advance quarterly estimates: Source data and methods used to prepare an extrapolator
Product side (GDP of $7,636.0 billion for 1996)—Continued			
Net exports of goods and services (—$94.8)	Exports and imports of goods, net (—$191.5)	Estimated as part of the balance of payments accounts: Export and import documents compiled monthly by the Census Bureau with adjustments by BEA for coverage and valuation to convert the data to a balance-of-payments basis. Adjusted for balance-of-payments coverage of U.S. territories and Puerto Rico with data from the Commonwealth of Puerto Rico, the U.S. Virgin Islands, and the Census Bureau, and coverage of gold adjusted with data from the U.S. Geological Survey and trade sources.	For territorial adjustment and coverage of gold, judgmental trend; for all others same as annual.
	Exports and imports of services, net ($96.6)	Estimated as part of the balance of payments accounts: For government transactions, reports by federal agencies on their purchases and sales abroad; for most others in this group (including travel, passenger fares, other transportation, and royalties and license fees), BEA quarterly or annual surveys (supplemented with data from other sources). Adjusted for balance-of-payments coverage of U.S territories and Puerto Rico, see entry above; adjusted to include financial services furnished without payment, see entry for »imputed—banks, credit agencies, and investment companies« under Net interest below, and adjusted for NIPA treatment of military grants and labor income.	For territorial adjustment, judgmental trend; for all others, same as annual.
Government consumption expenditures and gross investment ($1,406.7)	Federal national defense consumption of general government fixed capital ($57.3)	Perpetual-inventory calculations at current cost, based on gross investment and on investment prices.	Same as annual.
	Federal national defense, except consumption of general government fixed capital ($295.4)	Within a control total established by fiscal year analysis: For compensation, military wages from the budget of the United States prepared by the Office of Management and Budget, civilian wages and benefits from the Office of Personnel Management, and employer contributions for social insurance mainly from outlays from *Monthly Treasury Statement*; for other than compensation, by type, based mainly on data from Department of Defense reports.	For components of compensation, employment from the Department of Defense (military) and the Bureau of Labor Statistics (civilian); for other than compensation, same as annual.
	Federal nondefense consumption of general government fixed capital ($11.2)	Perpetual-inventory calculations at current cost, based on gross investment and on investment prices.	Same as annual.

Table 5.1. Principal source data and estimating methods used in preparing estimates of current-dollar GDP-Continued

Component (billions of dollars)	Subcomponent (billions of dollars)	Annual estimates: Source data and methods used to determine level for benchmark and other years or used to prepare an extrapolator or interpolator	Advance quarterly estimates: Source data and methods used to prepare an extrapolator
Product side (GDP of $7,636.0 billion for 1996)—Continued			
Government consumption expenditures and gross investment—Continued	Federal nondefense, except consumption of general government fixed capital ($156.1)	Within a control total established by fiscal year analysis: For Commodity Credit Corporation inventory change, book values of acquisitions and physical quantities of dispositions from agency reports times average market prices from the Department of Agriculture; for financial services furnished without payment, see entry for »imputed—banks, credit agencies, and investment companies« under Net interest below; for compensation, civilian wages and benefits from the Office of Personnel Management and employer contributions for social insurance mainly from outlays from *Monthly Treasury Statement*; for petroleum sales (Naval Petroleum Reserve), distribution and price data from the Department of Energy; for research and development, obligations from the National Science Foundation and disbursements from the National Aeronautics and Space Administration; for construction, value put in place from Census Bureau monthly construction survey; for all other, outlays from *Monthly Treasury Statement*.	For components of compensation, employment from the Bureau of Labor Statistics; for other than compensation, same as annual.
	State and local compensation of general government employees, except force-account construction ($547.2)	For wages and salaries, tabulations of wages and salaries of employees covered by state unemployment insurance from the Bureau of Labor Statistics; for employer contributions for social insurance, tabulations from the Social Security Administration, other agencies administering social insurance programs, and Census Bureau surveys of state and local government retirement funds, adjusted to a calendar year basis from a fiscal year basis; for other labor income, trade sources, Health Care Financing Administration, and Census Bureau surveys of state and local governments, adjusted to a calendar year basis from a fiscal year basis.	For wages and salaries, derived from Bureau of Labor Statistics monthly employment times earnings from Bureau of Labor Statistics employment cost index, if available; otherwise, judgment trend. For other compensation, judgmental trend.
	State and local structures ($128.5)	Value of construction put in place from Census Bureau monthly construction survey.	Same as annual.
	State and local brokerage charges and financial services furnished without payment ($13.0)	See entries under Personal consumption expenditures for services above.	See entries under personal consumption expenditures for services.
	State and local consumption of general government fixed capital ($56.6)	Perpetual-inventory calculations at current cost, based on gross investment and on investment prices.	Same as annual.
	State and local investment in equipment and consumption expenditures, except compensation, consumption of fixed capital, brokerage charges, and financial services furnished without payment. ($141.4)	Years except most recent—Total expenditures from Census Bureau quinquennial censuses and annual surveys of state and local governments, selectively replaced with source data that are more appropriate for the NIPA and adjusted as follows: For coverage; for netting and grossing differences; to a calendar year basis from a fiscal year basis; for other timing differences; to exclude interest, subsidies, net expenditures of government enterprises, and transfer payments; and to exclude compensation and structures.	Same as annual for most recent year.
		Most recent year	Judgmental trend

Table 5.1. Principal source data and estimating methods used in preparing estimates of current-dollar GDP-Continued

Component (billions of dollars)	Subcomponent (billions of dollars)	Annual estimates: Source data and methods used to determine level for benchmark and other years or used to prepare an extrapolator or interpolator	Advance quarterly estimates: Source data and methods used to prepare an extrapolator
Income side (Gross national income of $7,697.6 billion for 1996)			
Compensation of employees ($4,426.9)[72]	Wage and salary accruals: Private industries ($2,991.0)	For most industries, annual tabulations of wages and salaries of employees covered by state unemployment insurance from the Bureau of Labor Statistics; for remainder, wages from a variety of sources (such as the Department of Agriculture for farms and the Railroad Retirement Board for railroad transportation), adjusted for understatement of income on tax returns and for several coverage differences.	For most industries, wages and salaries derived from Bureau of Labor Statistics monthly employment times earnings times hours; for others, judgmental trer
	Wage and salary accruals: Federal Government ($177.2)	For civilians, wages from the Office of Personnel Management; for military personnel, wages from the budget of the United States prepared by the Office of Management and Budget.	For civilians, employment from the Bureau of Labor Statistics and judgmental trend; for military personne employment from the Department of Defense and judgmental trend.
	Wage and salary accruals: State and local governments ($465.4)	Mainly tabulations of wages and salaries of employees covered by state unemployment insurance from the Bureau of Labor Statistics.	Derived from Bureau of Labor Statistic monthly employment times earnings from Bureau of Labor Statistics employment cost index, if available, otherwise judgmental trend.
	Employer contributions for social insurance ($385.7)	Years except most recent**C**Tabulations from the Social Security Administration and other agencies administering social insurance programs, and Census Bureau surveys of State and local government retirement funds, adjusted to a calendar year basis from a fiscal year basis.	For federal programs, BEA-derived wages and salaries of employees cover by the programs; for State and local government programs, judgmental tren
		Most recent year**C**Census Bureau surveys of state retirement funds, adjusted to a calendar year basis from a fiscal year basis.	Judgmental trend.
	Other labor income: Group health insurance ($262.7)	Years except three most recent**C**Total contributions from the Health Care Financing Administration less employee contributions from the Bureau of Labor Statistics consumer expenditure survey.	
		Three most recent years**C**Employer costs for employee compensation from the Bureau of Labor Statistics.	Judgmental trend.
	Other labor income: Pension and profit-sharing ($94.8)	Years except two most recent**C**Tabulations from the Department of Labor.	
		Two most recent years**C**Employer costs for employee compensation from the Bureau of Labor Statistics or Internal Revenue Service tabulations of business tax returns.	Judgmental trend.
	Other labor income: Workers' compensation ($37.0)	Years except most recent**C**Employer contributions from trade sources and contributions for self-insured plans from the Social Security Administration.	Judgmental trend.
		Most recent year.	
	Other labor income: Group life insurance (7.4)	Years except most recent**C**Group premiums and estimates of employer share from trade sources.	Judgmental trend
		Most recent year.	

[72]Includes $2.6 billion for wage and salary accruals: rest of the world, net, and $5.4 billion for other labor income: supplemental unemployment, directors' fees, and judicial fees.

Table 5.1. Principal source data and estimating methods used in preparing estimates of current-dollar GDP-Continued

Component (billions of dollars)	Subcomponent (billions of dollars)	Annual estimates: Source data and methods used to determine level for benchmark and other years or used to prepare an extrapolator or interpolator	Advance quarterly estimates: Source data and methods used to pre pare an extrapolator
Income side (Gross national income of $7,697.6 billion for 1996)—Continued			
Proprietors' income with inventory adjustment (IVA) and capital consumption adjustment (CCAdj) ($520.3)	Farm income with IVA ($45.0)	Based on Department of Agriculture data on net income, obtained by deriving gross income (cash receipts from marketing, inventory change, government payments, other cash income, and nonmoney income) and subtracting production expenses, adjusted to exclude corporate income from Internal Revenue Service tabulations of business tax returns and adjusted to a NIPA basis.	For crops, BEA quarterly allocation of Department of Agriculture annual projections of crop output; for livestocl Department of Agriculture quarterly projections of cash receipts and inventories; for both crops and livestoc quarterly allocation of Department of Agriculture annual projections of government subsidy payments and production expenses.
	Farm CCAdj (B$7.8)	See entry for "CCAdj" under Consumption of fixed capital below.	
	Nonfarm income ($455.3)	Years except most recent—Income from Internal Revenue Service tabulations of business tax returns, adjusted for understatement of income on tax returns and for several conceptual differences. Most recent year—For construction, trade, and services, indicators of activity (such as value of housing put in place); for most others, judgmental trend.	Same as annual for most recent year.
	Nonfarm IVA (B$0.2)	See entry for "IVA" under Corporate profits with IVA and CCAdj below.	
	Nonfarm CCAdj ($28.0)	See entry for "CCAdj" under Consumption of fixed capital below.	
Rental income of persons with CCAdj ($146.3)	Owner-occupied nonfarm housing ($109.7)	Benchmark years—Derived as space rent (see entry for "non-farm dwellings" under Personal consumption expenditures above) less related expenses, including maintenance and repair from Bureau of Labor Statistics quarterly consumer expenditure survey, mortgage interest, and property taxes from Census Bureau decennial survey of residential finance. Other years—Same as benchmark years, except mortgage interest, based on mortgage debt from the Federal Reserve Board times a BEA interest rate, and property taxes from Census Bureau quarterly surveys of State and local tax collections.	For owner-occupied space rent, same a annual; for depreciation, interest, and taxes, based on NIPA estimates of thos components; for other expenses, judgmental trend.
	Tenant-occupied nonfarm housing ($52.7)	Same as owner-occupied nonfarm housing, adjusted to cover only rental income accruing to persons not primarily engaged in the real estate business.	Same as annual.
	Farms owned by nonoperator landlords ($6.8)	Prepared in conjunction with farm proprietors' income; see entry for "farm income with IVA" under Proprietors' income with IVA and CCAdj above.	Judgmental trend.
	Nonfarm nonresidential properties ($15.8)	Years through 1983—Rents paid and received by business and government, adjusted for expenses associated with property (mainly depreciation, taxes, interest, and repairs) from Internal Revenue Service tabulations of business tax returns, Census Bureau surveys, and the *Budget of the United States* prepared by the Office of Management and Budget.	Judgmental trend.
		Other years	Judgmental trend.
	Royalties ($8.3)	Years except most recent—Internal Revenue Service tabulations of royalties reported on individual income tax returns.	Same as annual for most recent year.
		Most recent year	Judgmental trend.
	CCAdj (B$47.0)	See entry for "CCAdj" under Consumption of fixed capital at the end of the table.	

Table 5.1. Principal source data and estimating methods used in preparing estimates of current-dollar GDP-Continued

Component (billions of dollars)	Subcomponent (billions of dollars)	Annual estimates: Source data and methods used to determine level for benchmark and other years or used to prepare an extrapolator or interpolator	Advance quarterly estimates: Source data and methods used to prepare an extrapolator
Income side (Gross national income of $7,697.6 billion for 1996)**C**Continued			
Corporate profits with IVA and CCAdj ($735.9)	Domestic profits before tax ($580.7)	Years except most recent**C**Receipts less deductions from Internal Revenue Service tabulations of business tax returns, adjusted for understatement of income on tax returns and for several conceptual differences. Most recent year**C**Profits from Census Bureau quarterly survey of corporate profits, regulatory agency reports, and compilations of publicly available corporate financial statements.	For some industries in transportation ar some in finance, etc., judgmental trend; for others, same as annual for most recent year. (Released at time of preliminary estimate of GDP for the fir second, and third quarters and of final estimate for the fourth quarter.)
	Rest-of-the-world profits before tax ($95.9)	Estimated as part of the balance of payments accounts: For direct investment income, BEA surveys; for portfolio income, Treasury Department surveys. Adjusted for NIPA coverage of U.S. territories and Puerto Rico**C**see entry for »exports and imports of goods, net,= under Net exports of goods and services above.	Same as annual. (Released on same schedule as domestic profits before tax
	IVA (**B**$2.5)	The IVA on the income side (for corporations and for nonfarm sole proprietorships and partnerships) and the IVA on the product side (described under the entry for change in business inventories) differ because the source data reflect different proportions of accounting methods (last-in, first-out (LIFO), etc.) underlying reported inventories. The income-side IVA is based on the product-side IVA, adjusted by the relationship between non-LIFO inventories from Internal Revenue Service tabulations of business tax returns and non-LIFO inventories from the Census Bureau.	Same as annual.
	CCAdj ($61.8)	See entry for »CCAdj= under Consumption of fixed capital below.	
Net interest ($425.1)	Domestic monetary, net ($87.6)	Years except most recent**C**For farm interest paid, Department of Agriculture surveys; for residential mortgage interest paid, Census Bureau decennial residential finance survey and mortgage debt from the Federal Reserve Board times a BEA interest rate; for most other interest paid and received by business, Internal Revenue Service tabulations of business tax returns, adjusted for misreporting on tax returns and for several conceptual differences. Most recent year**C**For farm and mortgage interest paid, same as other years; for other interest, interest receipts and payments from regulatory agencies (such as the Federal Deposit Insurance Corporation), from trade sources, or obtained by applying BEA interest rates to interest-bearing assets/liabilities from Federal Reserve Board flow-of-funds accounts.	Derived by combining estimates of (1) interest received by persons, (2) government interest paid and received, and (3) interest paid by persons. For (1 judgmental trend; for (2), *Monthly Treasury Statement* for federal and judgmental trend for state and local; fo (3), consumer debt from the Federal Reserve Board times BEA estimates of interest rates. (Released on same schedule as domestic profits before tax
	Rest-of-the-world monetary, net (**B**$76.4)	Estimated as part of the balance of payments accounts: For direct investment income, BEA surveys; for portfolio income, Treasury Department surveys. Adjusted for NIPA coverage of U.S. territories and Puerto Rico**C**see entry for »exports and imports of goods, net,= under Net exports of goods and services above.	Same as annual. (Released on same schedule as domestic profits before tax

Table 5.1. Principal source data and estimating methods used in preparing estimates of current-dollar GDP-Continued

Component (billions of dollars)	Subcomponent (billions of dollars)	Annual estimates: Source data and methods used to determine level for benchmark and other years or used to prepare an extrapolator or interpolator	Advance quarterly estimates: Source data and methods used to prepare an extrapolator
Income side (Gross national income of $7,697.6 billion for 1996)**C**Continued			
Net interestC Continued	Imputed**C**banks, credit agencies, and investment companies ($180.1)	Property income earned on investment of deposits and monetary interest paid to depositors (and for mutual depositories, profits from Internal Revenue Service tabulations of business tax returns) from annual reports of regulatory agencies and the Federal Reserve Board. Imputed interest (financial services furnished without payment) is allocated to persons, government, and the rest of the world on the basis of deposit liabilities from the same sources.	Judgmental trend.
	Imputed**C**life insurance carriers and private non-insured pension plans ($233.7)	Property income earned (and for life insurance carriers, profits) from Internal Revenue Service tabulations of business tax returns, trade sources, and the Federal Reserve Board.	Judgmental trend. (Released on same schedule as domestic profits before tax
Business transfer payments ($33.6)		Payments to persons: For charitable contributions, for years except most recent, Internal Revenue Service tabulations of business tax returns or, for most recent year, judgmental trend; for other components (such as liability payments for personal injury), for years except most recent, information from government agency reports and trade sources or, for most recent year, judgmental trend. Payments to the rest of the world: Estimated as part of the balance of payments accounts.	Judgmental trend.
Indirect business tax and nontax liability ($604.8)	Federal Government ($95.8)	For excise taxes, collections from the Bureau of Alcohol, Tobacco, and Firearms and the Internal Revenue Service; for customs duties, receipts from *Monthly Treasury Statement*; and for nontaxes (such as fines), receipts from the *Budget of the United States* prepared by the Office of Management and Budget.	For customs duties, Monthly Treasury Statement; for most excise taxes, derive from indicators of activity (such as gasoline production for gasoline tax); f others in this group, judgmental trend.
	State and local governments ($508.9)	Receipts from Census Bureau quinquennial censuses and annual and quarterly surveys, adjusted to a calendar year basis from a fiscal year basis.	Judgmental trend.
Subsidies less current surplus of government enterprises ($25.4)	Federal Government ($37.7)	For subsidies, payments by the Commodity Credit Corporation from agency reports and, for most other agencies, outlays from *Monthly Treasury Statement*; for current surplus, mainly reports of various agencies, such as the Postal Service, and consumption of fixed capital estimates derived with perpetual-inventory calculations at current cost, based on gross investment and on investment prices.	For subsidies, Commodity Credit Corporation reports and judgmental trend; for current surplus, judgmental trend and consumption of fixed capital estimates derived with perpetual-inventory calculations at current cost, based on gross investment and on investment prices.
	State and local governments (**B**$12.3)	For subsidies, limited to railroad, Census Bureau annual surveys of expenditures, adjusted to a calendar year basis from a fiscal year basis. For current surplus: For current operating receipts, mainly revenue data from Census Bureau annual surveys of state and local governments, adjusted to a calendar year basis from a fiscal year basis; for current operating expenditures, see entries above for »state and local investment in equipment and consumption expenditures, except compensation, consumption of fixed capital, brokerage charges, and financial services furnished without payment= and for »state and local consumption of general government fixed capital= under Government consumption expenditures and gross investment.	Judgmental trend.

Table 5.1. Principal source data and estimating methods used in preparing estimates of current-dollar GDP-Continued

Component (billions of dollars)	Subcomponent (billions of dollars)	Annual estimates: Source data and methods used to determine level for benchmark and other years or used to prepare an extrapolator or interpolator	Advance quarterly estimates: Source data and methods used to prepare an extrapolator
Income side (Gross national income of $7,697.6 billion for 1996)**C**Continued			
Consumption of fixed capital ($830.1)	**Government:** ($147.4)		
	General government ($125.1)	Perpetual-inventory calculations at current cost, based on gross investment and on investment prices.	Same as annual.
	Government enterprise ($22.3)	Perpetual-inventory calculations at current cost, based on gross investment and on investment prices.	Same as annual.
	Private: ($682.7)	Perpetual-inventory calculations at current cost, based on gross investment and on investment prices.	Same as annual.
	Capital consumption allowances ($709.9)	Years except most recent**C**For depreciation of corporations and of nonfarm sole proprietorships and partnerships, Internal Revenue Service tabulations of business tax returns, adjusted for several conceptual differences; for other depreciation (including noncorporate farms, nonprofit institutions, and owner-occupied houses), perpetual-inventory calculations; for accidental damage to fixed capital, losses reported to insurance companies and government agencies. Most recent year**C**For depreciation of corporations and non-farm sole proprietorships and partnerships, BEA estimates of tax-return-based depreciation; for other depreciation and accidental damage to fixed capital, same as other years.	Judgmental trend.
	Less: CCAdj ($27.1)	For corporations and nonfarm sole proprietorships and partnerships, the difference between tax-return-based calculations and perpetual-inventory calculations; for other (including noncorporate farms, nonprofit institutions, and owner-occupied houses), the difference between perpetual-inventory calculations at historical cost and current cost.	Judgmental trend.

CCAdj Capital consumption adjustment
IVAInventory valuation adjustment
NIPA National income and product account

Source: 1996 estimates, *Survey of Current Business*, August 1997.

Appendix 2

SOURCE DATA USED IN THE FLOW OF FUNDS BALANCE SHEETS

1. Introduction

5.51 The table that follows shows the major source data used by the Federal Reserve Board (FRB) to prepare balance sheets for the United States in the following sectors: public, households, farm business, non-farm non-corporate business, non-farm non-financial corporate business, and private financial institutions. Although much of the source data used to prepare these balance sheets is the same as that used to prepare the NIPA, they are not consistent with the NIPA; work has started to develop an integrated set of accounts.

2. Use of business accounts

5.52 The table was prepared based on information about source data published by the FRB. For this paper, each of these sources, which is listed along with the asset category and sector for which it is used, is classified as to whether the source is a statistical report, a trade source, a regulatory source, or a tabulation of tax returns. The tabulations of tax returns are considered to be business accounts, and this source is used extensively for the asset detail for non-financial corporate and non-corporate business. The regulatory and statistical reports are taken from business accounts. However, because many corporations engage in both financial and non-financial activities, when source data cannot be broken down by industry, the data on non-financial corporations include an unknown amount of financial activity.

Table 5.2. Business account data used in the flow of funds balance sheets

SOURCE TITLE	TYPE	ASSET CATEGORY	SECTOI
Statistics of income source books: Partnership Returns, Sole Proprietorship Returns, Corporation Income Tax Returns; SOI Bulletin	Tax return	Assets and liabilities of corporate and non-corporate business, tax liabilities of financial institutions	Non-farı business Non-farı Private f
Quarterly financial reports for manufacturing, mining, and trade corporations	Statistical	Assets and liabilities of non-farm non-financial corporations	Non-farı business
FOGS report (Report on finances and operations of government securities brokers and dealers)	Regulatory	Assets and liabilities of security brokers and dealers	Private f
FR Y-9LP report (Parent company only financial statements for bank holding companies with total consolidated assets of $150 million or more, or with more than one subsidiary)	Regulatory	Assets and liabilities of domestic affiliates of commercial banks (bank holding companies)	Private f
ICI Supplementary Data	Trade source	Assets and liabilities of mutual funds and money market mutual funds	Private f
IRS/DOL/PBGC Form 5500, Annual return/report of employee benefit plans	Regulatory, tax return	Assets and liabilities of private pension plans	Private f
Life Insurance Fact Book Life Insurance Fact Book Update	Trade source	Assets and liabilities of life insurance companies	Private f
Monthly Credit Union Estimates	Regulatory, statistical	Assets and liabilities of credit unions	Private f
Finance companies, quarterly statements	Statistical	Assets and liabilities of finance companies	Private f
Finance companies, quinquennial statements	Statistical	Assets and liabilities of finance companies	Private f
Mutual Fund Fact Book	Trade source	Assets and liabilities of mutual funds and money market mutual funds	Private fi
National Credit Union Share Insurance Fund (Annual report)	Regulatory, statistical	Assets and liabilities of the National Credit Union Share Insurance Fund	Private fi sector
Finance Companies (G.20 statistical release)	Statistical	Assets and liabilities of finance companies	Private f
FOCUS report (Financial and Operational Combined Uniform Single Report)	Regulatory	Assets and liabilities of security brokers and dealers	Private f
Reports of condition and income for depository institutions (The	Regulatory	Assets, liabilities, income and expenditures of depository	Private f

SOURCE TITLE	TYPE	ASSET CATEGORY	SECTOI
FDIC Quarterly Banking Profile, Quarterly Financial Results and Condition of the Thrift Industry; Aggregated Thrift Financial Reports)		institutions	
REIT Watch	Trade source	Assets and liabilities of Real Estate Investment Trusts	Private f
Best=s Aggregates and Averages, Property-Casualty	Trade source	Assets and liabilities of property-casualty insurance companies	Private f
Trends in Mutual Fund Activity	Trade source	Assets and liabilities of mutual funds and money market mutual funds	Private f
Trust Assets of Financial Institutions	Regulatory	Assets and liabilities of private pension funds	Private f
Federal National Mortgage Association, Balance Sheet	Regulatory, statistical	Assets and liabilities of Federal National Mortgage Association	Public s
Student Loan Marketing Association, Consolidated Balance Sheets	Regulatory, statistical	Assets and liabilities of Student Loan Marketing Association	Public s

Note: This table was adapted from ASources of Data for the Accounts@ *Guide to the Flow of Funds Accounts* (Washington, DC, Board of Governors of the Federal
Reserve System, 1993), pp. 47-55.

Appendix 3

CLASSIFICATIONS OF PRODUCTION IN THE NATIONAL INCOME AND PRODUCT ACCOUNTS (NIPA)

5.53 This appendix describes the various sectoral and industry classifications of production used in the NIPA. Note: **Table number references are to the NIPA tables that appear each month in BEA's journal**, the *Survey of Current Business.*

1. Sectors

5.54 In the basic NIPA presentation (table 1.1), current-dollar GDP is shown as the sum of expenditures. In table 1.7, the GDP is also shown as the sum of three major NIPA sectors - business, households and institutions, and general government. The production of each of these sectors is defined below; their relationship to the SNA sectors follows.

(a) Business

5.55 This includes production by all entities that produce goods and services for sale at a price intended at least to approximate the costs of production, corporate and non-corporate private entities organized for profit, plus certain other entities treated as business in the NIPA. These entities include mutual financial institutions, private uninsured pension funds, cooperatives, non-profit organizations (that is, entities determined to be non-profit by the Internal Revenue Service (IRS) for purposes of determining income tax liability) that primarily serve business, Federal Reserve banks, federally sponsored credit agencies, and government enterprises. (For more detail on government enterprises, see section 3 below on legal form of organization.)

5.56 Business production also includes the services of owner-occupied housing and of buildings and equipment owned and used by non-profit institutions that primarily serve households. In theory, production of the business sector can be measured either as the difference between output and intermediate consumption or as the sum of the costs incurred and incomes earned by business from production. In practice, it is measured as GDP less the product of the household and institutions and of the general government sectors, which in NIPA is the equivalent of the sum of costs incurred and incomes earned in production plus the statistical discrepancy.

(b) Households and institutions

5.57 This includes production by households, consisting of families and unrelated individuals, and by non-profit institutions that primarily serve individuals. Production is measured by the compensation of the employees of these entities. (As noted above, the services of owner-occupied housing and of buildings and equipment owned and used by non-profit institutions that primarily serve households are defined as part of the business sector.)

(c) General government

5.58 This includes production of all federal, state and local government agencies except government enterprises. Production is measured as the sum of the compensation of the employees and consumption of fixed capital by these agencies.

5.59 In the 1993 SNA, the sectors are organized somewhat differently. Although the NIPA business sector is similar to the combination of the SNA financial and non-financial corporations sectors, it includes all sole proprietorships and partnerships, owner-occupied housing, and buildings and equipment owned and leased by non-profit institutions serving households; it excludes all market non-profit institutions serving households. The NIPA household and institutions sector consists only of households and non-profit institutions serving households as institutional units.

2. Subsectors

5.60 In addition to the gross domestic product of the business sector, estimates are shown of the gross domestic product of the housing, farm, and corporate sectors and for the gross product of government enterprises. The housing subsector data cover all outputs, inputs, and incomes relating to residential housing. The farm subsector data cover all outputs, inputs, and incomes related to the private production of farm products. (Both the housing and farm sectors cover all business entities engaged in these activities and thus include corporations and government enterprises.) Business product less farm and housing is used as the numerator in the calculation of quarterly labour productivity. (See NIPA table 1.7).

5.61 The gross domestic product of financial and non-financial corporations is also presented in the NIPA (table 1.16). Corporations for this purpose include all corporate entities as defined in section 3 below. The corporate GDP is further divided between financial and non-financial corporations, using the definitions in section 4 below. All corporate business subsector estimates are prepared as the sum of costs incurred and incomes earned in production. Estimates on the gross output and intermediate purchases of these corporations are not available.

5.62 Financial industries consist of the following 1987 Standard Industrial Classification (SIC) industries: depository and non-depository institutions, security and commodity brokers, and insurance carriers. They also include regulated investment companies, small business investment companies, and real estate investment trusts, which are classified in the SIC, holding and other investment companies. Non-financial industries consists of all other private industries.

3. Legal form of organization

5.63 For the domestic business sector, income and its components are shown in the NIPA tables for four legal forms of organizations - corporate business, sole proprietorships and partnerships, other private business, and government enterprises (compensation of employees only). The entities whose production is included in each of these legal forms are specified below.

(a) Corporate business

5.64 This includes all entities required to file federal corporate tax returns (IRS Form 1120 series) including mutual financial institutions and cooperatives subject to federal income tax, private uninsured pension funds, non-profit institutions that primarily serve business, Federal Reserve banks, and federally sponsored credit agencies.

(b) Sole proprietorships

5.65 This includes all entities that would be required to file IRS Schedule C (Profits or Loss from Business) or Schedule F (Farm Income and Expenses) if the proprietor met the filing requirements, together with owner-occupied farm housing.

(c) Partnerships

5.66 This includes all entities required to file federal partnership income tax returns, IRS Form 1065 (U.S. Partnership Return of Income).

(d) Other private business

5.67 This includes all entities that would be required to report rental and royalty income on the individual income tax return in IRS Schedule E (Supplemental Income and Loss) if the individual met the filing requirements, tax-exempt cooperatives, owner-occupied non-farm housing, and buildings and equipment owned and used by non-profit institutions that primarily serve individuals.

(e) Government enterprises

5.68 This includes government agencies that cover a substantial proportion of their operating costs by selling goods and services to the public and maintain their own separate accounts. A "mixed" treatment of government enterprises is used in the NIPA, in which some types of transactions are recorded as if they were part of the business sector and others as if they were part of the general government sector.

5.69 Government enterprises are treated like other businesses and included in the NIPA business sector in that (a) their sales to final users are recorded as sales by private businesses; (b) their purchases of materials and business services are considered intermediate; and (c) their compensation payments and consumption of fixed capital are deducted in calculating their income. Within the business sector, government enterprises are classified as non-corporate businesses.

5.70 Government enterprises are treated like other government agencies in that (a) their interest payments are combined with those of general government rather than those of business and (b) their investment in equipment and structures is combined with general government investment rather than with business investment in gross private domestic investment, and (c) their profit-like income, the current surplus of government enterprises, accrues to general government.

4. Industry

5.71 Industrial distributions are presented in the NIPA for national income and its components, capital consumption allowances, employment and hours, and the change in business inventories and the stock of business inventories. The classification underlying the distributions of private activities is based on the SIC.

5.72 Industrial distributions of government activities are not provided; instead, they are combined into a single category. For most series, separate estimates are shown for the activities of the federal Government, of state and local governments, and of government enterprises. Expenditures by the federal Government and state and local governments are also shown by type and function.

5.73 The industrial distributions for private activities are based on data collected either from "establishments" or from "companies" (also called enterprises or firms). Establishments, as defined for purposes of the SIC, are economic units, generally at a single physical location, where business is conducted or where services or industrial operations are performed. Companies consist of one or more establishments owned by the same legal entity or group of affiliated entities. Establishments are classified into an SIC industry on the basis of their principal product or service, and companies are classified into an SIC industry on the basis of the principal SIC industry of all their establishments. Because large, multi-establishment companies typically own establishments that are classified in different SIC industries, industrial distributions of the same economic activity for establishments and companies can be significantly different.

5.74 For the NIPA series, industrial distributions on a consistent establishment or company basis are not available. For the following series, the industrial distributions are based on establishment data: ompensation of employees, employment, hours, inventories, rental income of persons, farm proprietors' income, farm net interest, and farm non-corporate capital consumption allowances. For non-farm proprietors, industrial distributions of proprietors' income, net interest, and capital consumption allowances are based on company data. These data are regarded as being much the same as if they were based on establishment data because nearly all unincorporated companies own only one establishment (and the few multi-establishment companies usually own establishments in the same SIC industry). For corporations, industrial distributions of profits, non-farm net interest, and capital consumption allowances are based on company data.

5.75 To overcome this mix of company and establishment data, BEA prepares estimates of gross product originating (GPO) that more closely reflect consistent establishment data. (They are no longer presented as part of the regular NIPA presentations because their preparation requires an additional several months.) For these estimates, the company-s distributions of corporate profits before taxes and corporate capital consumption allowances are converted to an establishment - industry basis. The conversion is based primarily on special Census Bureau matrices of the employment of establishments of corporations. These matrices present employment of these establishments cross-classified by (a) the company-industry classification assigned for the "Statistics of Income" program tabulations of corporate tax returns and (b) the establishment-industry classification assigned by the Census Bureau in the establishment (economic) censuses. For integrated petroleum companies, the results of applying this matrix are supplemented by information from Department of Energy tabulations of the net income and depreciation of energy companies on an establishment basis. Adjustments to the matrix also are made, when necessary, to reflect publicly available information about large mergers, acquisitions, or changes in company diversification that have occurred since 1987, the year covered by the latest matrix as of this writing.

Appendix 4

RELATION OF CORPORATE PROFITS IN THE NATIONAL INCOME AND PRODUCT ACCOUNTS (NIPA) TO CORRESPONDING MEASURE AS PUBLISHED BY THE INTERNAL REVENUE SERVICE (IRS)
(in billions of dollars)

	1992	1993	1994	1995	1996
Total receipts less total deductions, IRS	412.2	505.0	585.1	.....	.....
Plus:					
Adjustment for misreporting on income tax returns	70.7	72.5	78.1	.....	.....
Post tabulation amendments and revisions[73]	-9.0	-6.6	-23.4	.....	.....
Income of organizations not filing corporation income tax returns	-1.1	-4.0	-4.5	.....	.....
Federal Reserve banks	17.8	16.1	17.8	.....	.....
Federally sponsored credit agencies[74]	1.9	2.1	2.1	.....	.....
Other[75]	-20.8	-22.3	-24.3	.....	.....
Depletion on domestic minerals	7.3	6.9	7.6	.....	.....
Adjustment to depreciate expenditures for mining exploration, shafts, and wells	-7.0	-6.0	-3.4	.....	.....
State and local corporate profit tax accruals	24.4	26.9	29.9	.....	.....
Interest payments of regulated investment companies	-69.9	-78.7	-97.4	.....	.....
Bad debt expense	89.6	80.7	67.9	.....	.....
Less: Tax-return measures of:					
Gains, net of losses, from sales of property	70.9	90.8	71.0	.....	.....
Dividends received from domestic corporations	25.3	28.8	33.0	.....	.....
Income on equities in foreign corporations and branches (to U.S. corporations)	56.2	59.1	62.2	.....	.....
Costs of trading or issuing corporate securities[76]	17.4	20.4	5.2	.....	.....
Taxes paid by domestic corporations to foreign Governments on income earned abroad	5.8	6.0	6.8	.....	.....
Plus: Income received from equities in foreign corporations and branches by all U.S. residents, net of corresponding payments	64.9	73.9	73.4	.....	.....
Equals: Profits before taxes, NIPA	406.4	465.4	535.1	622.6	676.6

[73]Consists largely of an adjustment to expense for all meals and entertainment, of oil-well bonus payments written off, of adjustments for insurance carriers and savings and loan associations, of amortization of intangible assets, and of tax-exempt interest income.

[74]Consists of the Farm Credit System for 1947 forward and the Federal Home Loan Banks for 1952 forward.

[75]Consists of private uninsured pension plans, non-profit organizations serving business, and credit unions.

[76]Includes the imputed financial service charge paid by corporations to domestic securities dealers who do not charge an explicit commission.

VI. LINK BETWEEN BUSINESS ACCOUNTS AND NATIONAL ACCOUNTS FOR THE NON-FINANCIAL SECTOR

Ching Hea Choo[77]
Department of Statistics of Malaysia

A. Introduction to the compilation of the SNA institutional sector accounts in Malaysia

6.1 In order to meet the needs of policy makers and analysts of the Malaysian economy which is fast growing and maturing, the Department of Statistics of Malaysia (DOS) under the direct authority of the Prime Minister=s Office has decided to set up the institutional sector accounts to monitor production, income, savings and capital formation in each institutional sector of the economy. This effort starts with a project supported by UNDP and the United Nations Statistics Division. After the project is completed, the compilation of the income-outlay and capital-finance accounts, an important part of the whole institutional sector accounts, will become part of the ongoing work of DOS. Also in support of the future implementation of the 1993 SNA, the project will introduce the new standards of the United Nations system in the compilation. For that reason, the GDP and other national accounts aggregates will deviate from those currently compiled by the National Accounts Division (NAD) of DOS. In this sense, the project will provide initial estimates which will indicate where discrepancies are most glaring between economic indicators compiled under the 1993 SNA standards and under the 1968 SNA standards so that the current time series of economic indicators compiled under the 1968 standards can be updated to the 1993 SNA more economically. Except for the financial sector covering banking, insurance, pension funds, and other financial activities, which is fully recompiled using basic statistics that are primarily based on business accounts, other sectors take outputs and intermediate consumption from NAD as points of departure, i.e. as total controls from which value added according to the 1993 SNA is derived. The main difference is the treatment of service charges of financial intermediaries (FISIM) as intermediate consumption of every activity in the new 1993 SNA.

6.2 As of this writing, the results of the project were still being finalized so none could be given. The main focus is to present the methods used by DOS to compile institutional sector accounts using current national accounts for the whole economy as the point of departure. The conclusions that can be drawn from the project are as follows:

(a) The compilation of institutional sector accounts, given currently available statistics, is possible in Malaysia, though the quality of estimates will improve if additional data are available;

(b) Business accounts should be further utilized in conjunction with benchmark statistics collected by censuses; and in many activities in which a few corporations dominate, business accounts may replace

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annual surveys. In fact, they have already been used to compile many activities by DOS, namely electricity, water, air and railway transports, communication, business services and all financial activities.

1. Overall framework of the Malaysian institutional sector accounts

6.3 The compilation of the institutional sector accounts in Malaysia started only in mid-1994. The institutions in the economy are categorized as follows:

(i) Non-financial sector - public;
(ii) Non-financial sector - private;
(iii) Financial sector, banks - public;
(iv) Financial sector, banks - private;
(v) Financial sector, other financial institutions - public;
(vi) Financial sector, other financial institutions - private;
(vii). Financial sector, insurance and pension funds - public;
(viii) Financial sector, insurance and pension funds - private;
(ix) General government - federal;
(x) General government - state;
(xi) General government - local;
(xii) Households and non-profit institutions serving households;
(xiii) Rest of the world.

6.4 The types of accounts covered for the above institutional sectors are as follows:

- Production accounts;
- Generation of income accounts;
- Allocation of primary income accounts;
- Secondary distribution of income accounts;
- Redistribution of income accounts; and
- Capital accounts.

6.5 It is to be noted here that the accounts beyond the capital accounts are not compiled for Malaysia.

2. Non-financial sector

6.6 The accounts for the non-financial sector are compiled from different sources of data, namely, the annual surveys carried out by the Statistics Department of Malaysia, the government budget reports/statistics and the annual financial reports of companies. In 1987, the most recent benchmark year in Malaysia, data from financial statements or business accounts made up about 13 percent of the total value added of the non-financial sector, while survey data accounted for 62 percent and the balance of 25 percent was from statistics obtained from related agencies in the sector where no information can be obtained either through business accounts or survey.

6.7 The industries in the non-financial sectors which are covered by the surveys include the following:

(i) Manufacturing;
(ii) Mining;

(iii) Medical, dental, other health and veterinary services;
(iv) Private schools and other educational facilities/services;
(v) Motion pictures and other entertainment services;
(vi) Transport - Road transport;
(vii) Transport - Services allied to transport;
(viii) Agriculture - Rubber planting (estate);
(ix) Agriculture - Oil palm estates;
(x) Agriculture - Tea estates;
(xi) Agriculture - Coconut estates;
(xii) Wholesale and retail trades;
(xiii) Hotels.

6.8 The industries which depend on data from financial reports or government budget reports are:

(i) Transport - Railway;
(ii) Transport - Air;
(iii) Transport - Water;
(iv) Transport - Communication;
(v) Electricity;
(vi) Water;
(vii) Business services;
(viii) Other recreational services.

3. Financial sector

6.9 The main sources of data for the financial sector are the aggregate financial statements from the commercial banks, finance companies, merchant banks and insurance companies respectively, which can be obtained from the central bank, and the annual financial statements from individual financial institutions.

4. General government sector

6.10 The general government sector is divided into three levels, namely, federal, state and local. Data sources for general government are the different government accounts.

5. Household sector

6.11 The household sector is made up of (i) individual households and (ii) unincorporated enterprises owned by the households, which are involved in the production of goods and services for their own final consumption or for sale in the market. By the SNA definition, unincorporated enterprises do not keep a full set of accounts, and if they do, they usually are not able to separate appropriately their expenditures into those used for business and those used for their own consumption. The accounts for the household-owned unincorporated enterprises are estimated using the results of the ›Common Questionnaire: (CQ) surveys, that is, unincorporated enterprises covered by CQ, consisting of partnerships and sole proprietorships, and the part that is measured residually after inflating CQ results to the total control estimates. The accounts for the individual households are measured residually.

6.12 The household sector of Malaysia also includes the non-profit institutions serving households (NPISHs) which provide goods or services free or at prices that are not economically significant. They could

be treated as a separate sector but because data on them are too scanty it was decided to treat them as part of the household sector.

6.13 The household sector should, by definition, include all economic activities that might be either illegal or underground. However, these activities are generally not included in the national accounts system of Malaysia because the censuses and surveys do not cover activities that are not included in the survey listing. There are exceptions insofar as illegal or underground activities can be estimated as a result of balancing the input-output tables. For example, as construction was believed to be undercovered by official statistics, the underground and undercovered activities were estimated using the demand for, and supply of cement, one of the essential inputs in construction.

6. Rest of the world sector

6.14 The rest of the world sector accounts are compiled from the balance of payment accounts with some reclassification or adjustment made on relevant transactions.

B. Compilation of the accounts for the non-financial sector

1. Sources of data

6.15 Different sources of data are used to compile the income-outlay and capital accounts of the non-financial sector for Malaysia. Some of the main sources are the annual economic surveys carried out by the Department of Statistics, namely, the annual Common Questionnaire Survey, the annual Financial Survey and the Estate Survey, and the annual financial reports of companies as well as the government budget reports/statistics.

(a) Common Questionnaire (CQ) survey

6.16 The annual CQ survey is carried out to collect data for the compilation of the production account, as well as to provide some economic statistics on some important industries. In general the statistical unit used is the establishment. Not all CQ surveys cover all the establishments. The cut-off point for an establishment to be covered is the number of employees, which varies from 5 to 100 depending on the industry and region. The industries covered include:

- Manufacturing;
- Mining;
- Construction;
- Transports (buses and taxis);
- Shipping;
- Stevedoring;
- Transport-related services;
- Advertising;

- Professionals: - lawyers;
  - doctors;
  - dentists;
  - veterinary doctors;
  - engineers;

- architects;

- Institutions: - schools;
  - hospitals.

6.17 The type of information collected includes production and related expenditures, fixed capital formation, as well as income receivable and payable such as interest, dividends, royalties, and corporate taxes payable. Income uses and resources which more appropriately pertain to that of enterprise are also furnished by the establishments because most enterprises have made an allocation of such transactions in the accounts of their subsidiaries or branches. For establishments where such information is not available, the statisticians involved in the survey will try to make an estimation based on the data provided by the establishments' headquarters.

6.18 Other information collected in the survey pertains to type of industry, establishments number, legal status and ownership. The categories of legal status and ownership of the establishments are as follows:

- Legal status: - individual proprietorships;
  - partnerships;
  - private limited companies;
  - public limited companies;
  - public corporations;
  - cooperatives;

- Ownership: - publicly owned;
  - privately owned;
  - jointly owned.

6.19 In adjusting the CQ survey data to meet the needs of the institutional sector accounts for Malaysia, information on the legal status and ownership is used especially to convert establishments into enterprises. For example, the legal status factor is used to classify the establishments into incorporated or unincorporated enterprises, while the ownership factor, which is based on the equity share, is used to classify the establishments into public or private corporations.

6.20 All industries which are individual proprietorships and partnerships are classified as household unincorporated enterprises. The assumption made here is that individual proprietorships and partnerships in Malaysia are mostly small businesses even though they may have business accounts. Cooperatives are classified as private non-financial corporations as these are normally non-financial cooperatives.

6.21 Private limited companies and public limited companies owned by the private sector are classified as private non-financial corporations whereas public limited companies owned by the Government and public corporations are classified as public non-financial corporations.

(b) Financial survey (FS)

6.22 The annual financial survey carried out by the Department of Statistics covers only large enterprises with an annual turnover of 5 million ringgit or more. It is carried out mainly to collect data on international transactions with the rest of the world in order to meet the data need for the compilation of the balance of payments.

6.23 As compared with the CQ surveys the financial survey is rather limited in its scope and coverage, and for that reason data from CQ surveys are preferred as inputs for the compilation of the institutional accounts. Nevertheless, part of the information collected in the FS is also used to supplement some of the transactions not covered by the CQ surveys as well as for cross-checking purposes.

(c) Estate survey

6.24 This survey is carried out on:

- Rubber estates;
- Oil palm estates;
- Tea estates;
- Coconut estates;
- Cocoa estates.

6.25 Annual or biennial surveys are carried out on estates like rubber, oil palm, tea, coconut and cocoa. The definition of an estate is: land, contiguous or non-contiguous, aggregating not less than 40.47 hectares (100 acres) in area, planted with the specified crop or on which the planting of the specified crop is permitted and is under a single legal ownership, or any area under the specified crop in an already existing estate of other crop. The information collected includes area planted, production (in quantity), yield, cost of production and capital formation.

6.26 Compilation of the institutional sector accounts for these industries in the agriculture sector is based on data from these surveys and statistics from the Agriculture Department. Estates are treated as corporate sector, and their output is estimated using the ratio of estate production over the total production times the total control output. As the total output of every agricultural industry is known, the difference between total control output and the total output of estates is the output of the household unincorporated sector.

(d) Business accounts

6.27 The other main source of information for the compilation of the institutional sector accounts is found in the annual financial reports of companies. Business accounts are required for industries which are not covered by any surveys. They are collected directly from the companies concerned.

6.28 Besides, government accounts prepared by some public enterprises are also used. As for some informal sectors like poultry and other livestock where no survey data or business accounts are available, information from cost analysis studies is used.

2. Use of the Common Questionnaire survey and the estate survey data for the compilation of the institutional accounts

6.29 Data from the CQ surveys are organized by legal status and ownership to classify the industries into public corporations, private corporations and household unincorporated enterprises. Transactional data are then tabulated to suit the SNA components such as output, input, compensation of employees, property income, current transfers and so on.

(a) Production account

6.30 In general output of the sectors covered by the CQ surveys can be obtained by summing up the following components:

- Value of products manufactured, or of output of minerals/quarries, or of construction work done;
- Income from processing work done for others on their materials;
- Income from repair and maintenance services rendered to others;
- Trade margin on the sales of purchased goods;
- Electricity sold;
- Capital expenditure on own construction;
- Increase in stocks of semi-finished good;
- Sales of meals and refreshments (hotels only);
- Commissions and brokerage earned;
- Value of tickets sold (cinemas only);
- Passenger fares received;
- Income from conducted tours;
- Receipts for accommodations (hotels only);
- Freight on transportation of goods;
- Management fees received;
- Fees for professional services rendered;
- Fees received by institutions;
- Income from all other services rendered;
- Income from rental of transport equipment;
- Income from rental of premises.

While the components of input are:

- Value of raw materials consumed;
- Value of supplies consumed;
- Cost of printing;
- Cost of goods purchased for catering (hotels only);
- Utilities and fuels consumed;
- Cost of work done by others on repairs and maintenance;
- Cost of work done by others on materials supplied;
- Cost of non-industrial services (e.g. advertising fees, bank charges, management fees, professional fees, insurance, rental, etc.).

6.31 As the CQ surveys do not cover all establishments, it is necessary to extrapolate to full coverage. For example, CQ data cover the incorporated and the registered unincorporated enterprises, but do not cover all enterprises in a particular activity. Therefore, they must be extrapolated. See section I of table 6.1 (p. 162). The difference between the National Accounts Division estimates and the CQ totals is to be attributed to the residual household unincorporated sector, under the assumption that the establishments not covered by the CQ survey are all small and belong to the unregistered household unincorporated enterprises. The input is also adjusted to comply with the 1993 SNA concepts.

(b) Generation of income account

6.32 The components of the generation of income account which can be obtained from the CQ surveys include salaries and wages, and free food, accommodations and medical care, treated as unfunded social contributions/benefits, employer's contributions to employees: provident fund,[78] to social security,[79] and to privately funded provident funds.

6.33 Assessment rates and quit rent paid on property/land where the production takes place are to be taken as other taxes on production. Other taxes on production include business registration fees, driving license fees, stamp duties and the like. Data on excise taxes, sales taxes and export duties are also collected in the CQ surveys. However, because such information is needed only at the total economy level, which can be obtained from the government accounts, it can be ignored. Moreover, information on such transactions from government accounts is assumed to be more accurate and reliable.

6.34. The components of the value added are raised by the raising factor derived for value added which is equal to value added from control totals divided by value added from CQ.

6.35. The mixed income of the household unincorporated enterprises is derived as follows:

Value added of the total household unincorporated enterprises
minus Compensation of employees and the operating surplus of the registered household unincorporated enterprises covered by the CQ survey
minus Other taxes on production.

(c) Primary income account

6.36. The data on property income which can be obtained from the CQ survey are interests payable and receivable, dividends receivable and royalties payable to government. Dividends payable are not collected in the CQ survey. However, such missing information is supplemented by the FS survey where estimates on dividends payable can be made. It is assumed that there are no dividends payable by the household unincorporated enterprises.

6.37. Property income is also raised to full coverage by the raising factor for output (control total output divided by CQ output).

6.38. During the compilation of sectoral accounts, interests payable and receivable are taken as gross and no adjustment is made on financial intermediation services indirectly measured (FISIM)). The adjustment on FISIM, to obtain pure interests payable or receivable, however, is made for the total non-financial public sector or the total non-financial private sector.

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[78] The Employees Provident Fund (EPF) is a trustee fund set up for the purpose of providing retirement benefits to members, very similar to the pension fund in the 1993 SNA. The members consist of the private and non-pensionable public sector employees. The employers as well as the employees are required to contribute to EPF based on the rate of contribution set in the EPF statute. While the major portion of the fund can only be withdrawn when an employee retires at age 55, a portion of the fund can be withdrawn at any time to help pay for a house and medical expenses.

[79] The Social Security Organization (SOCSO) administers the social security schemes which give protection to employees for several contingencies, namely employment injury, invalidity and death. The objective of the social security schemes is to guarantee payment of benefits to employees and their dependents in the event of a contingency occurring. This scheme is not compulsory for all employees but is compulsory for private sector employees with monthly income below a certain level. SOCSO is similar to the private social security organization mentioned in the 1993 SNA.

(d) Secondary distribution of income account

6.39. Current transfers data from the CQ survey include direct taxes payable, non-life insurance premium payable and claims receivable, remittances, grants, and subscriptions payable/receivable. Scholarships payable, if any, will be treated as current transfers if given to non-employees, but if given to employees, they will be treated as part of compensation of employees.

6.40. For non-life insurance premium payable, an insurance service charge is estimated and included as part of the intermediate consumption of the industry. The insurance service charge is based on a ratio estimated during the compilation of the non-life insurance sector, which is equal to the output of the sector divided by the total premium received by it. The net insurance premium, which is equal to the gross insurance premiums minus non-life insurance service charges, is treated as current transfers in the secondary distribution of income account.

(e) Capital account

6.41. Data on gross fixed capital formation (GFCF) from the CQ surveys include:

(i) Purchase/acquisition of new or old,
(ii) Sales/disposal of, and
(iii) Own-construction involving the following capital goods:
- Land;
- Land improvement;
- Buildings - residential and non-residential;
- Machinery/equipment;
- Transport equipment;
- Furniture and fixtures.

6.42. Total GFCF by sectors are estimated based on the control total which is the NADs estimates. The GFCF for the private and public corporations covered by the CQ are raised by the raising factor for output. The difference between the control total GFCF and the total inflated GFCF of the corporations plus the GFCF of the registered household unincorporated enterprises covered by CQ is the GFCF for the unregistered household unincorporated enterprises not covered by the CQ survey.

Table 6.1. Use of CQ survey data for the compilation of the sectoral accounts

INDUSTRY	Private corporations		Public corporations		Unincorporated households						Total CQ		Control total (inflated) from national accounts		In
					Registered		Unregistered (residual)		Total						
	U	R	U	R	U	R	U	R	U	R	U	R	U	R	
Output		330,700		11,508		9,002		13,730[2]		22,732		351,210		364,940[1]	
Intermediate consumption	225,375		7,684		4,952		7,183[4]		12,135				0		
CQ intermediate consumption 1	225,521		7,713		4,996						238,230		245,420[3]		
CQ intermediate consumption 2	225,375		7,684		4,952						238,011		245,420[1]		
Input / Output ratio	0.68		0.67		0.55		0.52		0.53		0.68		0.67		
VALUE ADDED (VA) before adjustment for FISIM	105,325		3,824		4,050		6,547		10,597		113,199		119,746		
													80,455[1]		
Compensation of employees (CE)	73,435		2,626		3,181				3,181		79,242		79,242		
	66,620		2,353		2,968				2,968		71,941		71,941		
	6,815		273		213				213		7,301		7,301		
Provident fund	6,365		250		201				201		6,816		6,816		
Government pension funds															
Private pension funds															
Other life insurance schemes															
SOCSO	450		23		12				12		485		485		
Mixed income (a + b)									7,687[5]				7,687		
a. Control total CE minus CQ's total CE									1,213[6]						
b. VA - (CE+OS) - other taxes on production									6,474[7]						
Other taxes on production	1,075		21		166		73		239		1,262		1,335		
	466		14		120		35		155		600		635		
	609		7		46		38		84		662		700		
Operating surplus (OS)	30,815		1,177		703				703		32,695		32,695		

U stands for uses; R stands for resources.

CQ intermediate consumption 1 refers to the intermediate consumption (IC) from CQ as taken by the National Accounts Division (NAD), where insurance premium was tak IC.

CQ intermediate consumption 2 refers to the IC from CQ for the sectoral accounts. Here, only the insurance service charge was taken as IC, while the net insurance premium (insurance premium minus service charge) was categorized as current transfer in the secondary distribution of income account.

1. Control total from NAD's estimates.
2. Control total output minus total output from CQ.
3. Control total IC multiplied by the ratio of CQ intermediate consumption 2 / CQ intermediate consumption 1.
4. Control total IC minus total intermediate consumption 1 from CQ.
5. Mixed income of household unincorporated enterprises which is the sum of 6 and 7.
6. Mixed income of household unincorporated enterprises: Control total CE minus total CE from CQ.
7. Mixed income of household unincorporated enterprises: Value added of the total unincorporated household minus compensation of employees and operating surplus of the registered household unincorporated enterprises covered by the CQ survey minus other taxes on production.

Table 6.1. (cont'd): Use of CQ survey data for the compilation of the sectoral accounts

JSTRY	Private Corporations		Public Corporations		Unincorported households						Total CQ		Total (inflated/ National accounts		Ir
					Registered		Unregisted (residual)		TOTAL						
	U	R	U	R	U	R	U	R	U	R	U	R	U	R	
From CQ survey															
Property income															
Interest by financial corporations	4,845	2,525	17	52	148	104					5,010	2,681	5,206	2,786	
Dividends		217		0		0					0	217	0	225	
Adjusted															
Property income															
Interest by financial corporations	5,034	2,624	18	54	154	108			154	108			5,206	2,786	
Dividends		225		0		0				0			0	225	
Taxes on income	2,579		53		5				5		2,637		2,637		
Net non-life insurance premium	646		29		54				54		729		729		
Miscellaneous current transfers															
Others	377	577	8	11	14	1			14	1	399	589	399	589	
From CQ survey															
Gross fixed capital formation	16,467		54		255						16,776		18,038		
Acquisition less disposal of produced assets	16,695		54		255						17,004		18,038		
Construction	9,735		3		145						9,883		10,650[8]		
Machinery equipment	2,734		22		98						2,854		2,985[8]		
Transport equipment	4,226		29		12						4,267		4,403[8]		
Acquisition less disposal of nonproduced fixed assets	-228		0		0						-228				
Land	-228		0		0						-228		0[8]		
Adjusted															
Gross fixed capital formation	17,318		55		255		410		665		17,628		18,038		
Acquisition less disposal of produced fixed assets	17,318		55		255		410		665		17,628		18,038		
Construction	10,116[9]		3[9]		145		386[11]		531		10,264[10]		10,650		
Machinery equipment	2,841[9]		23[9]		98		23[11]		121		2,962[10]		2,985		
Transport equipment	4,361[9]		23[9]		12		1[11]		13		4,402[10]		4,403		
Acquisition less disposal of nonproduced fixed assets	0		0		0						0				
Land	0		0		0						0		0		

8. Control total from NAD=s estimates.
9. Inflated by the output inflation ratio (total output of NAD / total output of CQ).
10. Inflated total (i.e. construction: 10,116 + 3 + 145; machinery: 2,841 + 23 + 98; transport: 4,361 + 29 + 12)
11. The difference between the control total (8) and the inflated total (10).

3. Use of the business accounts data for the compilation of income-outlay accounts

6.43. Business accounts of enterprises are used to prepare the sectoral accounts for industries like telecommunications, railways, airlines, electricity, water, business services and recreational services. Business accounts consist of three main accounts, namely:

(a) Income and expenditure statement or profit and loss account;
(b) Statement of changes in financial position or cash flow statement; and
(c) Balance sheets.

6.44. As the sectoral accounts for Malaysia do not go beyond the capital account, only the profit and loss account and the balance sheets are used.

6.45. The business accounts which are made public, like those published in the annual financial reports of enterprises, are normally not detailed enough for the compilation of sectoral accounts. Efforts have been made to obtain more detailed information in addition to the annual reports. In the annual financial reports of enterprises, financial accounts are presented as Acompany account@ and Aconsolidated account@ which is the

combination of the parent company and its subsidiaries. For the purpose of the SNA sectoral accounts only the Acompany account@ is being used.

6.46. It is to be noted that there is no standard format in the presentation of the business accounts in Malaysia. It varies from company to company and from industry to industry.

(a) Example of a business account

6.47. An example of the business account is presented in appendix 1. The notes to the accounts provide useful information for the compilation of the SNA sectoral accounts. Nevertheless, additional information is still required, especially for the compilation of the production account and the generation of income account. In the example in appendix 1, the supplementary information as given in table 6.4 (p. 171) is rather detailed. However, oftentimes a company may not be able to provide such detailed information. But it should at least provide detailed information on revenue and the compensation of employees. And in such cases, there normally is a need to estimate other intermediate consumption, which is equal to total gross revenue minus total *stated* expenses minus profit before taxation.

(b) Linking business accounts to SNA accounts

6.48. An intermediary step is needed to link the business accounts to SNA accounts before the actual compilation of the sectoral accounts. Table 6.5 in appendix 2 shows the link between transactions in the business accounts and the SNA components. The business accounts are then reorganized into the sectoral accounts as shown in table 6.6 in appendix 3.

4. Allocation of financial intermediation services indirectly measured (FISIM) for the non-financial sector

6.49. It is assumed that only interest payable on loans provided by financial intermediaries and interest receivable on deposits at the financial intermediaries are subject to service charges.

(a) Finding the FISIM

6.50. The task is to estimate FISIM paid by the non-financial sector for the loans borrowed from financial intermediaries and for the interests received on deposits.

6.51. Before any allocation of FISIM for the non-financial sector can be made, the total FISIM charges by the financial intermediaries as well as the shares of the FISIM charges on borrowers and lenders have to be estimated. Total FISIM charges (abbreviated as TISC) by the financial intermediaries are equal to total interest receivable minus total interest payable by the financial intermediaries. The share of FISIM charges on borrower is the ratio of the difference between the lending rate (i_l) and the pure interest rate (i_r)[80] over the difference between lending rate and deposit rate (i_d), while the FISIM charges on lender (depositor) are the ratio of the difference between the pure interest rate and the deposit rate over the difference between lending rate and deposit rate. These ratios are applied to all financial intermediaries to find the total FISIM charges on loans ($TISC_l$) and the total FISIM charges on deposits ($TISC_d$).

Share of FISIM charges on borrower $= (i_l - i_r) / (i_l - i_d)$

[80]Pure interest rate, also called reference rate is computed as the average interbank interest rate.

Share of FISIM charges on depositor $= (i_r - i_d) / (i_l - i_d)$

Based on these formulas, TISC can be split into two parts:

(i) The share of the FISIM charges on loan borrower $[(i_l - i_r) / (i_l - i_d)]$ is 0.6;
(ii) The share of the FISIM charges on lender (depositor) $[(i_r - i_d) / (i_l - i_d)]$ is 0.4.

6.52. To find the FISIM charges on deposits and loans for the non-financial sector, the following steps are taken:

(i) Find the total interest receivable on loans given by financial intermediaries (TIL);

(ii) Find the total interest payable on deposits at the financial intermediaries (TID);

(iii) Find the total FISIM charges on loans ($TISC_l$) given by the financial intermediaries, which with the assumption given above is equal to 0.6TISC;

(iv) Find the total FISIM charges on deposits ($TISC_d$) by the financial intermediaries, which with the assumption given above is equal to 0.4TISC;

(v) Find the ratio of service charges per ringgit[81] of interest on loan (borrower) [RSCL].RSCL = total FISIM charges on loan (0.6TISC) / total interest on loans (TIL);

(vi) Find the ratio of service charges per ringgit of interest on deposit (lender) [RSCD]. RSCD = total FISIM charges on deposit (0.4TISC) / total interest on deposits (TID).

6.53. As an example, say the FISIM rate on loan (RSCL) is 0.238, which means for every ringgit of interest payable on loans a service charge of 0.238 ringgit is imposed by the financial intermediaries, or FISIM rate on deposit (RSCD) is 0.384, which means for every ringgit of interest receivable on deposits a service charge of 0.384 ringgit is imposed by the financial intermediaries.

Therefore:

Total FISIM charges on the total interest payable on loans
= total interest payable x 0.238

and

Total FISIM charges on the total interest receivable on deposits
= total interest receivable x 0.384.

(b) Pure interest receivable/payable

[81]Data on total loans or total deposits by the non-financial sector are not available. However, interest payable on loans and receivable on deposits by the non-financial sector can be estimated. Therefore, it is better to find ratio of service charges per ringgit of interest payable on loan or receivable on deposit.

6.54. Financial intermediaries impose a service charge on depositors, by deducting it from the interest (pure interest) they are supposed to transfer from borrowers to depositors. Therefore pure interest receivable is equal to gross interest receivable plus total FISIM payable on deposits. In the case of loans, financial intermediaries add a service charge to the interest (pure interest) they are supposed to transfer from borrowers to depositors. Therefore pure interest payable is equal to gross interest payable minus total FISIM payable on loans.

From table 6.5, in appendix 2

Interest receivable on fixed deposit is 28. Pure interest receivable is therefore equal to 28 + (28 x 0.384) = 39;

Interest payable is 181. Pure interest payable is therefore equal to 181 - (181 x 0.238) = 138;

Total FISIM charges payable are equal to 11 + 43 = 54, which is the intermediate consumption of corporations. In the context of table 6.1, intermediate consumption has not been adjusted for FISIM, which is adjusted only at the institutional level.

5. Allocation of insurance service charges as intermediate consumption to the non-financial sector

6.55. To allocate the non-life insurance service charges to the non-financial sector as well as any other sector using the non-life insurance service, the total insurance output for the non-life insurance sector has to be estimated first. Then the ratio of insurance service is found in order to estimate the insurance service charges on enterprises which use the non-life insurance service. This ratio of insurance service charges is equal to total non-life insurance output divided by the total premium received by the non-life insurance sector.

6.56. Assume that the ratio of insurance charges is 52% of total premium payable. From table 6.5, insurance premium payable is 18, out of which the insurance service charges (intermediate consumption) is equal to 18 x 0.52 = 9. Net premium (gross premium minus service charges) is equal to 18 - 9 = 9, which is treated as current transfer in the secondary distribution of income account.

C. Conclusion

6.57. The compilation of the institutional sector accounts in Malaysia is a new project and as such no survey has been carried out to collect data on enterprise units to meet the data needs of the institutional sector accounts. The financial survey (FS), although an enterprise survey, is designed to capture information on international transactions to compile the balance of payment. As noted, the CQ survey data can be used to compile institutional accounts and are an important source. However, there still are deficiencies in the data on some important transactions, like property income payable/receivable (e.g. dividend payable), current transfers payable/receivable (e.g. corporation tax payable), for the institutional sector accounts. Therefore, there is a need to expand the scope of questions in the current survey on enterprises, especially non-financial enterprises, to get more detailed information on institutional accounts. Nevertheless, it is feasible for the Department of Statistics to prepare the institutional sector accounts annually as the available data are sufficient for this purpose. But it has to be noted that there will be a time lag between the reference year of the institutional sector accounts and the actual calendar year.

6.58. As mentioned before, besides the CQ and FS surveys, the business accounts are another important source of data for the compilation of the non-financial sector accounts. In fact, given that business accounts

are systematically collected, and given that many activities are dominated by a small number of enterprises, business accounts can be used in conjunction with benchmark censuses to arrive at the industry output and thus supplement the annual surveys in these activities. An additional point that needs to be emphasized is that the presentation of, as well as the terms used in, the business accounts vary from company to company and may also vary from year to year. Therefore, care has to be taken in reading the business accounts and reconciling them to the SNA accounts. It is advisable to consult business accountants before interpreting them into SNA terms.

6.59. The vast information presented in the institutional sector accounts is useful, especially to the Government, in the economic analysis of the different institutional sectors in the economy, and in decision and policy-making. Besides, it can also meet the requirements of other users, like research institutes, universities and the general public.

6.60. In the institutional sector accounts, savings by the different institutional sectors can be estimated and presented separately, and this allows users to monitor the behaviour of saving in each sector of the economy and to see how savings are being used. The information on capital formation allows users to analyse which sector of the economy has the biggest investment and also the type of investments.

Appendix 1

PROFIT AND LOSS ACCOUNT AND BALANCE SHEET OF A TRANSPORT COMPANY OVER A CALENDAR YEAR

Table 6.2. Profit and loss account

Operating revenue[82]	4,115
Profit before taxation[83]	14
Taxation[84]	6

[82] This consists primarily of gross income from carriage of passengers and cargo and the provision of related services

[83] This is arrived at after charging:

Depreciation of fixed assets		(557)
Hire of transport machinery and equipment		(402)
Interest on finance lease		(184)
Loss on foreign exchange		(18)
Rent on land		(6)
Rent on building		(36)
Machinery spare parts deleted	(8)	
Provision for doubtful debts		(4)
Maintenance of machinery/equipment		(205)
Unrealized exchange loss amortized		(47)
and crediting:		
Profit on sale of fixed assets		13
Fixed deposit interest receivable		28
Other interest receivable		1
Write back of unavailed credit balances on sales in advance of carriage	69	
Amortization of deferred income		40
Rental income from building		10
Dividends receivable		1

[84] Taxation

Current year	8

Profit after taxation	8
Unappropriated profits brought forward	127
Profit available for appropriation including	135
Proposed dividend[85]	-11
Unappropriated profits carried forward	124

Table 6.3. Balance sheet as at 31 December

	Year t	Year t-1
CAPITAL AND RESERVES		
Share capital	700	700
Share premium	1,450	1,450
General reserve	1,000	1,000
Unappropriated profits	1243,274	1273,277
DEFERRED INCOME	478	299
LONG-TERM LIABILITIES		
Term loans	2,225	1,707
Lease payable	3,294	1,333-
	5,519	3,040
CURRENT LIABILITIES AND PROVISIONS		
Trade creditors	602	609
Other creditors	198	187
Term loans	942	796
Lease payable	170	104
Bank overdrafts (unsecured)	50	14
Sales in advance of carriage	387	375
Proposed dividend	11	65
Provision for machinery maintenance	113	95
Provision for taxation	99	79
	2,572	2,324
FIXED ASSETS[86]	9,532	6,893
OTHER INVESTMENTS	74	89
DEFERRED CHARGES	252	58
CURRENT ASSETS		
Stores and consumable spares	174	175
Trade debtors	685	580
Other debtors	232	245
Deposits, cash and bank balances	894	900
	1,985	1,900
Grand total	11,843	8,940

[86] Notes on fixed assets

Year t	Cost	Valuation	Total cost/ valuation	Accumulated depreciation	Net book value	Current year depreciation
Freehold land	0	1	1	0	1	0
Leasehold land	7	55	62	6	56	1

Overprovision in respect of prior year	2
	6

[85] Proposed dividends: Final dividend of 2%. 11

Buildings	742	105	847	159	688	19
Transport machinery	4,436	0	4,436	867	3,569	193
Leased transport machinery	5,605	0	5,605	620	4,985	275
Plant, equipment	428	0	428	248	180	43
Office furniture, equipment	193	0	193	152	41	17
Motor vehicles	52	0	52	40	12	9
	11,643	161	11,624	2,092	9,532	557
Freehold land	0	1	1	0	1	0
Leasehold land	7	55	62	5	57	1
Buildings	441	105	546	140	406	18
Year t-1						
Transport machinery	3,976	0	3,976	601	3,375	151
Leased transport machinery	3,266	0	3,266	446	2,820	171
Plant, equipment	388	0	388	207	181	40
Office furniture, equipment	179	0	179	137	42	15
Motor vehicles	43	0	43	32	11	8
	8,300	161	8,461	1,568	6,893	404

Table 6.4. Detailed supplementary information on the company

Revenue from:	
Carriage of passenger and cargo	3,789
In-flight sales	21
Other services	295
Rent on office building	10
Sublease of transport machinery	5
Training	5
Total revenue	4,125
Expenses:	
Advertising and promotion	114
Bills, legal liability and insurance	36
Commission on sales	308
Cargo en route charge	272
Contribution to provident fund	67
Contribution to SOCSO	14
Depreciation	557
Fees and charges	174
Finance charges	181
Finance lease charges	3
Freight, custom duties	10

Fuel and oil	611
Insurance	18
In-flight sale expenditure	11
In-flight meals and service cost	159
Maintenance of transport equipment	205
Rent on land and building	42
Rent on lease transport machinery	402
Salaries and allowances	583
Staff benefits	142
Staff insurance	15
Road tax	23
Other miscellaneous expenses	239
Total expenses	4,186

Appendix 2

Table 6.5. LINKING PROFIT AND LOSS ACCOUNT TO SNA ACCOUNTS

			SNA COMPONENTS
	Operating revenue		
I1	Carriage of passenger and cargo	3,789	Output
I2	In-flight sales	21	Only trade margin is treated as output, by netting out cost of goods resold (E14)
I3	Other services	295	Output
I4	Rent on office building	10	Output
I5	Sublease of transport machinery	5	Income on sublease of a lease is not income. It should be subtracted from expenses on lease (E19) to obtain rental on lease
I6	Training	5	Output
	Total operating revenue	4,125	
	Other income		
I7	Profit on sale of fixed assets	13	Capital gain
I8	Fixed deposit interest receivable	28	Property income receivable plus financial intermediation service charge (FISIM)
I9	Other interest receivable	1	Property income receivable
I10	Write back of unavailed credit balances on sales in advance of carriage	69	Ignored as it is part of reduction in liability
I11	Amortization of deferred income	40	Added to output
I12	Dividends receivable	1	Property income receivable
	Total other income	152	
	Expenses		
E1	Advertising and promotion	114	Intermediate consumption
E2	Bill, legal liability and insurance	36	Intermediate consumption
E3	Commission on sales	308	Intermediate consumption
E4	Cargo en route charges	272	Intermediate consumption
E5	Contribution to provident fund	67	Compensation of employees
E6	Contribution to SOCSO	14	Compensation of employees
E7	Depreciation	557	Part of gross value added
E8	Fees and charges	174	Intermediate consumption
E9	Finance charges	181	Property income payable (after deducting FISIM)
E10	Finance lease charges	3	Property income payable
E11	Freight, custom duties	10	Intermediate consumption

E12	Fuel and oil	611	Intermediate consumption
E13	Insurance	18	Must split into 2 parts: service charge and current transfer
E14	In-flight sale expenditure	11	For calculating output
E15	In-flight meals and service cost	159	Intermediate consumption
E16	Maintenance of transport equipment	205	Intermediate consumption
E17	Rent on land	6	Property income payable
E18	Rent on building	36	Intermediate consumption
E19	Rent on lease transport machinery	402	Intermediate consumption
E20	Salaries and allowances	583	Compensation of employees
E21	Staff benefits	142	Compensation of employees
E22	Staff insurance	15	Compensation of employees
E23	Loss on foreign exchange	18	Ignored (as it belongs to balance sheet)
E24	Machinery spare parts deleted	8	Revaluation
E25	Provision for doubtful debts	4	Ignored
E26	Unrealized exchange loss amortized	47	Ignored
E27	Road tax	23	Taxes on production
E28	Other miscellaneous expenses	239	Intermediate consumption
	Total expenses	4,263	

Appendix 3

Table 6.6. REORGANIZATION OF THE BUSINESS ACCOUNTS INTO SNA ACCOUNTS

Uses	Resources		Notes
Production account			
Output		4,149	I1+I2-E14+I3+I4+I6+I11
Intermediate consumption	2,624		E1+E2+E3+E4+E8+E11+E12+ E15+E16+E18+E19-I5+E28+ (E13*0.52) (insurance service charge)+ (E9*0.238) + (I8*0.384) (FISIM on interest receivable/ payable)
Gross value added (basic price)	1,525		
Generation of income account			
Value added (Gross)		1,525	
Compensation of employees	821		
Wages and salaries	583		E20
Employers' social contributions	238		
Employers' actual soc. contribn.	96		
Provident fund	67		E5
Pension fund			
SOCSO	14		E6
Other non-life insurance	15		E22
Employers' imputed soc. contribution.	142		
Imputed pension fund			
Other imputed social contribn.	142		E21
Taxes on production and imports	23		
Taxes on products			Are not allocated at the sectoral level but at the total economy level
Other taxes on production	23		
Road tax	23		E27
Others (incl. fees and fines)			
Subsidies	0		
Subsidies on products			Are not allocated at the sectoral level but at the total economy level
Other subsidies on production	0		
Operating surplus (gross)	681		
Primary income account			
Operating surplus (gross)		681	
Property income	158	41	

Table 6.6. REORGANIZATION OF THE BUSINESS ACCOUNTS INTO SNA ACCOUNTS

Uses	Resources		Notes
Pure interest	141	40	
Interest by financial corporation	138	39	Pure interest payable = E9 minus (E9 * 0.238) Pure interest receivable = I8 plus (I8 * 0.384) Please refer to para 6.54 Imputed interest has no FISIM charge
Imputed interest (financial leasing, etc.)	3		Other interest includes interest from subsidiary companies, etc.
Other interest		1	
Distributed income of corporation	11	1	
Dividends	11	1	
Withdrawals from income of quasi-corporations			
Reinvested earnings on direct foreign investment			
Property income attributed to insurance policy holders			
Rent	6		
Balance of primary incomes	564		
Secondary distribution of income account			
Balance of primary incomes		564	
Current taxes on income, wealth	8		
Taxes on income	8		
Other current taxes			Corporation tax for the current year
Social contributions			
Employers: actual social contributions		142	
Employers: imputed social contributions		142	
Imputed pension fund			
Other imputed social contributions		142	
Employees: social contributions			
Provident fund			Equal to the unfunded employee social benefits
Pension fund			
SOCSO			
Other non-life insurance			
Social benefits other than in kind	142		
Provident fund benefits			
Private funded pension benefits			
SOCSO benefits			
Other non-life insurance			
Imputed pension benefits			
Unfunded employee social benefits	142		
Other current transfers	9		E21- Staff benefits given out
Net non-life insurance premium	9		
Non-life insurance claims			
Miscellaneous current transfers			E13 minus service charge. Please refer to para 6.40
Disposable income, gross	547		
Use-of-disposable-income account			
Disposable income, gross		547	
Final consumption	0		
Adjustment for the change in net equity of households on pension funds	0		
Saving, gross	547		
Capital account			
Saving, gross		547	
Gross fixed capital formation	3,163		Capital formation is obtained by taking the cost in year t

Table 6.6. REORGANIZATION OF THE BUSINESS ACCOUNTS INTO SNA ACCOUNTS

Uses	Resources	Notes
Acquisition less disposal of tangible fixed assets		minus that in year t-1.
Construction	301	Includes building
Machinery equipment	54	Includes plant and equipment and office furniture and equipment
Transport equipment	2,808	Includes transport machinery and motor vehicles
Acquisition less disposal of intangible fixed assets		
Addition to the value of non-produced non-financial assets		
Major improvements to non-produced nonfinancial assets		
Land improvement		
Mineral exploration		
Costs of ownership transfer on non-financial assets		
Acquisition less disposal of non-produced non-financial assets		
Acquisition less disposal of land and other tangible non-produced assets	0	
Net lending (+)/ Net borrowing (-)	-2,616	

VII. COMPILATION OF SECTOR ACCOUNTS OF NON-FINANCIAL CORPORATIONS: LATIN AMERICAN PRACTICES

Magda Ascues, Consultant
Jan W. van Tongeren, United Nations Statistics Division [87]

A. Business accounting and national accounts

7.1 Business accounting and national accounting both describe economic transactions; however, their analytical objectives are different. Business accounting is done at the level of the microenterprise, while national accounting deals with the macroeconomy of a country. The aim of business accounting is to support the enterprise's management in its control of production and financial management. National accounts, on the other hand, describe macroeconomic phenomena and do not deal with individual enterprises at the micro level but rather with groups of enterprises, included in the non-financial corporate (NFC) sector of the SNA.

7.2 As a consequence, the structure of business accounts differs from that of national accounts, and as both have different analytical approaches, the balancing items identified in business accounting differ from those in the SNA. Thus, business accounts distinguish between profit and loss statements, balance sheets and an analysis of the changes in the net equity of an enterprise. On the other hand, national accounts distinguish broadly between income and use of income accounts, capital and financial accounts and balance sheets.

7.3 This chapter is based on the practices in some countries of Latin America with regard to the compilation of NFC sector accounts, including those of Peru, Colombia,[88] the Dominican Republic and Bolivia. At present these practices are being expanded to some countries in central America, including Costa Rica and Guatemala.

7.4 In the remaining part of the chapter, data sources are reviewed (section B), including financial statements of enterprises and enterprise-establishment surveys. Section C deals with the format of financial statements of enterprises and shows how this format and the details therein are converted to the accounting structure of the SNA, including production, income and use of income accounts, capital accounts, financial accounts and balance sheets. The section also discusses how data are reconciled between the capital and financial accounts, taking into account that these data originate from different parts of enterprises' financial statements. Section D deals with the integration of industry and NFC sector data in two steps: integration of common data on production and generation of income available for industries and NFC sectors, and global integration of NFC sector data within the overall context of the national accounts. Section E presents a description of the relevant country practices in the Dominican Republic, Peru and Colombia, supplementing the limited references to those practices, and practices in other countries presented in the previous sections.

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[87] Interregional Adviser on Macro Accounting Policy Analysis, UNSD. The opinions in this chapter are those of the authors and do not necessarily reflect those of the United Nations Statistics Division.

[88] The description of Colombian practices were adapted from information provided by Evaristo Arrieta, Director Técnico del Sistema Estadístico Nacional y Territorial (SENT) of the Departamento Administrativo Nacional de Estadística (DANE). Responsibility for any errors resulting from the adaptation of the original information is with the authors.

7.5 Throughout the text illustrative data are used, that are based on the data in appendixes 1 and 2. Both appendixes reflect the practices in the Dominican Republic. Appendix 1 includes the basic data and in appendix 2 they are converted to the SNA format. Wherever possible, links were established between the data in the tables in the text and those in appendix 2, by indicating the corresponding line items of appendix 1. Appendix 3 illustrates the NFC compilation practice in Peru, and is based on the fictitious data of appendixes 1 and 2.

7.6 As the experience presented in this chapter is entirely based on Latin American practices, business accounting terminology used in the paper may deviate from that of other regions. For easy reference, appendix 4 presents the Spanish and English equivalents of the main business accounting terms used in the text.

B. Data sources

7.7 Financial statements of corporations are the main source of information for the elaboration of NFC sector accounts. However, this source does not provide sufficient detail on production activities of these enterprises, and for this purpose a second data source should be used, i.e. the traditional economic surveys of establishments, which may also include some information on the enterprises to which the establishments belong. The latter, however, often are incompatible with financial statements of enterprises and thus additional efforts are needed to integrate the two data sources and arrive at a comprehensive analysis which deals not only with production of NFCs, but also with their impact on income distribution and the financial market and needs of a country. The two data sources will be reviewed separately below.

1. Financial statements of enterprises

7.8 The financial statements of enterprises consist of a number of separate statements or accounts, which describe their operations during the accounting period, as well as the financial position of the enterprise, which is not only the result of the activities of this period, but also reflects the accumulated results of previous ones. The statements are elaborated on the basis of the principles of business accounting, including the principle of double bookkeeping entries.

7.9 In general the financial statements consist of four separate statements, i.e.:

i. The balance sheet statement (BS), describing the financial position of a corporation, including its assets, liabilities and its net equity;

ii. The profit and loss statement (PL) which describes the flow of revenues and outlays during the accounting period, and on that basis measures the profits or losses, which the corporation has generated as a result;

iii. A statement describing the changes in the net equity (EQ) of the corporation, which provides more detail on the equity included in the balance sheets statement, with regard to changes in the paid-up capital, accumulation of profits and/or losses, revaluations, accumulated depreciation and other reserves. Changes in these components of the net equity may result from the profits/losses of the present accounting period, or may consist in restructuring the net equity between its different components.

iv. Explanatory notes (EN) provide details on some of the statements, both in descriptive and quantitative formats. Among others, the notes provide further details about the aggregates

presented in the BS and PL statements. In particular further detail is included on outlays, changes in the fixed assets and accumulated depreciation, as well as some further disaggregation of assets, liabilities and net equity.

7.10 Some countries, including Peru, have introduced General Accounting Plans (GAP), which enterprises are obliged to follow. The GAP identifies business accounting categories that are closely related to transaction categories of this sector in the SNA. This facilitates conversion of business accounting concepts to their SNA equivalents, without ignoring the different objectives of the two accounting approaches. Furthermore, the GAP reduces the burden of business accountants when providing statistical data, and also makes it easier for individual enterprises to assess the results of their operations in the total economy. In Peru, GAP categories are used in formatting the content of the economic surveys of enterprises and establishments. Colombia uses the GAP, when public and large private corporations with net equity and revenues exceeding pre-defined magnitudes report accounting data to a supervisory institution of corporations and cooperatives (Superintendencia de Sociedades y Cooperativas).

7.11 If no General Accounting Plan is available, national accountants generally have to develop an intermediate framework of business accounts, close to the format of financial statements of enterprises. This is done in the case of Bolivia, until now for selected years only. Such an intermediate system can be used to bring data from different formats of financial statements into one format, and also to present data on the NFC sector in a format that is closer to the type of analysis with which business accountants are familiar. In the Dominican Republic, there is no GAP. In the case of private enterprises, therefore, financial statements have not been used in the compilation, not only because of heterogeneity of financial statement formats, but also because of lack of data, and because of considerable differences between the fiscal years used by each enterprise. In the case of public enterprises, homogeneity of financial statement formats has been improved over time, and therefore their statements have been used in the compilation. However, as many differences still remained, each public enterprise financial statement was separately converted.

7.12 The non-existence of a GAP often also gives rise to different accounting periods used by corporations in their financial statements. In particular, in the practices of several Latin American countries, such as the Dominican Republic and Bolivia, the closing date of the financial statement differs between corporations and in most instances does not coincide with the end of the calendar year. A question that would need to be further reviewed is what would be the most adequate type of adjustments that could be made to the data, so that they are converted to a uniform accounting period which coincides with the calendar year of the national accounts, and without distorting the absolute and relative values of the corporations' transactions?

2. Enterprise - establishment survey

7.13 The administrative data obtained from financial statements may be supplemented by economic surveys. These surveys generally collect annual economic and financial data from enterprises and establishments through pre-designed questionnaires. The questionnaires are usually divided into two modules, i.e. one aimed at compiling enterprise data and one compiling data on the component establishments of the enterprise.

(a) The enterprise module

7.14 The enterprise module includes in its general part the name and address of the enterprise, its paid up capital with a distinction between resident and non-resident owners, identification of the activities of the component establishments, and data on the number of employees, compensation of employees and other personnel outlays.

Table 7.2. Changes in fixed assets and depreciation classified in the enterprise module of economic surveys by type of asset:

Land *
Buildings
Fixed and permanent installations
Machinery, equipment and other processing units
Transport equipment
Furniture and fixtures
Various types of equipment
Equipment not yet in use *
Equipment not yet received *
Work in progress (buildings, other construction, machinery and equipment) *

* These classification categories only refer to fixed assets and not to depreciation.

Table 7.1. Details included in enterprise modules of economic surveys

Outlays of enterprise:
Purchases in the country
Purchases abroad
Personnel cost
Services by third parties
Taxes on output
Taxes on income, wealth, etc.
Financial outlays
Various outlays

Changes in fixed assets
Initial stock
Additions during the year
- Construction and other output on own account use
- Purchases and other additions
- Work-in-progress during the year
- Exchange rate differentials
- Revaluations

Reductions during the year
- Sales
- Retirement of equipment
- Work-in-progress completed during the year

Final stock

Depreciation
Initial stock
Addition during the year
- Depreciation during the year
- Depreciation due to exchange rate differentials
- Depreciation due to revaluation

7.15 The module includes specialized data that correspond to the separate statements that are included in the financial statement of a corporation, as explained above. This specialized information covers the balance sheet, profit and loss statement and the net equity statement. In addition, there are several tables which provide further detail on outlays of the corporation, changes in fixed assets and data on depreciation of fixed assets. Some of this detailed information is reflected in table 7.1. Data on changes in fixed assets and depreciation are classified by type of assets, generally identifying the asset categories indicated in table 7.2.

(b) The establishment module

7.16 The establishment module of the economic surveys is the traditional data source of national accounts. This module provides data on output, cost and value added that are used in the compilation of data on GDP by

industries. The surveys, however, generally have a much wider scope of information, which is used for the more elaborate needs of industrial statistics, but may also be of use in the compilation of accounts for the NFC sector. Establishment surveys generally include the type of data presented in table 7.3 below (p. 182).

7.17 With regard to employed personnel, a distinction is generally made in the surveys between permanent staff, temporary employees, and unpaid workers. The permanent staff is subdivided according to the labour force classification used in the country, e.g. salaried employees, workers, etc. This information generally refers to four-month periods and is available for each quarter.

C. Conversion of the financial statements to non-financial corporate sector accounts of the SNA

7.18 In order to accomplish the conversion of data from business accounts to national accounts, there is generally a need to precede the conversion by standardizing the large variety of business accounts formats into a single uniform type. It is only after that standardization that it is possible to convert each item of the standardized business accounts to the transaction categories of the SNA. When converting the data, it is necessary to determine differences in accounting principles and classifications which are governed by different analytical objectives.

7.19 The national accounts principles behind the sector accounts of NFCs aim at conceptual as well as practical reconciliation of data of this sector with other sectors of the economy. Following these principles, a data set is established which guarantees not only comparability between enterprise data of this sector and other sectors, but also compatibility between current accounts data that are generally included in the profit and loss statements of corporations and capital and financial data that are obtained from the balance sheets.

1. General format of links between business and national accounts standards

7.20 The current accounts of the SNA, including the production and distribution of income accounts, are elaborated on the basis of the profit and loss statements, which describe the revenues and outlays for each accounting period.

Table 7.3. Data included in the establishment module of economic surveys

a. Employment data and data on compensation and other outlays on personnel
b. Annual output and sales
   i. Annual output by products in quantities
   ii. Annual sales by products, in quantities, total value and unit value both excluding taxes
   iii. Tax rates by products sold
   iv. Other revenues
c. Sales by distribution channels (in %'s)
   i. Direct sales abroad
   ii. Sales to other industrial enterprises
   iii. Sales to wholesalers and retailers
   iv. Sales directly to the public
d. Raw materials, fuels, oils and other materials, with separate information on:
   i. Inventories at the beginning of the year in quantities and values
   ii. Total purchases in quantities and values
   iii. Inputs received from other establishments of the same enterprise in quantities
   iv. Use during the year
   v. Inventories at the end of the year in quantities and values
e. Raw materials for processing received and provided to others for processing by type

f. Expenditures on services by others, taxes and other outlays
   i. Services by others
      - Freight and other transport cost
      - Industrial processing done by others
      - Repair and maintenance
      - Other works by others
      - Publicity
      - Electric energy
      - Water
      - Patents, etc.
      - Professional fees
      - Insurance
      - Various services
   ii. Taxes
      - Sales tax
      - Consumption taxes
      - Import duties and taxes
      - Export taxes and duties
      - Other taxes
   iii. Other outlays
      - Rent of buildings
      - Other rents
      - Various outlays (with further detail)

g. Inventories of finished products, work-in-progress, raw materials, fuels, oils and other materials
h. Electric energy produced, purchased and sold, in quantities and values
i. Changes in fixed assets and depreciation

7.21 The accumulation accounts, including the capital account, financial account, other changes in assets accounts and also the balance sheets are obtained from data recorded in the balance sheet statement of the financial statements of the corporations. The latter presents data on financial and non-financial assets and liabilities which are held by the enterprise during the period in question. Accumulation accounts elaborated on the basis of these balance sheets would measure the flow or annual changes by comparing the value of an item in the balance sheet in year n with the value of that same item in year n-1.

7.22 The link between the profit and loss (PL) and the balance sheet (BS) statements are the profits/losses of the enterprise which are obtained from the PL statements and included in the net equity in the balance sheet. From the point of view of the national accounts, the close parallels of profits/losses are savings and net lending. Saving is the SNA link between the current and capital accounts, while net lending is the link between the capital account and the financial account. Thus, when elaborating the accounts for the sector of NFCs, it is necessary to evaluate and further elaborate the net earnings of the period resulting from the profit and loss statements, in order to arrive at saving and net lending or borrowing of the sector. At the same time, financial and also non-financial capital transactions need to be elaborated on the basis of balance sheet data, and this results

Table 7.4. **Saving and net lending derived from financial statements of corporations**

Derivation from profit and loss statement:	
(+)	**Profits/losses of the current period** (PL=BS)
(+)	Outlays due to exchange rate differentials (PL)
(-)	Revenues due to exchange rate differentials (PL)
(+)	Outlays which are part of saving, i.e. depreciation, other additions to reserves, extraordinary outlays and other non-recurrent outlays (PL)
(-)	Revenues which are non-recurrent, are not part of saving and are not included in the elaboration of the current accounts, e.g. extraordinary revenues (PL)
(-)	Revenues resulting from the sale less purchase of securities (PL)

in measures of saving and net lending, which should be compared and adjusted, so that at the end they are equal to the ones derived on the basis of the PL statements. When deriving net lending/borrowing from profits/losses of the PL statements, reference is made to Anon-financial net lending@, and when arriving at net lending/borrowing data from financial balance sheet data, the concept is often referred to as Afinancial net lending@.

(+)	Net cost related to the sale of securities (PL)
(+)	Losses of previous periods (PL)
(-)	Profits of previous periods (PL)
(-)	Dividends and other distributed income (BS, EQ)
(-)	Income tax payable (PL, BS, EQ)
(=)	**Gross saving**
(+)	Capital transfers receivable (BS, EQ)
(-)	Capital transfers payable (BS, EQ)
(-)	Gross capital formation (BS)
(-)	Acquisition less disposal of valuables (BS)
(-)	Acquisition less disposal of non-produced non-financial assets (BS)
(=)	**Net lending/borrowing**

7.23 The relationships defining saving and Anon-financial@ net lending on the basis of profit and loss (PL) statements, supplemented with data from the balance sheets (BS) and net equity (EQ) statement are presented in table 7.4 to the right. By indicating the data source behind each of the items, it is clearly shown that the SNA concepts of saving and net lending are supported by all three data sources and therefore require internal compatibility between those different sections of the financial statement of each corporation.

7.24 The Anon-financial@ net lending should be reconciled with Afinancial@ net lending. The Afinancial@ net lending later can only be estimated on the basis of data from balance sheet (BS) and net equity (EQ) statements, while the non-financial net lending can be derived, starting from the PL statement as was done above, or alternatively starting from flow data based on BS and EQ information. Thus, in the balance sheet the two approaches come together, and this can be clearly seen from the balance sheet identities presented in table 7.25 The table starts from three elements that are included in the balance sheet, i.e. assets, liabilities and net equity. It then derives the last identity, which is the basis for the derivation of the identity between Afinancial@ and Anon-financial@ net lending.

Table 7.5. Balance sheet identities

ASSETS = LIABILITIES + NET EQUITY

Financial assets + non-financial assets = liabilities + (financial net equity + non-financial net equity)

Financial assets - (liabilities + financial net equity) = non-financial net equity - non-financial assets

7.26 The above identities are based on a distinction in the balance sheet (BS) of a corporation, between financial and non-financial assets and liabilities. The non-financial assets include inventories, real estate, machinery and equipment, and also intangible assets. The financial assets in the balance sheets cover items such as cash, bank deposits, accounts receivable, securities, advance payments made, and also so-called Ainventories receivable@ which refer to goods in transit. The scope of liabilities is similar to that of financial assets, including loans, accounts payable, and advance payments received. The financial net equity includes paid-up capital, and the non-financial net equity elements cover donations of capital, profits/losses of the present accounting period, accumulated profits and losses of previous periods, revaluation of shares, reserves for future use, other reserves.

2. Conversion to SNA format

7.27 In the following sections, the conversion from business accounts format to SNA will be described using an intermediate data set, presented in appendix 1, that is based on the compilation of NFC sector accounts in the Dominican Republic.[89]

(a) Production, income and use of income accounts

7.28 Based on data in appendix 1, the estimation of output is illustrated in table 7.6. The line numbers in the last column of the table refer to those in appendix 1; the same line references are included in tables 7.7-7.9 and 7.12-7.14.

7.29 In the production account of the sector is recorded the output generated during the period in question and not the sales. This distinction is important, as the enterprise does not sell all of its output during the accounting period but may store some for later sale, or alternatively may sell some products that were produced during a previous period.

Table 7.6. Estimation of output

			Line appendix 1
Output of finished goods/work-in-progress	82,636		
(+) Sales, net of taxes on products		80,542	2
(+) Changes in inventories in final and intermediate products	2,094		
(+) Inventories of final products at the end of the period		13,686	18
(+) Inventories of final products at the beginning of the period		13,072	8
(+) Inventories of intermediate products at the end of the period		2,600	17
(-) Inventories of intermediate products at the beginning of the period		1,120	10
Output of trade services	5,821		
(+) Sales of traded goods (merchandise)		26,869	4
(-) Cost of merchandise sold		21,048	20
Production of services	27,438		
Services (rent of machinery)		27,413	3
Services (rent of equipment)		25	70
Total production at basic prices	115,895		

7.30 There are differences in the measurement of gross output of non-financial corporations, depending on the economic activity of the enterprise. In order to bring this out, corporations are classified by their main economic activity.

7.31 To estimate output, data are needed on sales, cost of sales and inventories of finished goods and work-in-progress. These are obtained from the profit and loss statements. Data on inventories are also included in the balance sheet of the financial statement.

[89] While Dominican Republic data were used as a starting point for appendix 1, the data set is illustrative, as several amendments and additions were made to them.

7.32 Output of enterprises carrying out trade is equal to the trade margins, which is the difference between sales of traded products less cost of sales of traded products. In the case of enterprises whose main activity is services, output is equal to sales.

7.33 Output of enterprises covers the output of the main activity as well as secondary output of services. The latter may include rent of machinery and equipment, information on which is included in the profit and loss statement, as presented in appendix 1.

7.34 Total production at basic prices (115,895), which is the final result of the presentation in table 7.6, is the same as the corresponding output item in appendix 2, before adjustments. The adjustments are reflected in appendix 2 and refer to output that is produced and used within the same enterprise by different establishments (para. 7.77 et seq.).

7.35 Estimation of intermediate consumption on the basis of the data in appendix 1 has been illustrated in table 7.7. It is derived from disaggregated data on the cost of sales and other general and administrative outlays related to sales. These outlays are on goods and services which the corporations need in order to carry out their production process. It should be noted that the cost of production includes a general category called Aindirect costs of production@, which enterprises often do not disaggregate. This general category includes three groups of expenses, i.e. wages and salaries, other materials, and depreciation. The disaggregation is generally obtained with help of supplementary data from the corporations, and included as such in appendix 1.

7.36 When reviewing the data in table 7.7, it should be noted that outlays on premiums of general insurance are broken down into a service component and net premiums. It has been assumed here that the service component is 51.3% of the gross premium. The insurance component is treated as intermediate consumption and the net premium is dealt with in the secondary distribution of income account (see para. 7.39 below) as net non-life insurance premiums. The total value of intermediate consumption in table 7.7 (71,278) is the same as the corresponding figure in appendix 2 before adjustments. The adjustments included in appendix 2 cover the adjustment for integrated production, which is the same as the adjustment to output referred to above, adjustments for imputed interest to insurance policy holders to arrive at the correct value of the insurance service charge explained above, and also an adjustment for so-called financial intermediation service charges indirectly measured (FISIM), which mainly refer to imputed service charges of banks.

Table 7.7. Estimation of intermediate consumption		Line number appendix 1
Intermediate consumption	71,278	
Primary products and raw materials	47,774	11
Other materials	6,410	13
Indirect cost of production (15%)	793	0.15x(14)
Packing materials	7,701	15
Commissions on sales (paid to non-employees)	1,071	31
Uniforms	58	34
Education and training of employees	6	38
Professional technical services	86	40
Maintenance and repair of equipment	318	42
Fuel and oil	396	43
Travel cost	253	45

Outlays on communication	369	46
Publicity and promotion	98	47
Electricity, water and sanitation	176	48
Paper and other office utensils	448	49
General insurance (51.3%)	343	0.513x(50)
Outlays on transport	20	51
External audit	76	52
Data processing, legal and other services	1,858	53
Security services	150	54
Technical assistance	1,486	55
Freight and other transport charges	242	57
Outlays related to imports	54	58
Storage cost	324	60
Representation expenses	42	61
Exchange rate and banking fees	650	62
Other services provided by third parties	76	65

7.38 Consumption of fixed capital is obtained on the basis of the data on depreciation presented by corporations in their financial statements. Its derivation is shown in table 7.8.

Table 7.8. Estimation of consumption of fixed capital		Line number in appendix 1
Consumption of fixed capital		
Indirect cost of production (2%)	106	0.02x(14)
Depreciation of production equipment	4,045	16
Depreciation of transport and office equipment (overhead cost)	174	44

7.39 Compensation of employees is obtained by aggregating the intermediate data elements of appendix 1 in the manner indicated in table 7.9 below. It includes payments to labour directly involved in production, and another part is labour cost not directly related to production. Both cover the payment of wages and salaries, supplementary payments to employees, contributions by the corporations to social security schemes, and payments of benefits that are not based on special funds (e.g. education grants) and are generally recorded in general and administrative outlays related to sales.

7.40 Other taxes on production are obtained directly from the detail in which data are presented in the financial statements of corporations. This is illustrated in appendix 2, where only license fees (83) are included in this category.

Table 7.9. Estimation of compensation of employees			Line number in appendix 1
Compensation of employees	19,299		
Direct labour cost		7,836	12
Indirect cost of production (83%)		4,386	0.83x(14)
Wages		2,027	26
Salaries		1,608	27
Payment for overwork		364	28

	Christmas bonus	614	29
	Vacation pay	428	30
	Employer's social security contributions	248	32
	Insurance for accidents at work	86	33
	Collective medical insurance	608	35
	Collective life insurance	72	36
	Lunch subsidies	670	37
	Support for education	214	39
	Compensation for use of personal vehicles	132	56
	Personnel incentives	6	59

7.41 The transactions of the primary allocation of income and secondary distribution of income accounts are also illustrated in appendix 2. They cover mainly property income and current transfers. On the revenue side these include receipts of interest, dividends, and land rent, all of which form part of property income in the SNA, and furthermore benefits received from non-life insurance schemes, imputed social contributions, etc. On the outlay side, these flows include property income paid in the form of interest, dividends and land rent, and furthermore net premiums of life insurance schemes after deduction of a service charge, and various current transfers paid. These transactions can be directly obtained from the detail of profit and loss statements, as is shown in the example of appendix 2.

(b) Capital accounts

7.42 The capital account of the SNA describes the format in which non-financial investments are made and how they are financed through own funds (saving) or capital transfers. The investments recorded in this account include, in addition to gross fixed capital formation and changes in inventories, acquisition less disposal of valuables, acquisition less disposal of non-financial, non-produced assets such as land and intangibles. For the NFCs, the main source of finance is saving. Saving plus capital transfers (receivable less payable) constitute the total of capital revenues, which finances what is called in the SNA changes in net worth due to saving and capital transfers. The difference between the latter and the level of non-financial investments, defines the capacity of the sector to lend to (+) or its need to borrow from (-) other sectors. The detail on financial instruments used in lending or borrowing is presented in the financial accounts of the SNA.

7.43 Gross fixed capital formation (GFCF) is estimated on the basis of two methods that complement each other, i.e. a direct method, using data on purchases of fixed assets, and an indirect method which is mainly based on the derivation of GFC flow data on the basis of the difference between successive balance sheet data. The indirect method is used in the derivation of GFC data in appendix 2.

7.44 The direct method of compilation is reflected in table 7.10. It estimates gross fixed capital formation on the basis of changes in fixed assets by type of capital good, that are described in separate explanatory notes (EN) to the financial statement. The information covers the purchase of fixed assets, construction of fixed assets on own account, and also deductions for the sale of fixed assets and withdrawal of fixed assets due to depreciation. Generally the EN refer to fixed assets including land. As land is not included in the calculation of GFCF, adjustments are

Table 7.10. Estimation of GFCF by the direct method

(+)	Purchases of fixed assets
(-)	Purchases of land, within the territory of the country (to K21)
(-)	Purchase of foreign land (to F5 in the account)
financial	
(+)	Own account construction of fixed assets
(-)	Sale and withdrawal of fixed assets
(+)	Sale of land (to K21)
(+)	Withdrawal of fixed assets due to depreciation
(+)	Intangible investments (K22, flow based on

needed for its purchase and sales. These transactions in land are dealt with in a separate SNA category, called acquisition less disposal of non-produced non-financial assets (K2), if it concerns the purchase or sale of land within the territory of the country, and if it concerns foreign land, it is a financial transaction with a foreign notional unit (quasi-corporation) that is recorded as F5 shares and other equity in the financial accounts. Furthermore, the information in the PL statement is not complete as far as intangible produced assets (e.g capitalized exploration expenses, databases, etc.) are concerned; GFCF in those assets can only be estimated through the indirect method based on balance sheet (BS) data.

7.45 The indirect method described in table 7.11 is based on information presented in the balance sheet of the financial statement; it is also the method used in appendix 2. Through this method GFCF is obtained as the difference between the balance sheet of this accounting period and the previous one, with regard to the data on real estate, machinery, equipment and intangible investments (in the present example no intangible assets have been identified). Any difference between accumulated depreciation between the present and previous balance sheet should be deducted, but depreciation of the present period should be included; this applies both to tangible and intangible assets. Purchases less sales of land should be deducted, as real estate data in the balance sheet generally include land, and land should not be reflected in GFCF. Also, an immediate adjustment should be made for revaluations of fixed asset, which are separately recorded in the EQ statement; this is done when calculating GFCF in appendix 2. Further adjustments, however, are needed with regard to price changes of fixed assets and changes in exchange rates; as these are only dealt with in the final reconciliation of the financial account and the balance sheet (see para. 7.57 et seq.), they are not reflected in this table nor in appendix 2.

Table 7.11. GFCF estimated indirectly on the basis of flow data obtained from two balance sheets

(+)	Real estate, machinery and equipment
(-)	Accumulated depreciation of real estate, machinery and equipment
(-)	Price adjustments
(-)	Accumulated revaluation (i.e. revaluation of fixed assets less revaluation of depreciation)
(-)	Exchange rate differential with regard to fixed assets
(+)	Depreciation of the period
(+)	Intangible investments
(-)	Accumulated depreciation of intangible investments
(+)	Depreciation of intangible assets of the period
(-)	Purchases less sales of land (K2)

7.46 Changes in inventories are estimated on the basis of information on inventories included in the balance sheet of a financial statement of a corporation. The estimates are made separately for inventories of producers and users. The first type is related to the output of each enterprise and the second one to its intermediate consumption. Changes in inventories do not cover the business accounting categories called Ainventories receivable@, which refer to goods in transit, and are dealt with in the financial account.

7.47 The inventories of producers include finished products, semi-finished products, and by-products and wastes. The inventories of users include traded products, raw materials, packing materials and various other materials.

(c) Financial accounts and balance sheet

7.48 The financial account presents changes in the use of financial resources through the acquisition of financial assets and changes in the sources of finance through incurrence of liabilities.

7.49 Financial assets held by the NFC sector always have as counterpart a liability incurred by the same or another sector and this also holds for liabilities of the NFC sector which are an asset held by a unit that is either part of the non-financial corporate sector or another sector. The same applies to the changes in the financial assets and liabilities which are described in the financial account; thus, for each transaction in the financial account there is a counterpart transaction in the financial account of the same or another sector. The

transactions in assets and liabilities recorded in the financial account are classified by type of assets, in the same manner as they are classified as stocks in the balance sheets.

7.50 In the compilation of the financial accounts of NFCs, several steps may be distinguished. Further adjustments are needed with regard to price changes of fixed assets and changes in exchange rates (for the latter see para. 7.57 and et seq.). A first step is to arrive at uniformity in the business accounting data. This implies that when reviewing the data presented by each enterprise for different periods, it should be verified that the accounting concepts used in the presentation of the data are the same and that the data are compatible within the same financial statement between the profit and loss statement, the balance sheets, the net equity statement and the explanatory notes. Thus, balance sheet data should be compatible across financial statements for different periods, and initial and final balancing items should be compatible with data included in appendixes to the financial statements.

7.51 The next step is to calculate the financial flow data from the stock data of the balance sheets and assign each to the financial transaction categories of the SNA. This is reflected in table 7.12, which shows the link between the intermediate balance sheet data in appendix 1 and the SNA categories of the financial accounts; the data are consistent with those in appendix 2. To get the flow data, differences are calculated between the balance sheet of the year in question and the previous balance sheet (year n - year n-1). Thereafter volume changes and revaluations are identified or estimated. The next step is to distribute the remaining financial flows between the financial transactions based on a bridge between the categories of the financial statements and the SNA, and taking into account the nature of each flow. This then results in a first estimate of net lending as a balancing item of the financial account, by calculating the differences between the thus allocated transactions in financial assets and liabilities.

Table 7.12. Estimation of items in the financial accounts

				Line number in appendix
Acquistion less disposals of financial assets		14,938		
F22	Transferable deposits	3,958		
	Current bank accounts in national currency		2,726	85
	Current bank accounts in dollars		1,232	86
F23	Other deposits	5		
	Other deposits and bonds		5	113
F3	Securities other than shares	20		
	Temporary investments		20	87
F5	Shares and other equity	711		
	Shares		711	98
F62	Prepayment of premiums and reserves against outstanding claims	84		
	Advance payment of insurance premiums		84	109
F7	Other accounts receivable	10,160		
	Accounts receivable		7,323	88
	Merchandise in transit		2,956	92
	Advance payments		(338)	93
	Commercial accounts receivable		216	94
	Advance payments of income tax		3	112
Incurrence less repayment of liabilities		18,324		
F3	Securities other than shares	25		
	Bills and commercial paper payable		25	124

F4	Loans	1,210		
	Loans		1,210	125
F5	Shares and other equity	2,500		
	Capital paid up		2,500	129
F7	Other accounts payable	14,589		
	Advance payments on sales		182	118
	Accounts payable		11,524	119
	Withholdings and other accounts payable		2,667	120
	Commercial accounts payable		216	121

7.52 Identification of counterpart sectors for financial transactions of NFCs is the next step. In doing this, account is taken of the SNA requirement that there be an identity between assets and liabilities, at the level of flows as well as stocks. Thus each financial transaction of one economic agent resulting in an increase or decrease of assets needs to have a counterpart in identical changes in liabilities of another agent, and vice versa.

7.53 The counterpart sector may be either the NFC sector itself or another sector. In order to identify the counterpart sectors, use is made of the details of the EN in the financial statements. The EN provides information on interest receivable from, and payable to resident banks and foreign banks, interest to and from other NFCs but without a distinction between resident and non-resident NFCs, dividends receivable from other NFCs, and without distinguishing between residents and non-residents. In some instances, it is more difficult to identify the counterpart sector. This applies for instance to dividends payable by NFCs, where no distinction can be made between those receivable by other NFCs, households and non-residents.

(d) Final reconciliation of net lending between the capital and financial accounts

7.54 Finally, adjustments to the financial flows are needed in order to arrive at an equilibrium between what was called earlier Anon-financial@ net lending of the capital and Afinancial@ net lending of the financial accounts. This equilibrium is not necessarily present at the end of the previous steps for several reasons further specified below. As a general guide, one should take into account that, when estimating net lending in the capital account, this should not reflect any flows that are not between agents; these should be either omitted or allocated elsewhere, e.g. treated as other volume changes or holding gains and losses.

7.55 The most important adjustments referred to in the previous paragraph will be presented below. They are not reflected in the SNA converted data of appendix 2. Each adjustment not only should be made in the NFC sector accounts, but also in the counterpart accounts of other sectors, depending on the type of financial transaction to which the adjustment is applied. Some of the adjustments change net lending in the capital and financial accounts in the same direction because they affect items in both accounts, while in other instances the adjustments only affect categories of the financial account and therefore have an effect on net lending of the financial account. Once the adjustments are made, net lending in the capital and financial accounts should be the same or if not, there should be a clear explanation why differences remain.

7.56 Adjustments for revenues and outlays related to the sale and purchase of securities are obtained from the presentation of extraordinary revenues and expenditures, which are included in the financial statements of enterprises. They affect the value of securities other than shares (SNA item F3), and also shares and other equity (SNA item F5), on which data are obtained from the balance sheet. The revenues reduce the values of the corresponding SNA items and the outlays increase their value.

7.57 Adjustments for revaluation of shares are based on information that is presented in the EQ statement, and reflected in the net equity of the enterprise in its balance sheets. The aim of the adjustment is to eliminate revaluations from asset and liability items of the financial accounts and corresponding balance sheet items and treat them as part of holding gains and losses in the revaluation account. If the revaluation in the balance sheet is identified as part of reserves, there is a need only to adjust the SNA asset category of shares and other equity (F5). However, if the revaluation is accounted for in the paid up capital of the balance sheet, the adjustment should be applied not only to asset category F5, but also to F5 on the liability side.

7.58 Another example applies to investments in financial instruments, which are recorded in the balance sheet of the financial statement of a corporation at a value including revaluations. With help of information on revaluations contained in the EQ statement, it is possible to identify and separate this revaluation from the corresponding balance sheet items in year n, and thus measure the flows without the revaluation component. The flow without the revaluations component is then generally allocated to SNA item F5 shares and other equity, on the asset and liability side of the financial account, and the revaluation component is included with the category in the revaluations account.

7.59 Adjustments for changes in exchange rates are another value adjustment needed in order to record in the capital and financial accounts the actual value of the transaction that took place, and in the revaluation account the holding gains and losses.

7.60 One type of adjustment for exchange rate changes is needed, because financial transactions of debtors and creditors carried out in foreign exchange are generally calculated at the end of the year (period of account). This implies that in times of inflation, transactions are overvalued in terms of local currency units, when the foreign currency is increasing in value over time. This overvaluation affects net lending. In this case, the exchange rate differential is recorded as a revenue in the PL statement and thus reflected in the net equity of the enterprise in the financial account. This type of recording is not in line with the SNA, which requires that exchange rate differentials be allocated to the revaluations account. Thus, an adjustment is required which reduces net lending and also the net equity (SNA item F5: Shares and other equity) in the financial account. This type of adjustment may apply to financial transactions, both on the asset and liability side of the financial account and balance sheet of the SNA.

7.61 Similar exchange rate differentials may apply to real estate, machinery and equipment purchased abroad. As in the previous example of financial transactions, the exchange rate differentials are recorded as a revenue in the PL statement and at the same time they are reflected in the value of capital goods purchased. In this case the adjustment would have to be applied to purchases of fixed assets when calculating gross fixed capital formation, while at the same time an entry on revaluations would have to be included in the revaluation account.

7.62 In this context it should be mentioned that enterprises, when acquiring new assets and making capital repairs to them often incur debts in foreign currency. If this is the case, the new foreign debt included in the financial account should be adjusted between the period of its incurrence until the end of the year, based on the change in the value of the foreign currency, for the same reasons as mentioned above. The same adjustment should be made to the value of the fixed asset acquired, when estimating gross fixed capital formation in the capital account. Thus, net lending in both accounts is adjusted in a compatible manner.

Table 7.13. Estimation of items in the revaluation account

	Line numbers

			in appendix 1
Nominal holding gains (+) and losses (-)	1,720		
Reserves for revaluation of inventories		0	91
Revaluation of fixed assets		1,720	135

7.63 Revaluation and exchange rate adjustments are recorded in the revaluation account of the SNA. Table 7.14, which is based on appendix 2, shows how the elements of this account are derived from the balance sheet data presented in appendix 1. The SNA converted data of appendix 2 only reflect revaluations and not elements of the other volume changes account of the SNA.

7.64 Adjustments for capital transfers are to be made on the basis of such information included in the EQ statement of the corporation. The capital transfers refer to capital formation or other accumulation of the enterprise, for which no debt is incurred and no changes in assets are to be recorded in the financial account.

7.65 Adjustments to reconcile data of the profit and loss statements and balance sheets are needed in some instances. Inconsistencies may be due to data inconsistencies within the financial statement between the bad debt allowance of the PL statement and the corresponding flow derived from BS information. This causes a difference between net lending of the capital account and net lending of the financial account, which should be treated as part of SNA item F71 (trade credits and advances).

7.66 Other adjustments may be needed in special circumstances. This may for instance be the case when the data on purchases of real estate, machinery and equipment include advance payments. The latter should not be recorded in the capital account, but rather be treated as a financial transaction under F71, trade credits and advances.

7.67 Even after the previous adjustments, discrepancies generally remain between Anon-financial@ and Afinancial@ net lending in the capital and financial accounts. These discrepancies are mainly by registration of transactions of revenues and outlays which do not correspond to the present accounting period or are caused by insufficient detail available in the financial statements as compared to what is required in the SNA.

7.68 From the above it should be clear that the main reconciliation takes place between the capital and financial accounts. However, as part of the flows are based on stock data from the balance sheets, the balance sheets will also result at the end of the compilation. This is reflected in table 7.14, which presents opening and closing balance sheets and the total changes between them. The table also shows how gross fixed capital formation and changes in inventories, as well as all flow categories of the financial accounts of NFCs are derived from the corresponding balance sheet items; gross fixed capital formation is obtained by deducting the revaluation of fixed assets from the flows based on the balance sheet item Aproperty, plant and equipment@. The presentation uses, as before, the illustrative data in appendix 1. Most countries have not implemented the compilation of balance sheet data.

D. Integration of data between industries and non-financial corporations

7.69 The next step is to integrate industry data with sector data. This is done in two steps, each of which is described below. First, the common data on production and generation of income derived from establishment surveys and those that are available from the financial statements of enterprises need to be reconciled. This is this done at the level of groups of enterprises and corresponding establishments (section 1). And the next step

is to reconcile the financial flow and stock data of the corporate sector with those of counterpart sectors, in the context of the global reconciliation of the national accounts (section 2).

7.70 The establishment survey data include information on cost structure and inter-industry flows of goods and services that are used to compile the Supply and Use Table (SUT) of the SNA. Each of the categories of the establishment surveys needs to be converted to the SNA formats of the production and generation of income accounts. Based on output and sales data of the survey, both principal and secondary output are calculated. To this should be added the production of energy, if the latter is not only applied for own use, but also sold to a significant extent. In the case of establishments which produce goods, the estimate of output follows the method described in table 7.6 above. Once output of goods is estimated in terms of quantities, the output value is obtained by multiplying the quantities with average prices of sales, where the latter are derived by dividing the sales value by the quantity sold. In the case of establishments producing trade and other services, output of industries is equal to output at the level of enterprises. The establishment surveys also include information on the elements of intermediate consumption, compensation of employees, consumption of fixed capital, and this information is processed as was done in tables 7.7-7.9 above and described in the accompanying text. Gross fixed capital formation is derived from the data on opening and closing stock of capital included in the surveys.

Table 7.14. Estimating items in the balance sheets

		Year n-1		Year n		Year n - Year (n-1)		Line number in appendix 1
AN1	Non-financial produced assets	43.908		60.413		16.505		
	Inventories		18.024		20.274		2.250	90
	Property, plant and equipment		25,884		40,139		14,255	101
	(Changes are broken down into:							
	Gross capital formation and					12.535		
	Revaluation of assets)					1.720		
AN2	Non-financial non-produced assets	2		12		10		
	Land		2		12		10	106
AF	Financial assets	43.420		58.358		14.938		
AF22	Transferable deposits	12.928		16.886		3.858		
	Current bank accounts in national		12.840		15.566		2.726	85
	Current bank accounts in dollars		88		1.320		1.232	86
AF23	Other deposits	10		15		5		
	Other deposits and bonds		10		15		5	113
AF3	Securities other than shares	42		62		20		
	Temporary investments		42		62		20	87
AF5	Shares and other equity	406		1.117		711		
	Shares		406		1.117		711	98
AF6	Insurance technical reserves	1.510		1.594		84		
	Advance payment of insurance		1.510		1.594		84	108
AF7	Other accounts receivable	28.524		38.684		10.160		
	Accounts receivable		15.990		23.313		7.323	88
	Merchandise in transit		7.376		10.332		2.956	92
	Advance payments		338		0		338	93
	Commercial accounts receivable		3.000		3.216		216	94
	Advance payments of income tax		1.820		1.823		3	112
AF	Liabilities	52,288		70,612		18,324		
AF3	Securities other than shares	1.816		1.841		25		
	Bills and commercial paper payable		1,816		1,841		25	124
AF4	Loans	24,530		25,740		1,210		
	Loans		24.530		25.740		1,210	125
AF5	Shares and other equity	11.000		13.500		2.500		
	Capital paid up		11.000		13.500		2.500	129
AF7	Other accounts receivable	14.942		29.531		145.889		
	Accounts payable		10.420		21.944		11.524	119
	Withholdings and other accounts		1.492		4.159		2.667	120
	Commercial accounts payable		3,000		3,216		216	121
	Advance payments on sales		30		212		182	118

1. Integration of industry and sector accounts

7.71 The integration of the industry and sector accounts is done in the format of the SNA table on the Cross-Classification by Industries and Sectors (CCIS) of production and generation of income accounts data.

7.72 The establishment and enterprise modules of economic surveys as well as the financial statements of enterprises constitute supplementary data sources, which together permit subdividing enterprises into their constituent establishments. To arrive at an adequate integration of establishment and enterprise data, integrated economic surveys of establishments and enterprises are needed. It is only in this manner, that it is possible to check data on establishments with those of enterprises. Any other method would result in a less precise link between the two.

7.73 If this integrated information is available, it is possible to determine whether output of establishments and enterprises is the same. In many instance in which this equality is not obtained, there is a need for adjustment of the data. The same holds for establishment and enterprise estimates of intermediate consumption, compensation of employees, gross fixed capital formation and changes in inventories.

7.74 In the compilation of the CCIS, it is important to take into account the existence of administrative units which manage the operations of the component establishments of the enterprise. The cost of the administrative units should be distributed between the component establishments of the enterprise. Allocation of the cost of administrative units to other establishments of the enterprise can only be done if this information is separately identified in the economic survey. If the survey does not include data at the level of establishments and enterprises, the identification and allocation of such administrative cost is even more difficult.

7.75 In order to arrive at an optimal link between establishment and enterprise data, a general rule would be to compile production and generation of income accounts simultaneously for groupings of large public and private NFCs. and corresponding industries (for groupings, see the description of the Peruvian practices in para. 7.90 et seq.). This simultaneous compilation of establishment and enterprise accounts would avoid large discrepancies between industry and sector accounts. These might emerge if the accounts were compiled separately, in which case they are more difficult to reconcile.

7.76 In the next two sub-sections, two principal adjustments are discussed when compiling the CCIS. The first one has to do with the estimation of changes in inventories and the second one with the scope and valuation of output.

(a) Changes in inventories

7.77 There is a need to introduce a valuation adjustment to the data on changes in inventories derived from the financial statements of NFCs, in order to bring them into line with those of the SUT. In the SUT output is generally available in physical units and valued at average prices of the year. On the other hand, output estimates from financial statements of NFCs , are based on sales data and data on changes in inventories. The changes in inventories in financial statements are obtained as the difference between two amounts that are valued at different periods. The opening stock of inventories is valued at prices that are close to those prevalent at the beginning of the year and the closing stock of inventories is valued at prices close to those at the end of the year. Value adjustments are made to the opening and closing stock, so that both are valued at average prices of the year, in line with the SUT estimates.

7.78 The price adjustment made to changes in inventories would alter output, gross value added, gross operating surplus and also gross saving in the NFC sector accounts. Also the value of intermediate consumption would need to be adjusted for the valuation of changes in inventories, if the latter are derived from data on purchases and changes in inventories of raw materials, fuel and oils. Net lending/borrowing is not affected, as the adjustment to changes in inventories and the corresponding adjustments to output, intermediate consumption, etc. would cancel out in the capital account.

(b) Output

7.79 Output and intermediate consumption at the level of the enterprise would not include output that is produced by one establishment of the enterprise and used by another. This inter-industry delivery of products within the same enterprise ,however, is recorded in output of industries in the SUT. It is to the level of industry output that output of enterprises should be adjusted, in line with the SNA recommendations.

7.80 A typical example is an oil company which in the SUT might include establishments belonging to four industries: oil extraction (ISIC 11), oil refining (ISIC 23), transport of oil by pipelines (ISIC 60), and services provided to enterprises (ISIC 11). The financial statements of the oil company in principle do not reflect separately the extraction of oil, nor its transport by pipeline to the refineries, and also do not present separately the output of services provided to the establishments dealing with extraction, refinery and transport of oil.

7.81 It is important that the inter-establishment use of output of enterprises be added at the same time to output and intermediate consumption of the enterprise. If this is not done at the enterprise level, while the industry data do reflect such inter-establishment deliveries, the integration of establishment and enterprise data in the CCIS would be distorted, as at the time of the final reconciliation the corresponding industry data may be erroneously allocated to a sector which does not actually produce this output.

2. Integration with the accounts of other sectors

7.82 In this so-called global integration of data of NFCs, financial assets and liabilities of this sector are compared with those of counterpart sectors. In order to achieve the global integration, assets and changes in assets of the NFC sector should be equal to the corresponding liabilities of other sectors and vice versa. The consistency should be elaborated on the basis of data of those sectors for which there is sufficient detail and explanatory information. When no information is available on a counterpart sector, the data are temporarily assigned to an Aunknown sector@. To implement the distribution between sectors of origin and destination of assets and liabilities, account is also taken of the quality of the data presented by each economic agent.

7.83 Furthermore, it is necessary to make allowance in the financial account for differences in the period of recording of non-financial transactions. Discrepancies with regard to the moment of recording between sectors may be allocated to F7 (Other accounts receivable/payable).

7.84 An attempt should be made to arrive at an equilibrium between sectors of uses and resources for each transaction separately. In this process, use is made of so-called transaction matrices, which record for each of the transactions the sector of resource and use. When reconciling the data between the sectors in the transaction matrix, the transactions that were temporarily assigned to an Aunknown sector@ are also taken into account.

7.85 In the process of global reconciliation of NFC sector data with data of other sectors, the equilibrium between Afinancial@ and Anon-financial@ net lending/borrowing should be maintained or achieved for each

sector separately. This so-called Avertical integration@ of data would check the internal compatibility for the non-financial sector --and for each other sector as well-- of the previous compilation steps, that converted the data of the profit and loss account to arrive at Anon-financial net lending@ and the balance sheet data of the financial statements to arrive at Afinancial net lending@.

7.86 Once this first vertical assessment of the NFC sector data is accomplished within the context of the global reconciliation, adjustments of the type mentioned in para. 7.52 and subsequent paragraphs above are applied in order to achieve final reconciliation between the two types of net lending for the NFC sector.

7.87 There are some items of assets and liabilities which have not been taken into account because they did not originate in actual transactions. One of those is the element of revaluation included in the balance sheet statement, which needs to be deducted from the changes in the value between two balance sheets for real estate, machinery and equipment, in order to arrive at capital formation in the capital account, and allocated to the revaluation account, as was explained above (para.7.55 et seq.). On the other hand, changes in the net equity (NE) statement between reserves (legal reserves, reserves for reinvestment, etc.) and accumulated results from past operations should not be taken into account in the processing of financial statement data for the purposes of national accounts.

7.88 The above steps in the global reconciliation of non-financial corporate sector data should be carried out simultaneously with the development of institutional sector accounts for other sectors.

E. Country practices

7.89 In the previous sections the compilation approach to NFC sector accounts was illustrated in a few instances with help of actual country practices. The following provides further detail on three of those practices, i.e. those in the Dominican Republic, Peru and Colombia. The Bolivian practices are not dealt with in any further detail, as they include the compilation of NFC sector accounts only for one selected year (1992).

1. Dominican Republic

7.90 Appendixes 1 and 2 used in the text above are closely related to the practices of the Dominican Republic in the compilation of NFC sector accounts for public corporations, except for the balance sheets and other changes in the balance sheets accounts, which have not been compiled for this country. The direct compilation of NFC sector accounts is not done for private NFCs, partly because of lack of data, but also because of lack of uniformity in the accounting presentations, which is due to the absence of a GAP (see para. 7.12).

7.91 The integration between industry and NFC sector accounts was done at the detailed level of 30 industries and with regard to manufacturing separately for three categories of large private enterprises, medium private enterprises and public enterprises. For each of those groupings, sector data on output, intermediate consumption, value added, compensation of employees, other taxes less subsidies on production, and operating surplus were reconciled fully or near fully with the data of the corresponding industries. For other non-manufacturing industries it was not possible on the basis of the available data to determine which belonged to the NFC sector and which ones should be allocated to the household sector. In those instances use was made of indirect information provided by specialists familiar with the organizational structure of those industries.

2. Peru

7.92 The Peruvian approach to national accounts compilation is reflected in appendix 3. In most instances, no detailed data were available on cost and other outlays of non-financial corporate enterprises, Therefore, Peru's compilation of non-financial corporate sector accounts started with the calculation of gross saving on the basis of profits/losses for this period, which is equal to gross disposable income, in the case of the NFC sector. Thereafter estimates were derived, also on the basis of the profits and loss accounts, of the transactions in the secondary distribution of income account and allocation of primary income account, and of the opening balancing items in these accounts, i.e. the balance of primary incomes and the operating surplus. To the latter was then added compensation of employees and other taxes on production, to arrive at value added of the sector. This value added was deducted from output, and intermediate consumption of the sector was obtained as a residual. The capital and financial accounts of the public and private NFC sector were only compiled for one base year (1979), while for all other prior years, these accounts were compiled only for the total of this sector at the time of the final reconciliation of national accounts. This was done by assigning industry data on the production accounts to the NFC sector and using a cross-classification of transactions by sector of origin and destination as a means of deriving of other NFC data indirectly from counterpart data.

7.93 The benchmark compilation requires the reconciliation of data on production and generation of income between the industry and NFC sector data. This was done by grouping corporate sector data into subsectors based on their main economic activity and comparing aggregates between industry and NFC sector data for each of the subsectors. This resulted in considerable discrepancies, which needed to be resolved.

7.94 Comparable groups of enterprises are defined on the basis of their legal status and available data. Three large groups are distinguished:

Group 1: Enterprises for which there is a high form of integration between the data on establishments and the enterprise; this applies for instance to the oil companies and to other public enterprises.

Group 2: Enterprises, for which it is not easy to establish links with the establishment data and only approximate links can be developed by grouping the enterprises by main activity categories that correspond to those also used in the classification of industries. This applies to private enterprises in the manufacturing industry which have more than one establishment.

Group 3: Groups of small and larger enterprises for which the link with establishments could not be identified at all, not even at the level of the main groupings of activities. This applies to establishments and enterprises operating in agriculture, forestry, construction, trade, road transport and other market services.

7.95 Based on these three groups, statistical discrepancies are evaluated and corrections made. When evaluating output data, it was determined that not the same valuation base was used: in industries basic prices were used, while enterprises used a valuation based on producers' prices. This difference was easy to correct, so that both industries and enterprises would value output at basic prices.

7.96 The largest discrepancy was found in intermediate consumption, as different methods were used for establishments and enterprises to measure this aggregate. In the case of industries, data were directly obtained from surveys, while in the case of enterprises, intermediate consumption was estimated as the difference between output and value added. Furthermore, establishment data did not reflect overhead administrative cost, and, as a consequence, intermediate consumption of some industries did not include this information.

7.97 Another difficulty encountered was with regard to changes in inventories. No detailed investigation was done; instead a global adjustment was applied to output, intermediate consumption and changes in inventories of enterprises, so that the latter aggregates would be compatible with those of industries.

3. Colombia

7.98 In Colombia the NFC sector includes corporations legally constituted as such, and also public quasi-corporations, as well as quasi-corporations that are subsidiaries of foreign corporations. The sector does not include private quasi-corporations, for lack of sufficient statistical information; these units are all included in the household sector.

7.99 In the compilation of data for the NFC sector a distinction is made between Acorporations with accounting data@ and Acorporations without accounting information@. The first group includes public enterprises, foreign subsidiaries and large private corporations and cooperatives, which are supervised by the Superintendencia de Sociedades. The Acorporations without accounting data@ are those that are not controlled by the *Superintendencia*, as their net equity is too small. For those enterprises it supervises, the *Superintendencia* compiles standardized data on financial statements, based on a General Accounting Plan (*Plan Unico de Cuentas*). This information is used in the NFC sector accounts, and generally presents few difficulties in the compilation, except when adjustments for inflation are incorporated in the balance sheets of some of the corporations, and also difficulties are encountered when the scope of the corporations covered by the *Superintendencia* changes over time. For public enterprises there is a separate compilation of data, which provide more or less detail depending on whether the enterprise is more or less expensively controlled by the Government. Less detailed information is generally available for the smaller public enterprises and for those controlled by regional governments. Colombia has not carried out integrated enterprise-establishment surveys, except for a recent experimental compilation for the manufacturing sector.

7.100 The compilation of NFC sector accounts for enterprises without accounting data is done at the time of the final reconciliation, with help of other indicators or counterpart information, in a manner similar to what was described above for Peru. Production information on corporations with accounting data is separated from the industry detail based on establishment data. The difference for each industry is allocated to the NFC sector and households with help of known indicators and knowledge on the institutional structure of each industry. So-called transaction matrices, cross-classifying by sector of origin and destination all other income, outlay and financial transactions, are then used to identify the amounts that pertain to the NFC sector.

7.101 With regard to the NFC sector, there is a division of work between DANE (Departamento Administrativo Nacional de Estadística) and the Banco de la República. DANE compiles the Areal@ accounts and the Banco compiles the financial accounts. This results sometimes in incompatibilities in data between net lending of the capital account and net lending of the financial account.

Appendix 1
NON-FINANCIAL CORPORATIONS, PROFIT AND LOSS ACCOUNTS AND BALANCE SHEETS, INTERMEDIATE DATA: EXAMPLE

National currency		
PROFIT AND LOSS	**Year n**	Line
Sales after discounts and returns of products and excl. sales tax	134,824	1
Final products (goods)	80,542	2
Services (rent of machinery)	27,413	3
Traded goods (merchandise)	26,869	4
		5
minus:		6
Cost of final products	76,956	7
(+) Inventories of final products at the beginning of the period	13,072	8
(+) Cost of production or processing	77,570	9
(+) Inventories of intermediate products at the beginning of the period	1,120	10
(+) Primary products and raw materials	47,774	11
(+) Direct labour cost	7,836	12
(+) Other materials	6,410	13
(+) Indirect cost of production	5,284	14
(+) Packing materials	7,701	15
(+) Depreciation of production equipment	4,045	16
(-) Inventories of intermediate products at the end of the period	2,600	17
(-) Inventories of final products at end of the period	13,686	18
		19
Cost of merchandise sold	21,048	20
		21
Gross results of sales	36,820	22
		23
minus:		24
Operational cost, general and administrative cost of sales	17,043	25
Wages	2,027	26
Salaries	1,608	27
Payment for overwork	364	28
Christmas bonus	614	29
Vacation pay	428	30
Commissions on sales (paid to non-employees)	1,071	31
Employer's social security contributions	248	32
Insurance for accidents at work	86	33
Uniforms	58	34
Collective medical insurance	608	35
Collective life insurance	72	36
Lunch subsidies	670	37
Education and training of employees	6	38
Support for education	214	39
Professional technical services	86	40
Donations and contributions	5	41

National currency

PROFIT AND LOSS	Year n	Line
Maintenance and repair of equipment	318	42
Fuel and oil	396	43
Depreciation of transport and office equipment	174	44
Travel cost	253	45
Outlays on communication	369	46
Publicity and promotion	98	47
Electricity, water and sanitation	176	48
Paper and other office utensils	448	49
General insurance	669	50
Outlays on transport	20	51
External audit	76	52
Data processing, legal and other services	1,858	53
Security services	150	54
Technical assistance	1,486	55
Compensation for use of personal vehicles	132	56
Freight and other transport charges	242	57
Outlays related to imports	54	58
Personnel incentives	6	59
Storage cost	324	60
Representation expenses	42	61
Exchange rate and banking fees	650	62
Provision for non-recoverable debts	778	63
License fees, etc.	83	64
Other services provided by third parties	76	65
		66
Result of operations	19,777	67
		68
Other revenues	1,147	69
Services (rent of equipment)	25	70
Casualty insurance claims	267	71
Interest received	855	72
		73
Other outlays/financial cost	2,230	74
Interest paid	2,228	75
Payments for mining concession, exploration and exploitation right	2	76
		77
		78
Profits of the period	18,694	79

NON-FINANCIAL CORPORATIONS, PROFIT AND LOSS ACCOUNTS AND BALANCE SHEETS, INTERMEDIATE DATA: EXAMPLE (continued)

National currency

BALANCE SHEET	Year n-1	Year n	Flow	Line
				80
				81
ASSETS	80,872	107,222	26,350	82
				83

National currency				
PROFIT AND LOSS			**Year n**	Line
CURRENT ASSETS	55,960	71,567	15,607	84
Current bank accounts in national currency	12,840	15,566	2,726	85
Current bank accounts in dollars	88	1,320	1,232	86
Temporary investments	42	62	20	87
Accounts receivable	15,990	23,313	7,323	88
Provision for unrecoverable debts	1,488	2,266	778	89
Inventorie	18,024	20,274	2,250	90
Reserves for revaluation of inventories	250	250	0	91
Merchandise in transit	7,376	10,332	2,956	92
Advance payments	338	0	338	93
Commercial accounts receivable	3,000	3,216	216	94
				95
				96
PERMANENT INVESTMENTS	406	1,117	711	97
Shares	406	1,117	711	98
				99
FIXED ASSETS	21,166	31,106	9,940	100
Property, plant and equipment	25,884	40,139	14,255	101
(-) Accumulated depreciation	4,720	9,045	4,325	102
				103
Total property, plant and equipment	21,164	31,094	9,930	104
				105
Land	2	12	10	106
				107
DEFERRED CHARGES	1,510	1,594	84	108
Advance payment of insurance premiums	1,510	1,594	84	109
				110
OTHER ASSETS	1,830	1,838	8	111
Advance payments of income tax	1,820	1,823	3	112
Other deposits and bonds	10	15	5	113
				114
LIABILITIES	41,288	57,112	15,824	115
				116
CURRENT LIABILITIES	14,942	29,531	14,589	117
Advance payments on sales	30	212	182	118
Accounts payable	10,420	21,944	11,524	119
Withholdings and other accounts payable	1,492	4,159	2,667	120
Commercial accounts payable	3,000	3,216	216	121
				122
LONG-TERM LIABILITIES	26,346	27,581	1,235	123

National currency				Line
BALANCE SHEET	**Year n-1**	**Year n**	**Flow**	
Bills and commercial paper payable	1,816	1,841	25	124
Loans	24,530	25,740	1,210	125
				126

National currency				
PROFIT AND LOSS			**Year n**	Line
EQUITY	39,584	50,110	10,526	127
				128
CAPITAL PAID UP	11,000	13,500	2,500	129
				130
RESERVES	976	996	20	131
Legal reserves	920	940	20	132
Other reserves	56	26	0	133
				134
REVALUATION OF FIXED ASSETS	10,000	11,720	1,720	135
				136
PROFIT OF LOSS	17,608	23,894	6,286	137
Retained profits, accumulated	9,320	9,320	0	138
Profits of the period	12,408	18,694	6,286	139
Accumulated losses	12,184	12,184	0	140
Profits from revaluation of foreign exchange	8,064	8,064	0	141
				142
TOTAL LIABILITIES AND EQUITY	80,872	107,222	26,350	143
				144
SUPPLEMENTARY		**Year n**		145
				146
Indirect production cost have the following structure:				147
15% other materials				148
83% wages and salaries				149
2% depreciation				150
				151
Insurance service charge 51.3% of premium [1]				152
Integrated production (inter-establishment deliveries)		700		154
Property income attributed to insurance policy holders [1]		113		155
Adjustment for FISIM, interest received [2]		121		156
Adjustment for FISIM, interest paid [2]		210		157
				158
Allocation of profits in the previous year		12,408		159
Dividends paid of which:		10,588		160
Reinvested earnings on direct foreign investments		500		161
Taxes on income paid		1,800		162
Increase in the legal reserves		20		163
				164
[1]/ Data obtained from the sector accounts of insurance companies.				165
[2]/ Data obtained from the sector accounts of financial corporations. other than insurance companies.				166
FISIM = Financial Intermediary Services Indirectly Measured				167

APPENDIX 2
NON-FINANCIAL CORPORATE SECTOR ACCOUNTS IN THE SNA FORMAT: EXAMPLE

National currency		Line numbers in appendix 1
PRODUCTION	**116,595**	
Output without adjustments	115,895	
Final and intermediate products	82,636	
(+) Sales	80,542	2
(+) Changes in inventories of final and intermediate products	2,094	
(+) Inventories of final products at end of the period	13,686	18
(-) Inventories of final products at beginning of the period	13,072	8
(+) Inventories of intermediate products at end of the period	2,600	17
(-) Inventories of intermediate products at begining of the period	1,120	10
Revenues from rent of equipment	27,413	3
Trade	5,821	
(+) Sales of traded goods (merchandise)	26,869	4
(-) Cost of merchandise sold	21,048	20
Revenues from rent of equipment	25	70
(+) Adjustment of integrated production	700	154
INTERMEDIATE CONSUMPTION	**72,422**	
Intermediate consumption without adjustments	71,278	
Primary products and raw materials	47,774	11
Other materials	6,410	13
Indirect cost of production (15%)	793	0.15x(14)
Packing materials	7,701	15
Commissions on sales (paid to non-employees)	1,071	31
Uniforms (factory workers)	58	34
Education and training of employees	6	38
Professional technical services	86	40
Maintenance and repair of equipment	318	42
Fuel and oil	396	43
Travel cost	253	45
Outlays on communication	369	46
Publicity and promotion	98	47
Electricity, water and sanitation	176	48
Paper and other office utensils	448	49
General insurance (51.3%)	343	0.513x(50)
Outlays on transport	20	51
External audit	76	52
Data processing, legal and other services	1,858	53
Security services	150	54

NON-FINANCIAL CORPORATE SECTOR ACCOUNTS IN THE SNA FORMAT: EXAMPLE

	National currency	Line numbers in appendix 1
Technical assistance	1,486	55
Freight and other transport charges	242	57
Outlays related to imports	54	58
Storage cost	324	60
Representation expenses	42	61
Exchange rate and banking fees	650	62
Other services provided by third parties	76	65
Adjustments to intermediate consumption	1,144	
Integrated production	700	154
Imputed interest to insurance policy holders	113	155
Adjustment for FISIM	331	156-157
CONSUMPTION OF FIXED CAPITAL	**4,325**	
Indirect cost of production (2%)	106	0.02x(14)
Depreciation (cost of production)	4,045	16
Depreciation (overhead cost)	174	44
COMPENSATION OF EMPLOYEES	**19,299**	
Direct labour cost	7,836	12
Indirect cost of production (83%)	4,386	0.83x(14)
Wages	2,027	26
Salaries	1,608	27
Payment for overwork	364	28
Christmas bonus	614	29
Vacation pay	428	30
Employer's social security contributions	248	32
Insurance for accidents at work	86	40
Collective medical insurance	608	35
Collective life insurance	72	36
Lunch subsidies	670	37
Support for education	214	39
Compensation for use of personal vehicles	132	56
Personnel incentives	6	59
OTHER TAXES ON PRODUCTION	83	
License fees, etc.	83	64
PROPERTY INCOME		
Interest received	**976**	
Interest received	855	72
(+) Adjustment for FISIM	121	156
Interest paid	**2,018**	

NON-FINANCIAL CORPORATE SECTOR ACCOUNTS IN THE SNA FORMAT: EXAMPLE

	National currency	
Interest (finance cost)	2,228	75
		Line numbers in appendix 1
(-) Adjustment for FISIM	210	157
Distributed income of corporations	**10,088**	
Dividends paid (+)	10,588	160
Reinvested earnings on direct foreign investment (-)	500	161
Reinvested earnings on direct foreign investments (-)	**500**	161
Adjustment for property income attributed to insurance policy holders (based on insurance sector information)	**113**	155
Land rent	**2**	
Payments for mining concession, exploration and exploitation	2	76
CURRENT TAXES ON INCOME, WEALTH, ETC.	**1,800**	
Taxes on income paid	1,800	162
IMPUTED SOCIAL CONTRIBUTIONS	**214**	
Support for education	214	39
NET NON-LIFE INSURANCE PREMIUMS	**326**	
General insurance (0.487 = 1 - 0.513)	326	0.487x(50)
NON-LIFE INSURANCE CLAIMS	**267**	
Casualty insurance claims	267	71
OTHER CURRENT TRANSFERS	**5**	
Donations and contributions	5	41
GROSS FIXED CAPITAL FORMATION	**12,535**	
Property, plant and equipment (+)	14,255	101
Revaluation of fixed assets (-)	1,720	135
CHANGES IN INVENTORIES	**2,250**	
Inventories	2,250	90
ACQUISTION LESS DISPOSALS OF NON-PRODUCED NON-FINACIAL ASSETS	**10**	
Land	10	106
ACQUISITION LESS DISPOSALS OF FINANCIAL ASSETS	**14,938**	
Transferable deposits	3,958	
Current bank accounts in national currency	2,726	85
Current bank accounts in dollars	1,232	86
Other deposits	5	

NON-FINANCIAL CORPORATE SECTOR ACCOUNTS IN THE SNA FORMAT: EXAMPLE

National currency		
Other deposits and bonds	5	113
		Line numbers in appendix 1
Securities other than shares	20	
Temporary investments	20	87
Shares and other equity	711	
Investment in shares	711	98
Prepayment of premiums and reserves against outstanding loans	84	
Advance payment of insurance payment	84	109
Other accounts receivable	10,160	
Accounts receivable	7,323	88
Merchandise in transit	2,956	92
Advance payments	338	93
Commercial accounts receivable	216	94
Advance payments of income tax	3	112
INCURRENCE LESS REPAYMENT OF LIABILITIES	**18,324**	
Securities other than shares	25	
Bills and commercial paper payable	25	124
Loans	1,210	
Loans	1,210	125
Shares and other equity	2,500	
Paid up capital	2,500	129
Other accounts payable	14,589	
Advance payments on sales	182	118
Accounts payable	11,524	119
Withholdings and other accounts payable	2,667	120
Commercial accounts payable	216	121
NOMINAL HOLDING GAINS (+) AND LOSSES (-)		
Non-financial produced assets	**1,720**	
Reserves for revaluation of inventories	0	91
Revaluation of fixed assets	1,720	135
OPENING BALANCE SHEET		
Non-financial produced assets	**43,908**	
Inventories	18,024	90
Property, plant, and equipment	25,884	101
Non-financial non-produced assets	**2**	
Land	2	106

NON-FINANCIAL CORPORATE SECTOR ACCOUNTS IN THE SNA FORMAT: EXAMPLE

National currency

		Line numbers in appendix 1
Financial assets	**43,420**	
Current bank accounts in national currency	12,840	85
Current bank accounts in dollars	88	86
Temporary investments	42	87
Accounts receivable	15,990	88
Merchandise in transit		92
Advance payments	338	93
Commercial accounts receivable	3,000	94
Investments in shares	406	97
Advance payment of insurance premiums	1,510	108
Advance payments of income tax	1,820	112
Other deposits and bonds	10	113
Liabilities	**52,288**	
Advance payments on sales	30	118
Accounts payable	10,420	119
Withholdings and other accounts payable	1,492	120
Commercial accounts payable	3,000	121
Bills and commercial paper payable	1,816	124
Loans	24,530	125
Capital paid up	11,000	129
TOTAL CHANGES IN ASSETS/LIABILITIES		
Non-financial produced assets	**16,505**	
Gross fixed capital formation	12,535	
Changes in inventories	2,250	90
Revaluation of fixed assets	1,720	135
Non-financial non-produced assets	**10**	
Land	10	106
Financial assets	**14,938**	
Transferable deposits	3,958	
Other deposits	5	113
Securities other than shares	20	87
Shares and other equity	711	98
Prepayment of premiums and reserves against outstanding loan	84	109
Other accounts receivable	10,160	
Liabilities	**18,324**	
Securities other than shares	25	124
Loans	1,210	125
Shares and other equity	2,500	129
Other accounts payable	14,589	117

NON-FINANCIAL CORPORATE SECTOR ACCOUNTS IN THE SNA FORMAT: EXAMPLE

	National currency	Line numbers in appendix 1
CLOSING BALANCE SHEET		
Non-financial produced assets	**60,413**	
Inventories	20,274	90
Property, plant and equipment	40,139	101
Non-financial non-produced assets	**12**	
Land	12	106
Financial assets	**58,358**	
Current bank accounts in national currency	15,566	85
Current bank accounts in dollars	1,320	86
Temporary investments	62	87
Accounts receivable	23,313	88
Merchandise in transit	10,332	92
Advance payments	0	93
Commercial accounts receivable	3,216	94
Investments in shares	1,117	97
Advance payment of insurance premiums	1,594	109
Advance payment of income tax	1,823	112
Other deposits and bonds	15	113
Liabilities	**70,612**	
Advance payments on sales	212	118
Accounts payable	21,944	119
Withholdings and other accounts payable	4,159	120
Commercial accounts payable	3,216	121
Bills and commercial paper payable	1,841	124
Loans	25,740	125
Capital paid up	13,500	129

APPENDIX 3
COMPILATION OF NON-FINANCIAL CORPORATE SECTOR ACCOUNTS: EXPERIENCES IN PERU

	Before adjustment	After adjustment	Line numbers in appendix 1
ESTIMATION OF GROSS SAVING			
Profits / losses of the period	18,694	18,694	79
Depreciation (+)	4,325	4,325	
Provision for non-recoverable debts (+)	778	778	63
Dividends payable (-)	10,588	10,588	160
Taxes on income payable (-)	1,800	1,800	162
Gross saving = Disposable income gross	**11,409**	**11,409**	
ACCOUNTS OF INCOME DISTRIBUTION			
Disposable income	11,409	11,409	
Other current transfer receivable (-)	267	267	
Casualty insurance claims	267	267	71
Current taxes payable (+)	1,800	1,800	
Other current transfers payable	331	331	
Net non-life insurance premiums	326	326	0.478x(50)
Miscellaneous current transfers	5	5	41
Balance of primary incomes	**13,272**	**13,272**	
Balance of primary incomes	13,272	13,272	
Property income receivable (-)	855	1,089	
Interest	855	976	72
Adjustment for property income attributed to insurance policy holders		113	155
Property income payable (+)	12,818	12,608	
Interest	2,228	2,018	75
Distributed income of corporations	10,088	10,088	
Reinvested earnings on direct foreign investments	500	500	161
Land rent	2	2	76
Gross operating surplus	**25,235**	**24,791**	
Gross operating surplus	25,235	24,791	
Compensation of employees (+)	19,299	19,299	
Other taxes on production (+)	83	83	64
Gross value added	**44,617**	**44,173**	
Gross value added (-)	44,617	44,173	
Production (+)	115,895	116,595	
Intermediate consumption	**71,278**	**72,422**	

Appendix 4

SPANISH EQUIVALENTS OF TERMS USED

Accounts payable	*Cuentas por pagar*
Accounts receivable	*Cuentas por cobrar*
Accumulated depreciation	*Depreciación acumulada*
Accumulated results	*Resultados acumulados*
Adjustments to reconcile data of the profit and loss statements and balance sheets	*Movimiento de cuentas*
Advance payments made	*Activos diferidos*
Advance payments received	*Pasivos diferidos*
Balance sheet statement	*Balance general*
Changes in accumulated depreciation	*Movimiento de la depreciación*
Changes in fixed assets	*Movimiento de los activos fijos*
Exchange rate differential	*Diferencia de cambio*
Explanatory notes of the financial statement	*Notas explicativas del estado financiero*
Financial statement	*Estado financiero*
Fuels and oils	*Combustibles y lubricantes*
General Accounting Plan (GAP)	*Plan contable general (PCG)*
Global (or final) reconciliation	*Síntesis global*
Indebtedness	*Endeudamiento*
Inventories Areceivable@	*Existencias por recibir*
Merchandise	*Mercaderías*
Net equity	*Patrimonio (neto)*
Other reserves	*Provisiones diversos*
Paid-up capital	*Capital social (pagado)* o *Capital aportado*
Price adjustment(s)	*Actualización del valor*
Profits and losses of the period	*Resultado del ejercicio*
Profit and loss statement	*Estado de resultados*
Sale and purchase of securities	*Enajenación de valores*
Securities	*Valores*
Statement of changes in the net equity	*Estado de cambios en el patrimonio neto*

VIII. MEASUREMENT OF FIXED CAPITAL STOCK AND CONSUMPTION OF FIXED CAPITAL

Vu Quang Viet
United Nations Statistics Division[90]

8.1 Valuation of fixed capital stock is essential (i) to gain a better idea of net product (net operating surplus, net value added) and net increase in productive capacity (net capital formation) through the calculation of consumption of fixed capital; (ii) to obtain measures of capital stocks that are used in the balance sheet of the SNA; and (iii) to allow studies of economic efficiency and productivity. For the first two objectives, the wealth capital stock is needed; for the third objective, the productive capital stock is. Each group of objectives is conceptually different and therefore the appropriate value of capital stock in each case is also different.

8.2 Business accounts, as discussed in the introduction and chapter II, provide neither the values of fixed assets nor the values of depreciation that are appropriate for the SNA. Values of fixed assets, and as a consequence depreciation, are measured at historic costs in business accounts while assets and depreciation are measured at current market prices in the SNA. In addition, depreciation may also reflect taxation policy, which makes it an inappropriate measure of cost of capital even if fixed assets are measured at current market prices. Because of these problems, one of the methods that can be used to estimate capital stocks and consumption of fixed capital at current prices is the perpetual inventory method (PIM). PIM is commonly used to measure both wealth capital stock and productive capital stock as mentioned in para. 8.1, though due to their conceptual differences, depreciation is handled differently.

8.3 Part A of the chapter will describe the theoretical basis for PIM. Part B will describe the application of PIM to estimate the wealth stock and consumption of fixed capital in national accounts. Part C will describe in brief the productive capital stock.

A. Theoretical foundation of valuing fixed assets

8.4 The SNA adopts the following principles in valuing assets:

(a) **Values observable on markets**: "Assets and liabilities ...are to be valued using a set of prices that are current on the date to which the balance sheet relates and that refer to specific assets." (SNA, para. 13.25) "Ideally, these prices should be observable prices on markets whenever such prices are available for the assets and liabilities in question." (SNA, para. 3.26)

[90]The author is grateful to the Australian Bureau of Statistics for organizing the International Conference on Measurement of Capital Stock, Canberra, Australia, 10-14 March 1997. This chapter benefited greatly from the many valuable papers presented at the conference. Unless otherwise noted, all papers quoted here were presented at the conference. The author is also grateful for the comments of Michael Ward of the World Bank.

(b) **Present value of future returns**: "...market prices may be approximated by the present, or discounted, value of future economic benefits expected from a given asset". (SNA, para. 13.28)

(c) **Values obtained indirectly by accumulating and revaluing transaction**: "The value of ... an asset at a given point in its life is given by its current acquisition price less the accumulated value of ... write-offs.@ (SNA, para. 13.32) The write-offs are for the consumption of fixed capital. The consumption of fixed capital, as a cost of production "may be defined in general terms as 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... Its value may deviate considerably from depreciation as recorded in business accounts or as allowed for taxation purposes, especially when there is inflation." (SNA, para. 6.179)

8.5 Capital theory states that under competitive conditions, values observable on markets would be bid either up or down to equal present values of future returns. The reason is that if the market value of an asset is lower than the present value of expected future returns, more producers will be willing to buy and use it in production, therefore bidding up its price. Conversely, if its market price is higher than the present value of expected future returns, its market price will have to be lower for the market to clear. The valuation of assets by either method is not possible since not all capital assets are either on sale or rented. Therefore, the third option, which is PIM, is recommended by the SNA. In order to illuminate the concept of asset value in the SNA, the main principle of capital theory, (i.e., present value of future returns) will be used. The illustration in table 8.1 will clarify the meaning of net capital stock and consumption of fixed capital.

Table 8.1. Market prices and consumption of fixed capital of an asset with an annual flow of constant net income

Year t	Net income earned by asset (f_t)	Present value at the beginning of each year over the life of the asset, with 10% discount					
		1	2	3	4	5	6
1	200	200					
2	200	182	200				
3	200	165	182	200			
4	200	150	165	182	200		
5	200	137	150	165	182	200	
6	200	124	137	150	165	182	200
Market price of the asset at the beginning of the year (NCS_t) = PV_t		958	834	697	547	382	200
Consumption of fixed capital during the year (D_t)		124	137	150	165	182	200

8.6 The example in table 8.1 assumes that the asset has a lifetime of 6 years and generates every year an annual net income[91], $f_t = 200$, assuming that these values are at constant prices; f_t is called the future rental in the SNA[92] or capital service value at period t. The market value of the asset in a given year is equal to the present value of the stream of net income generated from that year until the asset is scrapped. For the first year (column of year 1), to arrive at the present value of the asset, the flow of expected net income of that year and the following years must be discounted to the beginning of the first year with the discount rate r which is assumed to be 10% in this example. It is equal to the sum of the discounted values in the first year column, which is 958. The following formula is used in calculation:

$$PV_1 = f_1 + [1/(1+r)]\, f_2 + ... + [1/(1+r)^5]\, f_6$$

8.7 In a more general form, the present value of an asset can be written as follows:

$$(1) \qquad PV_t = \sum_{i=0}^{L} \frac{1}{(1+r)^i} f_{t+i}$$

where L is the service life of the asset.

8.8 By the end of the second year, the value of capital asset is reduced because the duration during which the asset can generate income is shortened. Its market value is only 834. The reduction in the ability to generate income equals capital used up in production or consumption of fixed capital (958-834=124). It is interesting to relate this theoretical example to the widely used assumption of straight-line depreciation (see appendix 1 for a description of different depreciation schedules and appendix 3 for country practices). Given that annual net income earned by an asset is assumed to be constant, consumption of fixed capital increases geometrically and not linearly. However, if annual income declines over the period due to loss of efficiency and with the appropriately selected rate of discount, consumption of fixed capital may either be linear or declining. Thus the straight-line depreciation may not be an unreasonable assumption.[93] But it is clear that the shape of depreciation is dependent on the degree of loss of efficiency and the discount rate. The shape of depreciation schedule is, therefore, an empirical question. Some empirical studies used changes of market values of capital assets over time to compute the depreciation pattern. Hulten and Wykoff[94] concluded that the pattern of depreciation in the United States of America appeared accelerated, relative to straight-line depreciation, though it was not statistically significant when tested. The SNA recommends that either straight-line or geometric depreciation may be used since it is still early to confirm either one is a better method. However, most countries adopt the straight line depreciation method because of its simplicity.

8.9 From equation (1), it is possible to derive the following useful relationship:

---

[91] Net income can be understood in the SNA context as gross operating surplus.

[92] "The rental needs to be large enough to cover not only the reduction in the value of the asset over that period i.e., the consumption of fixed capital but also the interest costs on the value of the asset at the start of the period and any other costs incurred by the owner." (SNA, para. 6.181)

[93] This is the conclusion reached by Derek Blades, Statistics Directorate, OECD, in his paper, ADepreciation in the national accounts, 1997".

[94] Charles R. Hulten and Frank C. Wykoff, AThe Measurement of Economic Depreciation@ in *Depreciation and the Taxation of Income from Capital*, Charles R. Hulten, ed., (Washington, D.C., The Urban Institute Press, 1981) and AThe Estimation of Economic Depreciation Using Vintage Asset Prices: An Application of the Box-Cox Power Transformation@ in *Journal of Econometrics*, 1981. This information is taken from Jack E. Triplett, AConcepts of Capital for Production Accounts and for Wealth Accounts: the Implications for Statistical Programs@, International Conference on Measurement of Capital Stock (Canberra, Australia, 1997).

(2) $(1+r)f_t = rPV_t + D_t$

where depreciation $D_t = PV_t - PV_{t+1}$

or (3) $D_t = (1+r)f_t - rPV_t$

8.10 It is possible to check that the relationship (3) is satisfied in table 8.1 (one should ignore the difference due to rounding error.) In (3), rPV_t looks like a holding gain on the remaining value of the asset. But this term should not be interpreted as a holding gain because there is no price change. This reduction in value of the unused "services" represented by declining PV_t happens as the asset comes ever closer to the end of its life. It is a change in quality.[95]

8.11 In summary, the theoretical discussion here shows that the choice of an appropriate method of depreciation depends on the interaction of two factors:

(a) Whether the net income (operating surplus) generated by the asset is constant, declining or increasing (the last one is less plausible); and

(b) The rate of discount.

8.12 It is not easy to calculate the present value of the asset because it is not easy to forecast the stream of future income accurately. Therefore, either a direct survey or an indirect method, such as PIM, must be used.

B. Perpetual inventory method as an approximation for the present value method of wealth capital stock

8.13 The PIM is used to calculate both wealth capital stock and depreciation (or consumption of fixed capital) in national account and productive capital stock in productivity analysis. The formulation is, however, slightly different due to conceptual differences. In this part, the use of PIM in wealth capital stock will be discussed. Part C will discuss the productive capital stock and the differences between the two concepts of capital stock.

8.14 The PIM values gross capital stock of a producer at a particular point in time as the accumulated sum of values of gross capital formation (historic gross capital formation must be first reflated to give replacement values in the current year) from the beginning of its operation to that particular point in time but diminished by the withdrawal of assets from production during the same period. Similarly, net capital stock can be defined as accumulated gross capital formation net of withdrawal and diminished by depreciation. The most important data in the calculation of net capital stock are: average service life, retirement and depreciation schedule.

(4) $GCS_t = GCS_{t-1} + GCF_t - R_t$

(5) $NCS_t = NCS_{t-1} + GCF_t - D_t$

where GCS is gross capital stock, NCS is net capital stock, GCF is gross capital formation, R is retirement or removal of capital assets from production use, D is depreciation or consumption of fixed capital and t refers to the end of the year or the beginning of the following year. Gross capital stock in (4) is necessary for the

[95] Peter Hill, "Economic Depreciation in the SNA", International Conference on Measurement of Capital Stock (Canberra, Australia, 1997).

calculation of depreciation in (5). At the beginning of the initial period, when retirement has not taken place and depreciation has not occurred, net capital stock is equal to gross capital stock.

8.15 The perpetual inventory method relies only on the following information by type of assets and by vintage[96] and also by types of industries and institutional sectors if capital stock by industries and institutional sectors is required:

(a) Gross capital formation;
(b) Average service life;
(c) Probable pattern of retiring assets by types (normally called mortality or retirement probability function);
(d) Depreciation pattern of assets;
(e) Price indexes of fixed assets in the capital stock.

8.16 Gross capital formation can be obtained from business accounts or through surveys. Price indexes of fixed assets which are statistically collected can be used to reflate gross capital formation in order to obtain replacement values in the year for which the capital stock is calculated. Average service life is normally based on tax life adjusted to reflect the real business practices. Retirement and depreciation schedules are still based on quite arbitrary assumptions by most countries.

8.17 In the following paragraphs, PIM will be presented conceptually from the most basic to the most complicated case as currently practiced by national accountants.

Table 8.2 Valuation of one capital asset

Assumptions: Simultaneous exit retirement function
4-year service life
Straight-line depreciation

Time period, end of year		1	2	3	4	5	6
1.	Gross capital formation (GCF) at period 1	800					
2.	Survival pattern of GCF at period 1	800	800	800	800		
3.	Gross capital stock (formula 4)	800	800	800	800		
4.	Consumption of fixed capital (line 3)/4	200	200	200	200		
5.	Net capital stock (formula 5)	600	400	200	0	0	

1. Tracing over time the value of one fixed asset put in place from a specific time period

8.18 Following is an example to show the calculation of the value of one fixed asset over its service life. In table 8.2, it is assumed that the fixed asset put in use in period 1 has a gross value of

[96] The year of installing a new asset.

800, is scrapped at the end of the fourth year and is depreciated on a straight line. Then, annual depreciation or consumption of fixed capital would be 200. Gross capital stock would remain at 800 for the 4-year service life of the asset. Net capital stock would be valued at 600 in the first period and 0 in the fourth period. Formulas (4) and (5) are used in the calculation of GCS and NCS; NCS is the concept that is used in the balance sheet of the SNA.

2. Tracing over time the value of a group of assets of the same kind put in place in a specific time period

8.19 Following is an example to show an application of PIM to value at different periods a group of fixed assets of the same type, which is bought in period 1. As a group, even though with the same expected service life, L, some assets may be withdrawn from use before their expected service life ends while some may outlast it due to special circumstances or economic decision by owners. In this case, a probability distribution of survival (or mortality) must be introduced. Let us assume the expected or mean service life is L, and

p_1 is a proportion of assets that is retired after 1 year;
p_2 is a proportion of assets that is retired after 2 years;
...
p_n is a proportion of assets that is retired after n years where n is the maximum number of years an asset of this kind can survive.[97]

These proportions will satisfy the following conditions:

$$(6) \qquad \sum_{i=1}^{\infty} p_i = 1$$

$$(7) \qquad \textit{Mean service life} = \sum_{i=1}^{\infty} i\, p_i$$

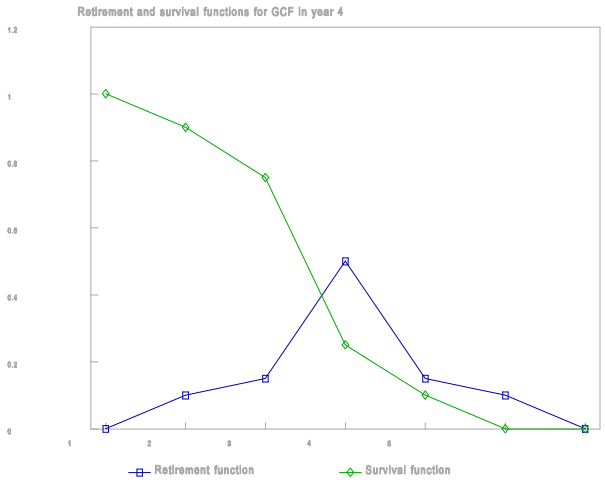
8.20 p_i is the probability of assets of a specific kind under study that will be retired in i years and ∞ is used in the formulas since they are applicable regardless of the value of n. The example in table 8.3 shows the retirement function and the valuation of GCS, NCS and D of a group of assets of the same kind with a mean (or average) service life of 4 years and being depreciated on a straight line.

8.21 In table 8.3 (p.220), the last column shows p_i, the percentage of assets that is assumed to be retired after year i. Out of a gross capital formation of 800 that is invested in period 1, no asset is retired after 1 year; 0.10 of assets is retired after 2 years, with a value of 80; 0.15 of assets is retired after 3 years, etc. In the table, GCS of the third class, for example, will retain its value of 120 from year 1 to year 3. Correspondingly, as this class has a service life of 3 years, the value of its GCS will have to be depreciated by a straight line in 3 years, which yields the consumption of fixed capital of 120/3=40. So D, equal to 40, is entered in the row of consumption of fixed capital of the third class, from year 1 to year 3. After that it is zero. The value of p_i is normally derived from the assumed functional form of the probability distribution of retirement. This retirement distribution function is

[97] Though the expected service life of a type of asset is L, some assets of that type may survice n years, longer or shorter than L. Since there are many types of assets, in the equations below, nis written in general as ∞.

also shown in figure 8.1. The survival function shows the accumulated proportion of assets that remain in use.

8.22 From table 8.3, it can be observed that though a straight-line depreciation is applied, the ratio of aggregate consumption of fixed capital over gross capital formation is not a constant. It is useful to show the example in table 8.3 so that all the concepts and mechanism used in calculation can be made clear. The calculation of GCS, NCS and D can be easily calculated by the following formulas.[98]



$$(8) \quad GCS_t = GCF_{t-i} \sum_{}^{\infty} p_j$$

$$(9) \quad D_t = GCF_{t-i} \sum_{j=i}^{\infty} \frac{p_i}{j}$$

$$(10) \quad NCS_t = GCF_{t-1} \sum_{j=i+1}^{\infty} \frac{j-i}{j} P_j$$

8.23 In the formulas above, i and j may take the value from 1 to 4, even though the average service life is L. However, in actual calculation, the probability function will give i, j a value from 1 to 2L. Index t refers to the year for which GCS, D, NCS are calculated. Index i will take the initial value so that year t-i is the year the gross capital formation (GCF) of the asset took place but still remains in use in period t.

Table 8.3. Valuation of a group of assets of the same type with a probability distribution of retirement around an average service life of 4 years

Time period, end of year	1	2	3	4	5	6	p_i
Gross capital formation (GCF)	800	0	0	0	0	0	
Survival pattern of GCF at period 1							
Class of 1-year service life	0						0.00
Class of 2-year service life	80	80					0.10
Class of 3-year service life	120	120	120				0.15
Class of 4-year service life	400	400	400	400			0.50
Class of 5-year service life	120	120	120	120	120		0.15
Class of 6-year service life	80	80	80	80	80	80	0.10
Gross capital stock (GCS^t)	800	800	720	600	200	80	
Consumption of fixed capital (D)							
Class of 1-year service life							
Class of 2-year service life	40	40					
Class of 3-year service life	40	40	40				
Class of 4-year service life	100	100	100	100			
Class of 5-year service life	24	24	24	24	24		
Class of 6-year service life	13.3	13.3	13.3	13.3	13.3	13.3	
Total D	217.3	217.3	177.3	137.3	37.3	13.3	
Net capital stock (NCS^t)	582.7	365.3	188	50.7	13.3	0	

[98] These formulas are based on those used in France. See *Le patrimoine national: sources et méthodes d'évaluation* (Paris, INSEE, 1994), pp. 55-56.

8.24 For example, in the year t=3, only GCF_{t-2} or GCF_1 = 800 will affect the calculation.

$GCS_3 = GCS_{3-2} (p_{2+1} + p_{2+2} + p_{2+3} + p_{2+4})$

$GCS_3 = GCS_1 (p_3 + p_4 + p_5 + p_6)$

$= 800 \times (0.15+0.50+0.15+0.10) = 800 \times 0.9 = 720$

Or for t = 4, the initial value of i = 3, then

$NCS_4 = GCF_{4-3} [((4-3)/4)xp_4 + ((5-3)/5)xp_5 + ((6-3)/6))xp_6]$

$= 800 \times [((4-3)/4)x0.50 + ((5-3)/5)x0.15 + ((6-3)/6)x0.10 = 188.0$

3. The perpetual inventory method (PIM)

8.25 This method is used to value capital stock at a particular point in time resulting from gross capital formation that has happened in the past until that particular point in time. In paragraphs 8.19-8.24 above, the value of gross and net assets resulting from the gross capital formation at one time i is traced. However, to calculate total capital stock and depreciation, PIM will have to trace values to a particular point in time of all capital formation that has happened in the past until that time. Table 8.4 below shows an example of full-fledged capital stock valuation resulting from gross capital formation which takes place from year 1 to year 8, assuming that only assets invested in year 3 have a probability distribution of retirement, which is the same as the one discussed in table 8.3. Assets of other vintage have the simultaneous exit at year 4.

8.26 Table 8.4 is constructed as follows:

At base year prices (lines 1-8):

(i) Lines 1-3: GCF is first deflated to the prices of the first year serving as the base year;
(ii) Lines below line 4: GCF in year 4 is assumed to be retired by a bell-shape probability mortality function which was already discussed and shown in table 8.3; GCF in other years is assumed to have a simultaneous exit retirement, similar to the case shown in table 8.2;
(iii) Line 5: GCS is the sum of all values of assets that survive during the year in each column shown above line 5;
(iv) Lines below line 6: Assets are all assumed to be depreciated on a straight line; consumption of fixed capital for GCF in a particular year is shown in each separate line below line 6; total D shows total consumption of fixed capital in a particular year;
(v) Line 7: Annual increase in net capital stock is the difference between gross capital formation and consumption of fixed capital, i.e. line 3 less total D;
(vi) Line 8: Net capital stock at the end of the year is the accumulation of all annual increase in net capital stock up to the end of the year;

At current prices (lines 9-13):

(vii) Line 9: Net capital stock at current prices is net capital stock at constant prices inflated by the price indexes in line 2;
(viii) Line 10: Net capital stock at current prices at the beginning of the year is line (9) delayed by 1 year;

(ix) Line 11: Same as line 1;

Time period, end of year	Prices	1	2	3	4	5	6	7	8
1. Gross capital formation (GCF_t)	Current price	500	735	848	920	1,150	1,560	2,600	2,700
2. Price index	Base year price	100	105	106	115	115	120	130	150
3. Gross capital formation (GCF_t)	Base year price	500	700	800	800	1,000	1,300	2,000	1,800
4. Survival pattern of GCF_t	Base year price								
GCF in year 1		500	500	500	500				
GCF in year 2			700	700	700	700			
GCF in year 3				800	800	800	800		
GCF in year 4	See table 8.3				800	800	720	600	200
GCF in year 5						1,000	1,000	1,000	1,000
GCF in year 6							1,300	1,300	1,300
GCF in year 7								2,000	2,000
GCF in year 8									1,800
5. Gross capital stock (GCS)	Base year price	500	1,200	2,000	2,800	3,300	3,820	4,900	6,300
6. Consumption of fixed capital (D_t) of ofor off	Base year price								
GCF in year 1		125	125	125	125				
GCF in year 2			175	175	175	175			
GCF in year 3				200	200	200	200		
GCF in year 4	See table 8.3				217.3	217.3	177.3	137.3	37.3
GCF in year 5						250	250	250	250
GCF in year 6							325	325	325
GCF in year 7								500	500
GCF in year 8									450
Total D_t	Total	125	300	500	717.3	8,42.3	952.3	1,212.3	1,562.3
7. Annual increase in NCS_t	Base year price	375	400	300	82.7	157.7	347.7	787.7	237.7
8. NCS_t at end of year	Base year price	375	775	1075	1157.7	1,315.4	1663.1	2,4508	2,688.5
9. NCS_t at end of year	Current price	375	813.8	1,139.5	1331.4	1,512.7	1,995.7	3,186.0	4,032.8
10. NCS_t at beginning of year	Current price	0	375	813.8	1139.5	1,331.4	1,512.7	1,995.7	3,186.0
11. GCF_t	Current price	500	735	848	920	1,150.0	1,560.0	2,600.0	2,700.0
12. Consumption of fixed capital (D_t)	Current price	125	315	530	824.9	968.6	1,142.8	1,576.0	2,343.5
13. Nominal holding gains (G_t)	Current price	0	18.8	7.8	96.8	0	65.8	166.3	490.2

(xj) Line 12: Consumption of fixed capital at current prices is D at constant prices inflated by the price index in line 2;

(xi) Line 13: These are nominal holding gains (G_t), the increases in the values of assets due to changes in prices of assets, which are calculated as net capital stock at the end of the year (NCS_t) less net capital stock at the beginning of the year (NCS_{t-1}), less gross capital formation (GCF_t), plus consumption of fixed capital (D_t), all being measured at current prices and assuming no other changes in volumes; the relationship is derived from the following one:

$$NCS_t = NCS_{t-1} + GCF_t - D_t + G_t;$$

Lines 9-13 provide data for the compilation of national accounts.

Table 8.4. PIM with both simultaneous exit and a probability distribution of retirement around an average service life of 4 years

$$(11) \quad GCS_t = \sum_{i=1}^{\infty} GCF_{t-i} \sum_{j=i+1}^{\infty} p_j$$

8.27 For computation, it is easier to use the following mathematical formulas:

$$(12) \quad D_t = \sum_{i=1}^{\infty} GCF_{t-i} \sum_{j=i}^{\infty} \frac{p_i}{j}$$

$$(13) \quad NCS_t = \sum_{i=1}^{\infty} GCF_{t-i} \sum_{j=i+1}^{\infty} \frac{j-i}{j} P_j$$

4. Problems with PIM in measuring wealth capital stock and alternatives

8.28 The parameters affecting growth of capital stock are:

(a) Asset service life;
(b) The pattern of depreciation;
(c) The probability distribution function of retirement around the average service life.

8.29 Asset service life is the most important parameter. It will vary among countries due to climate, culture, environmental legislation, etc. However, at the International Conference on Measurement of Capital Stock in Canberra, Australia, 10-14 March 1997, many countries reported increasing reliance on OECD estimates of asset lives which were largely dependent on "second-hand" estimation methods used by individual member countries (see appendices 3 and 4 for review of country practices in capital stock measurement). The conference suggested countries obtain asset service lives directly by using age-price profiles. In addition, more attention should be paid to extraordinary events and unforeseen obsolescence in the measurement of capital stock.

8.30 The pattern of depreciation is currently assumed to be straight-line by most countries that prepare wealth capital stock. As discussed previously, though there were some empirical studies which showed that depreciation might be geometric, the issue should be further investigated.

8.31 The type of retirement function commonly used was also based on very limited empirical data. The function has been more or less arbitrarily selected (see appendix 2 for commonly used retirement functions). One study showed that the specific form of the retirement (or mortality) function does not matter much in the results of calculation of capital stock as long as gross capital formation grows constantly over time. A study by Eurostat has simulated NCS with different retirement functions, assuming the same service life and the same growth of gross capital formation; the results did not differ significantly except for the lognormal function adopted by France because of the left-hand skew in the distribution with retirements amounting to 50% well after the average service life.[99] Further simulation is needed to see if the retirement function matters when the rate of growth of gross capital formation varies over time.

8.32 Since PIM is a statistical method to compile capital stock, the main question is whether it produces accurate value of capital stock. Though there are scant empirical studies on this issue, Eurostat[100] reported that

[99] Eurostat, "Stock of Fixed Assets in Industry in the Community Member States: Towards Greater Comparability" in Studies of National Accounts, No.2, 1983.

[100] *Ibid* p. 18.

a study in Italy to compare survey results with PIM (1976) and another study in France to compare book-value results with PIM (1962) have shown that the discrepancies were not significant.

8.33 While PIM is easy to calculate, it requires a long time series of data on gross capital formation by type of asset, by industry and institutional sector. This requirement cannot be met in many countries and therefore expensive direct surveys may be needed. Besides, direct surveying is useful in studying the accuracy of PIM. It relies on the book value of assets in business accounts, but these values must be reflated to obtain replacement values. Currently, the Central Bureauof Statistics of the Netherlands[101] and the United Kingdom have experimented with the survey method. It uses the direct observation approach for large manufacturing companies every five years to obtain the type of asset, the original value, the actual value (obtained by statisticians through the use of price index), the vintage[102] and the status of ownership/leasing and newly purchased/second-hand. The gross actual value of capital assets is obtained by formula (4) (see para. 8.14 above) where R_t refers to the actual retirement (or discards) of assets. Given that data are collected over the years, actual service life by type of assets and by industry may be obtained instead of relying on assumptions of not only service life but also a distribution function of probability of retirement of assets around the average service life. In Korea, Japan and Russia, surveys have also been utilized, and used assets are valued as a given percentage of historical values updated to the prices of a base year by price indexes.

C. Productive capital stock for productivity analysis

8.34 In national accounts, wealth capital, as a measure of the potential stream of future income contributed by the asset stock, is always affected by the aging of capital goods. As the asset ages, the value of the expected stream of income declines because of capital used up in production. The capital used up in production is depreciation or consumption of fixed capital.

8.35 In economic studies of efficiency and productivity, as long as an asset provides the same efficiency in production during its productive lifetime (i.e. the ability to retain the same level of production), the productive capital stock will remain the same until the end of its lifetime, and the flow of capital services from the asset in every period will remain the same. An example of a light bulb that lasts for many years without decay in the lumens per year fits into the case mentioned above. This is a special "one hoss shay" asset that is frequently mentioned in the literature. In this special case, the productive capital stock and the capital service remain the same until the end of its service life. For wealth capital, the value of the light bulb declines as it approaches the end of its life. Cost of consumption of fixed capital (or depreciation) must be calculated to offset the capital used up in production in every period in order to maintain the wealth stock intact, in other words to maintain a constant Hicksian income so that at the end of the service life of the bulb, the producer is able to replace it. For productive capital, the productivity of the light bulb, i.e. the capital service value remains the same until the end of its service life.

8.36 However, if the asset loses its efficiency over time, that loss has to be taken into account to calculate productive capital stock.[103] The loss of efficiency (or deterioration, in the language of Triplett) is due to decay

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[101] See Jim Frenken, CBS Netherlands, AHow to Measure Tangible Capital Stock?@ (International Association for Research in Income and Wealth, 22nd General Conference, Flims, Switzerland, 1992) and AStatistics on Tangible Capital Stock: Direct Observation at Statistics Netherlands,@ International Conference on Measurement of Capital Stock, (Canberra, Australia, 1997).

[102] See footnote 96 above.

[103] For an extremely useful explanation of conceptual differences between productive capital used in productivity analysis and wealth capital used in national accounts, see Jack E. Triplett, "Depreciation in Production Analysis and

in terms of output (less output can be produced, everything being equal), input (more inputs are needed as an asset ages) and retirement (i.e. the withdrawal of assets from usage). If the flow of capital services declines as the asset gets older, the productive value of the asset must be written down. When taking efficiency into account, the stock of assets is called productive capital stock and its use in production measures "the flow of capital service", or the productive contribution of the capital stock to productive activity. The productive capital stock is obtained by applying a deterioration schedule to the vintages of capital in the stock. Deterioration is not the same as depreciation. Productive capital stock PK is estimated by the perpetual inventory method and written as the sum of current gross capital formation and the remaining capital stock of the previous period after deteriorating at the rate of d.

(14) $PK_{i,t} = GCF_{i,t} + PK_{i,t-1}(1-d)$

8.37 In the United States, d in formula (14) has a specific form as follows:

(15) $(1-d) = (L-i)/(L-ßi)$ for $0 \# i < ß$

where i is age of the capital asset, L is the useful life, ß is efficiency loss, and lies between 0 and 1; ß is assumed to be 0.50 for equipment and 0.75 for structures.[104] This formula implies that efficiency declines more rapidly as assets age. Similar to the case of wealth capital stock, a retirement distribution function is also introduced to the calculation. If a_i is defined as the relative efficiency of a class of assets at age i in a specific category of assets, then an individual class of assets in the category must be weighted by its relative frequency P_i.

$$(16) \quad a_i = \sum_{L=1}^{Lmax} P_i \frac{L-i}{L-bi} \quad for\ i \leq L$$

$$(17) \quad K_t = \sum_{i=0}^{Lmax} a_i GCF_{t-i}$$

in Income and Wealth Accounts: Resolution of an Old Debate" in *Economic Enquiry*, Vol. 34, January 1996, pp. 93-115.

[104] *Monthly Labor Review*, Special Issue on Productivity Measurement and Trends, July 1995, U.S. Department of Labor, p. 53.

Appendix 1

DEPRECIATION SCHEDULE

8.38 Two schedules of depreciation are recommended by the SNA (SNA, paras. 6.193-6.197):

(a) Straight line

8.39 Straight-line depreciation is very simple. Depreciation or consumption of fixed capital is spread out evenly over the service life of an asset. It is similar to what is practised by business accountants.

(b) Geometric depreciation

8.40 Geometric depreciation assumes that depreciation is equal to a constant fraction of the value of an asset (normally net capital stock) over its service life. It can be written as follows (SNA, para. 6.195):

(18) $D_t = (2/L) \times NCS_t$

L is the average service life of the asset. This formula is asymptotic and the annual amounts will never sum to the full value of the asset. A cut-off point, c, of say 10% may be used so that the remaining value of the asset is included in the year when total past consumption of fixed capital reaches 90% of the original asset value. Then:

(19) $D_t = (1/c)^{1/L}$

Another form of geometric depereciation is d in equation (15).

Appendix 2

RETIREMENT (OR MORTALITY) AND SURVIVAL FUNCTIONS[105]

8.41 There are three basic types of retirement functions, which are also called mortality functions, that are widely used: the linear retirement, the simultaneous exit and the bell-shape type of retirement function. The last two have been used in tables 8.1-8.3. Below, survival functions are shown. They show the percentage of assets which survive until the year t.

8.42 The presentation below will use the following notations:

(aI) F(t) is the probability or percentage of assets that are likely to survive until the end of period t;
(b) L is the mean service life of each asset.

8.43 The difference between the probability of survival of the two periods is the probability of retirement (or mortality) during the period. The probability of assets that are retired at year t is: $P_t = F_{t+1} - F_t$. P_t is similar to p_i in table 8.3.

1. Linear survival function

8.44 The linear retirement function assumes that the same percentage of assets, 1/(2L), is retired around the average (mean) service life of a group of assets of the same kind, extending from year zero to year 2L. No country is reported to use this survival function now.

Then:

$$F(t) = 1 \quad where \quad t = 0$$

$$F(t) = 1 - \frac{t}{2L} \quad where \; 0 < t < 2L$$

$$F(t) = 0 \quad where \quad t \geq 2L$$

2. Delayed survival function

8.45 The delayed survival function is similar to the linear survival function except retirement at a constant rate is assumed to take place over a period shorter than 2L. In the United Kingdom, it is assumed that retirement takes place between 20% of asset service life or between 0.8L and 1.2L. Retirement starts later and ends sooner. So if a group of assets is expected to last 25 years, retirements are spread out evenly over a period of 20 to 30 years. The formulas are as follows:

$$F(t) = 1 \quad where \quad t \leq 0.8L$$

$$F(t) = 1 - \frac{t - 0.8L}{0.4L} \quad where \; 0.8L < t < 1.2L$$

$$F(t) = 0 \quad where \quad t \geq 1.2L$$

[105] See Michael Ward, *The Measurement of Capital, the Methodology of Capital Stock Estimates in OECD Countries* (Paris, OECD, 1976); see also Eurostat, "Stock of Fixed Assets in Industry in the Community Member States: Towards Greater Comparability", in Studies of National Accounts, Eurostat, No. 2, 1983.

8.46 New Zealand assumes different retirement ranges for different kind of assets. Thailand also uses a delayed survival function.

3. Simultaneous exit

8.47 The simultaneous exit assumes that assets will survive until the end of their average service life and then will be retired entirely at that point. This function is used in many countries: Canada, Japan, Mexico, Singapore and the United Kingdom before 1975.

$$F(t) = 1 \quad when \quad t \leq L$$
$$F(t) = 0 \quad when \quad t > L$$

4. Survival function based on bell-shaped retirement function

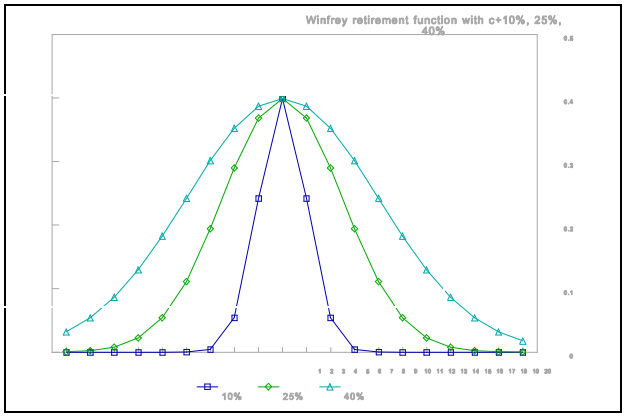
8.48 This type of function is the most popular since retirement is spread around the average service life of assets. This function may take different specific shapes. Following are a few specific types.

(a) "Gamma" survival function used in Germany

$$F(t) = 9^9 \, x \, (8!)^{-1} \, x \, L^{-9} \, x \, t^8 \, x \, e^{-9\frac{t}{L}}$$

(b) "Winfrey" type retirement function

$$f(s) = \frac{1}{\sqrt{2p}} e^{-\frac{s^2}{2}}$$
$$s = \frac{t - L}{d}$$
$$d = c.L$$



8.49 There f(s) is the distribution function. The integral of it is density function; s refers to the standard error deviated from the mean of a normal distribution function with mean = 0 and d =1; t refers to the period for which survival is calculated; L is the mean service life; c is the dispersion coefficient which normally takes the value of 0.10, 0.20, 0.30, 0.40. The higher the value of c the more spread out the retirement around the average service life. The example given in the graph has an average service life of 10 years.

8.50 The Winfrey type function is used in the United States and in Denmark.

(c) "Lognormal" retirement (mortality) function

8.51 The survival function is derived from the integral of the following distribution function.

$$f(t) = \frac{1}{\sqrt{2p}} e^{-\frac{1}{2}\left(\frac{\log t - m}{d}\right)^2}$$

$$\frac{L}{d} = 0.6 \text{ for plant, machinery; } = 0.5 \text{ for buildings}$$

where f(t) is a lognormal distribution with mean equal to μ = log(L), and standard deviation d. A lognormal distribution guarantees that t cannot take a negative value; t refers to the period for which the survival function is calculated.

Appendix 3
REVIEW OF COUNTRY PRACTICES

COUNTRY	BROAD METHOD	DEPRECIATION	SURVIVAL FUNCTION	LEVEL OF DETAIL	DATA SOURCES FOR MEAN ASSET LIVES	MEAN ASSET LIFE
Australia	PIM	Straight line	Winfrey S3	For each institutional sector, 4 broad asset types, for each industry 2 broad asset types	Tax lives benchmarked to OECD data	Construction fixed, equipment declining by 0.5% per annum
Canada	PIM	Geometric, straight line and delayed	Truncated normal	Broad sector by industry by 4 broad asset types	Direct survey supported by tax lives	Declining annually
Denmark	PIM, direct measurement and registers		Winfrey, with log-normal and specific functions	Sector by investment type by industry by commodity by 4 broad asset types		Generally fixed, some declining
Germany	PIM	Straight line	Gamma distribution	2 broad asset types by industry	Tax lives	Declining
Indonesia	PIM	Straight line	Gaussian distribution	Sector by commodity	Tax lives, supplemented by survey data	Declining
Korea (Republic of)	Direct survey	Declining balance		Highly detailed (economic activity sector by industry; asset type; acquisition year; ownership and user; first and second-hand goods and region)	Tax lives	Fixed
Mexico	PIM	Straight line	Simultaneous exit	Private sector only	Annual survey	Direct survey
Netherlands	PIM and some direct survey	Straight line		8 asset classes by industry		
New Zealand	PIM		Delayed linear (-20% to +20% of mean)	2 asset types by industry	OECD estimates	Fixed
Norway	PIM	Geometric	Mainly geometric, based on bell shaped distribution	17 asset types by industry	Mainly based on Statistics Sweden and OECD estimates	
Russia	Annual census			6 asset types		
Singapore	PIM	Straight line	Simultaneous exit	7 asset types	Tax lives	Fixed
Sweden	PIM		Winfrey		Several, modified by practices of other countries	
United Kingdom	PIM	Straight line	Delayed linear (-20% to +20% of mean)	9 asset types by industry	1950s tax allowance data with some updating	Variable
United States	PIM	Geometric	Simultaneous exit	Highly detailed	Treasury and tax lives	

Source: *Summary Record of the International Conference on Measurement of Capital Stock*, Canberra, Australia, 10-14 March 1997.

Appendix 4
AVERAGE SERVICE LIFE

8.52 Below is the average service life of assets used by various countries. It is important to know that when a range is given, the service life of a particular asset will vary according to types of assets and industries where they are used. In some cases, a single number is given, but that may reflect only the average service life. The service life of assets is a key factor in the calculation of capital stocks and is not the same in every country, even given the same type of equipment. These tables are given for reference only.

Table 8.5. Mean service life of assets in some countries (in years)

	Sweden	Singapore	Australia	Denmark
Resident buildings		80	40,60,90[106]	80-105[107]
One family	75			
Multi family	65			
Non-residential buildings		40		55-85
Industrial buildings	30-45		45	
Government buildings	45-60			
Others	40-60		50-60	
Other construction		40		40-50
Road	40		10,75	
Others	25-65		65	
Transport				
Cars	13	10		10-15
Trucks and buses	6-8	10	22	
Fishing boats	35	20		
Ships	25	20	19	11-30
Airplanes	20	15	17	16
Machinery and equipment		15		3-30
Industrial	10-25		19	
Electricity, gas			25	
Mining			16	
Agriculture	10		13	
Rail transport	25		30	25-30
Mainframe computers	10			
Government machinery	10-12			

[106]Vary by type of construction.
[107]Steadily decreasing.

Table 8.6. Service life of capital stocks in Indonesia (in years)

Livestock	3
Wood, bamboo and rattan furniture and fixtures	3
Glass products	5
Kitchen wares, hand tools and agricultural tools	5
Metal furniture and fixtures	5
Engines and machinery	7
Electric generators and electrical motors	7
Communication equipment and apparatus	7
Ships and repairs	10
Trains and repairs	10
Cars	10
Motorcycles	7
Aircraft and repairs	7
Measuring, photographic and optical equipment	6
Musical instruments	6
Buildings	20

Sources of table 8.5
Documents from the International Conference on Measurement of Capital Stock (Canberra, Australia, 1997):
1. Australia's Methodology for Compiling Estimates of Capital Stock and Consumption of Fixed Capital (Australian Bureau of Statistics, 1997).
2. Computation of Capital Stock Estimates in Singapore - A Methodological Note (Department of Statistics of Singapore, 1997).
3. Michael Wolf, Fixed Capital Stock in the Swedish National Accounts, 1997.
4. Jens Holst Jensen, Definitions and Methodology used in Denmark for Estimating Capital Stock and Consumption of Fixed Capital (Statistics Denmark, 1997).

Source of table 8.6
Estimation of the Capital Stock and Investment Matrix in Indonesia, 1997, International Conference on Measurement of Capital Stock (Canberra, Australia, 1997).

IX. BALANCE SHEET VALUATION: PRODUCED INTANGIBLE ASSETS AND NON-PRODUCED ASSETS[108]

Marcel Pomme and Willem Baris[109]
Statistics Netherlands

A. Introduction

9.1 The national accounts generally provide a comprehensive, yet detailed record of the transactions and other flows that occur in the national economy in a particular period. In addition to these economic flows, the national accounts include the opening and closing stocks of assets and liabilities at the beginning and end of the accounting period. These stocks generally consist of non-financial assets such as land and buildings, as well as financial assets and liabilities such as shares, deposits and loans.

9.2 The flows and stocks are closely related as stocks result from the accumulation of transactions and other flows during the accounting period. In addition to consistency within the accounting period (be tween flows and stocks), consistency between accounting periods in principle exists as the closing balance sheet at the end of the accounting period equals the opening balance sheet at the beginning of the subsequent period (i.e. balance sheet continuity).

9.3 Balance sheets are in principle compiled for individual sectors as well as for the total economy. In the balance sheets of the total economy, the financial claims on (and liabilities to) resident sectors completely cancel out. Only financial assets and liabilities with the rest of the world remain.

9.4 The compilation of balance sheets may further improve the quality of data flow, especially if stocks are derived from sources other than the flows. The confrontation of independently estimated stock data with related flows may lead to the identification of statistical discrepancies. Removing these discrepancies typically increases the plausibility of data.

9.5 Balance sheets also yield an important summary indicator of the state of the national economy, namely net worth. The national net worth is often referred to in economic literature as the "national wealth", i.e. the total of economic assets in a country less its liabilities. Changes in national net worth include, for example, the discovery of natural resources, whereas the depletion of these resources is deducted. Countries relying heavily on the exploitation of these natural resources may witness high growth rates of their gross domestic product (GDP), yet may be faced with large

[108]The views expressed in this chapter are those of the authors and do not necessary reflect the views of Statistics Netherlands.

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reductions in their national wealth. In addition to the GDP, therefore, national net worth is an important indicator of the state of the economy.

9.6 This chapter is more limited in its aim as it focuses on the estimation of opening and closing stocks of non-financial assets in the Netherlands. The reference year is 1990. The chapter especially elaborates on the estimation of stocks of produced intangible assets and non-produced tangible and intangible assets. These mainly concern items for which no estimates were available in the Netherlands.

9.7 The estimates presented here should be considered as tentative, as they are the outcome of a first step in the compilation of balance sheets for the Netherlands. The estimations may be further refined in subsequent stages of balance sheet compilation. For example, the valuation of land may be improved by using more detailed price data than are currently available at Statistics Netherlands.

9.8 The chapter is broadly structured according to the classification of assets as used in the 1993 System of National Accounts (SNA). Section B discusses the main conceptual issues. Section C elaborates on produced intangible fixed assets. Section D deals with a particular category of produced assets, namely valuables. Sections E and F elaborate on non-produced tangible and intangible assets, respectively. The last section summarizes the findings and contains some concluding remarks.

9.9 Each section starts with the definition of asset categories and the identification of sources. Subsequently, volumes, prices and values are estimated for most of the asset categories. These estimates pertain to the beginning (1 January) and end (31 December) of 1990. In a few cases, however, estimates could not be compiled as sufficient data were not available. Sometimes it was concluded that the stock value is negligible.

B. Balance sheets: conceptual issues

9.10 This section elaborates on conceptual issues related to the compilation of balance sheets. The first subsection deals with the asset boundary which determines what is recorded on the balance sheets. The second subsection deals with the various institutional sectors in the Netherlands. The third subsection deals with flows and stocks, and the way they are related. The fourth subsection elaborates on categories of non-financial assets. The fifth subsection deals with principles of valuation.

1. Asset boundary

9.11 The asset boundary includes all assets that are owned by institutional units from which economic benefits can be derived by holding or using them over a period of time. Included here are financial assets such as shares and bills and bonds as well as non-financial assets such as buildings and equipment, which themselves have been produced in the past. Moreover, non-financial assets that have not been produced are also included in the asset boundary provided that institutional units exercise ownership rights over them and that benefits can be derived from them. These assets include items such as land, mineral deposits, fuel reserves, uncultivated forests and so on (SNA paras. 1.26, 2.40 and 2.41).

9.12 Some assets fall outside the asset boundary like the atmosphere and the open seas, because no ownership rights can be exercised over them or because no benefits can be derived from them at present. This pertains for instance to mineral or fuel deposits that are economically not viable, i.e. given the technology and relative prices incapable of bringing any benefits to their owners.

2. Institutional sectors

9.13 Institutional units are the basic units in the national accounts for which it is in principle possible to compile a complete set of flow accounts and balance sheets. These units are capable of owning assets, incurring liabilities, and engaging in transactions on their own account. The institutional units that are resident in the economy are classified into five main sectors:

(a) non-financial corporations;
(b) credit institutions;
(c) insurance corporations and pension funds;
(d) general government;
(e) households.

9.14 These five resident sectors together make up the total economy. In addition, the transactions between them and non-residents are recorded on the rest of the world account. Each sector may be divided into subsectors. The general government, for example, is subdivided into central government, local government and social security funds.

3. Flows and stocks

9.15 The institutional units described above may engage in various economic activities, for example in the production of goods and services, the consumption of goods and services, and savings and investment. These actions result in economic flows and corresponding changes in the volume, composition or value of the institutions' assets or liabilities. All these economic activities are called transactions. Transactions do not make up the full spectrum of economic flows. For example, the destruction of economic assets by natural disasters or changes in the value of assets and liabilities due to price changes are not transactions. Nevertheless, these events are also recorded in the system as they affect the value of the assets or liabilities of an institutional unit. These so-called Aother flows@ are by convention recorded on the Aother changes in assets@ account.

9.16 In contrast to economic flows, the stocks of assets and liabilities are recorded at one point in time, such as the beginning or end of the accounting period. However, stocks and flows are closely related as stocks result from the accumulation of transactions and other flows during the accounting period.

4. Categories of non-financial assets

9.17 The SNA distinguishes a large number of asset categories. In the first instance, assets are classified into non-financial assets and financial assets. The non-financial assets are further subdivided into produced assets and non-produced assets (SNA para. 10.4 to 10.8).

9.18 Produced assets are outputs of a production process. They are further classified into fixed assets, inventories and valuables. Fixed assets are used repeatedly or continuously in processes of production for more than one year. Inventories consist both of stocks of output held by units that produced them and stock of products acquired from other units that are used up in processes of production or resold without further processing. Valuables are not used for production, but mainly function as stores of value.

9.19 Fixed assets consist of tangible and intangible assets. Tangible fixed assets include buildings, structures, machinery and equipment. Intangible fixed assets include mineral exploration, computer software, and entertainment, literary or artistic originals.

9.20 In contrast to the produced assets, the non-produced assets do not come into existence through processes of production. These assets are further classified on the basis of the way they come into existence. Some of these assets occur in nature, while others appear through legal or accounting actions.

9.21 Similar to produced assets, non-produced assets consist of tangible and intangible assets. The non-produced tangible assets occur in nature and include land, subsoil assets, non-cultivated biological resources and water resources. The non-produced intangible assets are constructs devised by society and include patented entities, leases and other transferable contracts and purchased goodwill.

9.22 The main categories of non-financial assets are summarized in table 9.1. A complete list of categories of assets is given in table 9.2.

Table 9.1. Main categories of non-financial assets

Produced assets
Fixed assets
Tangible fixed assets
Intangible fixed assets
Inventories
Valuables
Non-produced assets
Tangible assets
Intangible assets

5. Principles of valuation

9.23 Just like economic transactions, assets and liabilities are also in principle valued at current market prices, i.e. not at historical cost prices as is often done in business accounting. This principle implies that assets and liabilities are regularly revalued at observed market prices for similar items. However, if such prices are not available, they may be approximated by accumulating and revaluing transactions over time (i.e. by using the perpetual inventory method) or by estimating the present value of future returns expected from a given asset (SNA paras. 13.25 to 13.35).

9.24 Thus, assets and liabilities are preferably valued at observed prices in markets. Such prices are mostly available for financial claims (e.g. from the stock exchange). Market prices may also be available for existing real estate such as buildings, other structures and underlying land (e.g. from real estate brokers), existing transportation equipment, crops and livestock as well as for newly produced fixed assets and inventories.

Table 9.2. Categories of non-financial assets in the SNA

Categories	SNA Code
NON-FINANCIAL ASSETS	AN
Produced assets	AN.1
Fixed assets	AN.11
Tangible fixed assets	AN.111
Dwellings	AN.111
Other buildings and structures	AN.1112
Machinery and equipment	AN.1113
Cultivated assets	AN.1114
Intangible fixed assets	AN.112
Mineral exploration	AN.1121
Computer software	AN.1122
Entertainment, literary or artistic originals	AN.1123
Other intangible fixed assets	AN.1129
Inventories	AN.12
Valuables	AN.13
Precious metals and stones	AN.131
Antiques and other art objects	AN.132
Other valuables	AN.139
Non-produced assets	AN.2
Tangible non-produced assets	AN.21
Land	AN.211
Land underlying buildings and structures	AN.2111
Land under cultivation	AN.2112
Recreational land and associated surface water	AN.2113
Other land and associated surface water	AN.2119
Subsoil assets	AN.212
Coal, oil and natural gas reserves	AN.2121
Metallic mineral reserves	AN.2122
Mon-metallic mineral reserves	AN.2123
Non-cultivated biological resources	AN.213
Water resources	AN.214
Intangible non-produced assets	AN.22
Patented entities	AN.221
Leases and other transferable contracts	AN.222
Purchased goodwill	AN.223

9.25 However, these prices are not always easy to obtain. Furthermore, in the case of land, for example, prices may show wide variations by region and by type of use, and may also fluctuate substantially from year to year (and even within years). This puts a heavy burden on the collection of data.

9.26 The perpetual inventory method may be used for the valuation of assets if market prices are not available. This method approximates the value of assets by accumulating and revaluing the acquisition less disposal of an asset over its lifetime. The value of such an asset equals its current acquisition price less the accumulated amortization. The amortization pattern is often derived from tax laws or business accounting conventions.[110] This valuation method is typically used for fixed assets and for non-produced intangible assets such as patented entities and purchased goodwill. The perpetual inventory method has been applied here for the valuation of mineral exploration, computer software and patented entities. The value of amortization has simply been derived from the revalued expenditures (investments) of the current year. This procedure leads to a slight overestimation of amortization of investments which have taken place at the end of the year. It is more realistic, however, to derive the amortization from the (unweighted) average of expenditures in the current and previous years (assuming a uniform distribution of investments during the year). This latter procedure is also applied to estimate the amortization of tangible fixed assets in the Netherlands. As the estimations are still preliminary and subject to revisions, it has not been applied in this study. However, this procedure is intended for later use to estimate the amortization of these assets as accurately as possible and to ensure consistency with the estimations of tangible fixed assets.

9.27 Market prices may also be approximated by estimating the present value of future returns expected from a given asset. A rate of discount is then used to compute the present value of expected future returns.[111] The SNA recommends to derive the rate of discount from information relating to transactions in the particular types of assets rather than using a general rate of interest (SNA para. 13.34). This method is typically used for assets with delayed returns (as with most non-cultivated biological resources) or with returns that are spread over a lengthy period (as with subsoil assets).

9.28 A practical difficulty with this method is that the estimated value of future returns from an asset is normally not disclosed by corporations. In many cases, therefore, these values can only be approximated. In the case of reserves of natural gas and oil, for example, the value of future returns has been approximated by the estimated government receipts of gas and oil revenues as direct information regarding the net value of the future returns from these assets is not available (see E 2(a), p.254 below).

9.29 There are generally two ways of determining the rate of discount. The first one is based on the concept of opportunity cost. In this case the rate of discount is equivalent to the rate of return of the second best investment alternative. It is generally not easy to obtain. The second way is based on the rate of interest.

9.30 In the following section, the above conceptual conclusions are applied to the estimation of balance sheets for produced intangible assets and non-produced assets.

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[110] Fixed assets are often recorded in the balance sheet at current written-down values, i.e. at current prices written down for the accumulated consumption of fixed capital (often "referred to as written-down replacement cost"). This method of valuation is consistent with the valuation concept of the national accounts.

$$\sum_{t=0}^{T} \frac{A_t}{(1+i)^t}$$

[111] The present value of expected future returns is calculated as:
Where i = rate of discount, T = total number of years, and A_t = expected return in year t.

C. Produced assets: intangible fixed assets

9.31 Produced intangible fixed assets include mineral exploration, computer software, entertainment, literary and artistic originals. These asset categories are discussed in the subsections below.

1. Mineral exploration

9.32 The SNA defines mineral exploration as: AThe value of expenditures on exploration for petroleum and natural gas and for non-petroleum deposits. These expenditures include prelicense costs, license and acquisition costs, appraisal costs and the costs of actual test drilling and boring, as well as the costs of aerial and other surveys, transportation costs, etc., incurred to make it possible to carry out the tests.@ (SNA, p. 307)

9.33 Concerning valuation of mineral exploration, the SNA recommends that: "Mineral exploration should be valued either on the basis of the amounts paid under contracts awarded to other institutional units ... or on the basis of the costs incurred for exploration undertaken on own account. That part of exploration undertaken in the past that has not yet been fully written off should be revalued at the prices and costs of the current period." (SNA para. 13.43)

9.34 The exploration of minerals is pursued in order to discover new reserves of minerals or fuels that may be exploited commercially. Therefore, all expenditure on mineral exploration, whether successful or not, should be treated as capital expenditure (i.e. the acquisition of intangible fixed assets) rather than intermediate consumption (SNA paras. 6.166, 10.90 and 10.91).

9.35 In business accounting, on the contrary, only expenditure on successful efforts is regarded as capital expenditure (the so-called successful effort method), while expenditure on unsuccessful efforts is usually regarded as current expenditure: i.e. directly charged to the profit of the year in which the effort has been judged to be unsuccessful. Because of these practices, it is usually not possible to derive total expenditures on mineral exploration from published business accounts.

9.36 As a consequence of these business accounting practices, expenditures on mineral exploration have been estimated in retrospect on the basis of quantity data as published by the Ministry of Economic Affairs.[112]

[112]See Ministry of Economic Affairs, Mining Division of the Directorate General for Energy, *Oil and Gas in the Netherlands, Exploration and Production 1990*, annexes 13 and 16.

Table 9.3. Mineral exploration: expenditures

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
A. Seismic surveying											
Quantities (1,000 km)											
- On shore: line km	2	4.6	4.3	3.9	2.5	3.4	2.3	2.2	1.1	0.8	0.1
- On shore: km^2	0	0	0.1	0.4	0.5	1.2	0.9	0.6	1.7	1.2	1.8
- Offshore: line km	15.4	22.1	14.7	24.4	9.3	41.5	11.7	24.5	14.3	4	8.2
- Offshore: km^2	0	0.1	0.3	0.2	0.4	0.8	0.2	1.6	1.9	3.2	4.9
Rates (1,000 guilders)											
- On shore: line km	24.5	24.5	24.8	24.8	24.8	25	25	25	25.3	25.5	25.8
- On shore: km^2	58.8	58.8	59.4	59.4	59.4	60	60	60	60.6	61.2	61.8
- Offshore: line km	2	2	2	2	2	2	2	2	2	2	2.1
- Offshore: km^2	24.5	24.5	24.8	24.8	24.8	25	25	25	25.3	25.5	25.8
Expenditure (million guilders)	**80**	**160**	**149**	**175**	**121**	**260**	**140**	**180**	**208**	**183**	**2.57**
- On shore: line km	49	113	107	97	62	85	58	55	28	20	3
- On shore: km^2	0	0	6	24	30	72	54	36	103	73	111
- Offshore: line km	31	44	29	49	19	83	23	49	29	8	17
- Offshore: km^2	0	3	7	5	10	20	5	40	48	82	126
B. Drilling activities											
Quantities (1,000 km)											
- On shore: wells	21	16	13	18	19	18	5	4	11	10	8
- Offshore: wells	14	15	20	7	11	18	15	14	17	14	14
Rates (million guilders)											
- On shore: wells	11.8	11.8	11.9	11.9	11.9	12	12	12	12.1	12.2	12.4
- Offshore: wells	17.6	17.6	17.8	17.8	17.8	18	18	18	18.2	18.4	18.5
Expenditure (million guilders)	**494**	**453**	**511**	**339**	**422**	**540**	**330**	**300**	**442**	**380**	**358**
- On shore: wells	248	189	155	214	226	216	60	48	133	122	99
- Offshore: wells	246	264	356	125	196	324	270	252	309	258	259
C. Other expenses (mil. guilders) [113]	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**
Total expenses (mil. guilders)	**574**	**613**	**660**	**514**	**543**	**801**	**470**	**480**	**650**	**563**	**615**

[113] These include reconnaissance licenses as collected by the Ministry of Economic Affairs (Dir. Gen. for Energy and Dir. Gen. for Oil and Gas).

Table 9.4. Mineral exploration: valuation

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
						(million guilders)					
Expenditure (tot.)	**574**	**613**	**660**	**514**	**543**	**801**	**470**	**480**	**650**	**563**	**615**
Expenditure (rev.)[114]	**603**	**644**	**686**	**535**	**565**	**825**	**484**	**494**	**663**	**569**	**615**
Expenditure (acc.)	**603**	**1,247**	**1,933**	**2,468**	**3,033**	**3,858**	**4,342**	**4,836**	**5,499**	**6,068**	**6,080**
Amortization (10 y.)	60	60	60	60	60	60	60	60	60	60	
		64	64	64	64	64	64	64	64	64	64
			69	69	69	69	69	69	69	69	69
				54	54	54	54	54	54	54	54
					57	57	57	57	57	57	57
						83	83	83	83	83	83
							48	48	48	48	48
								49	49	49	49
									66	66	66
										57	57
											62
Amortization (acc.)[115]	**60**	**185**	**378**	**625**	**928**	**1,314**	**1,748**	**2,232**	**2,782**	**3,389**	**3,394**
Balance sheet value											
-1990 prices										**2,679**	**2,686**
-1989 prices										**2,650**	

9.37 In the Netherlands, mineral exploration is limited to oil and natural gas exploration. This exploration broadly consists of seismic surveying and drilling activities (exploration/appraisal), which are pursued both on shore and offshore. The Energie Beheer Nederland B.V. (EBN) at Heerlen provides rough estimates of average expenditures for these different types of exploration for the period 1980-1990. The rates in guilders are as follows:

Seismic surveying:	on shore:	25,000/km and 60,000/km^2
	offshore:	2,000/km and 25,000/km^2
Drilling:	on shore:	12,000,000/well
	offshore:	18,000,000/well.

[114]The expenditures have been revalued to current 1990 prices, using the price index for mineral exploration.

[115]Accumulated expenditures and accumulated amortization in a given year are calculated by accumulating the expenditures (or amortized values) in the previous 10 years and then deducting the expenditures (or amortized values) made in the years before that 10-year period. For example, the accumulated expenditure in 1990 equals 6,068+615-603=6,080.

9.38 As more details were not available, these rates have been used for 1985, while rates for other years (1980 to 1990) have been adjusted on the basis of the price index for mineral exploration (available from the national accounts)

9.39 Total expenditures on mineral exploration have been obtained by multiplying the quantity data by these prices and include other expenses such as reconnaissance licenses (see table 9.3). Balance sheet values for mineral exploration have been obtained on the basis of the perpetual inventory method. Based on the accounting practices of Energie Beheer Nederland B.V. (EBN), the average useful service life has been set at 10 years. The estimates appear in table 9.4 on p.243.

2. Computer software

9.40 The SNA defines computer software as "Computer programs, program descriptions and supporting materials for both systems and applications software. Included are purchased software and software developed on own account, if the expenditure is large. Large expenditures on the purchase, development or extension of computer databases that are expected to be used for more than one year, whether marketed or not, are also included." (SNA, p. 307)

9.41 The SNA recommends to value computer software "on the basis of the purchasers' price paid for the software or, in the absence of such prices, on the basis of costs of production when produced in-house. Software acquired in previous years and not yet fully written down should be revalued at current prices or costs (which may be less than the original price or cost)." (SNA, para. 13.44)

9.42 The estimates of expenditure on computer software have been based on the "Automation Statistics" as published by Statistics Netherlands. These statistics cover expenditures on computer software by private enterprises, subdivided into many industries, and the general government, subdivided into various levels of government. The expenditures consist of purchased software (both standard off-the-shelf and specially developed software), staff costs, and investments in special software designed to facilitate production processes (computer aided manufacturing and computer aided planning). The following categories of expenditure for computer software are distinguished:

(a) Software, standard (purchased, rented or leased);
(b) Software, special (purchased, rented or leased);
(c) Staff costs, wages (partly own account production);
(d) Investment in computer aided manufacturing (CAM);
(e) Investment in computer aided planning (CAP).

9.43 Because the expenditures on software developed in-house for own use are not directly available from Automation Statistics, the wage costs of application programmers and other software developers have been taken as an approximation.[116] These costs constitute about 30 per cent of the total wages of automation personnel. This is only a rough approximation, as other automation personnel may also be involved in the development of software for own use, while application programmers, for example, may undertake other activities as well. Moreover, training costs such as special courses related to the development of software for own use are not taken into account.

[116]The other software developers include system designers and programmers and information analysts. The wage costs of software developers employed by software houses have been excluded here, as they are predominantly involved in the development of software for external use.

9.44 The total expenditures on computer software have been revalued to 1990 prices on the basis of the price index of computer services from the national accounts.

9.45 The balance sheet values for computer software at the beginning and end of 1990 have been estimated on the basis of the perpetual inventory method (assuming an average useful service life of three years). The estimates have been compiled for non-financial enterprises (corporations and unincorporated enterprises), credit institutions, insurance enterprises and pension funds, and the general government. The estimates appear in table 9.5 below.

Table 9.5 Computer software: valuation

	1985	1986	1987	1988	1989	1990
			(million guilders)			
Non-financial enterprises						
Expenditure (total)	2,148	2,415	2,624	2,640	3,220	3,656
- Software, standard	443	443	462	441	587	600
- Software, special	465	576	734	735	953	1,274
- Staff costs, wages	1,080	1,206	1,188	1,194	1,380	1,452
- Computer aided manuf. (CAM)	80	100	130	150	170	180
- Computer aided planning (CAP)	80	90	110	120	130	150
Expenditure (rev.)	2,363	2,632	2,834	2,772	3,349	3,656
Expenditure (acc.)[117]	2,363	4,995	7,829	8,238	8,955	9,777
Amortization (3 years)	788	788	788			
		877	877	877		
			945	945	945	
				924	924	924
					1,116	1,116
						1,219
Amortization (acc.) [117]	788	2,453	5,062	5,445	5,798	6,223
Balance sheet value						
- 1990 prices			2,767	2,793	3,157	3,554
- 1989 prices					3,034	
Credit institutions						
Expenditure (total)	321	453	388	397	530	686
- Software, standard	56	70	76	67	112	130
- Software, special	121	179	168	186	256	382
- Staff costs, wages	144	204	144	144	162	174
Expenditure (rev.)	353	494	419	417	551	686
Expenditure (acc.)	353	847	1,266	1,330	1,387	1,654
Amortization (3 y.)	118	118	118			
		165	165	165		
			140	140	140	
				139	139	139
					184	184
						229
Amortization (acc.)	118	400	822	912	881	1,013
Balance sheet value						
- 1990 prices			444	418	506	641
- 1989 prices					486	

[117] Accumulated expenditures and accumulated amortization in a given year are calculated by accumulating the expenditures (or amortized values) in the previous 3 years and then deducting the expenditures (or amortized valued) made in the years before that three-year period. For example, the accumulated expenditure in 1988 equals 7,829+2,772-2,363=8,238.

Table 9.5. Computer software: valuation (continued)

	1985	1986	1987	1988	1989	1990
			(Million guilders)			
Insurance corporations and pension funds						
Expenditure (total)	155	218	181	200	266	298
- Software, standard	31	52	40	40	53	53
- Software, special	40	64	63	70	105	131
- Staff costs, wages	84	102	78	90	108	114
Expenditure (rev.)	171	238	196	210	277	298
Expenditure (acc.)	171	409	605	644	683	785
Amortization (3 y.)	57	57	57			
		79	79	79		
			65	65	65	
				70	70	70
					92	92
						99
Amortization (acc.)	57	193	395	439	428	494
Balance sheet value:						
- 1990 prices			210	205	255	291
- 1989 prices					245	
General government						
Expenditure (total [118]	546	575	605	773	712	725
- Software, standard	128	135	142	147	120	161
- Software, special	237	250	263	407	374	343
- Staff costs, wages	181	190	200	219	218	221
Expenditure (rev.)	601	627	653	812	740	725
Expenditure (acc.)	601	1,228	1,881	2,092	2,205	2,277
Amortization (3 y.)	200	200	200			
		209	209	209		
			218	218	218	
				271	271	271
					247	247
						242
Amortization (acc.)[119]	200	610	1,237	1,333	1,441	1,547
Balance sheet value						
- 1990 prices			644	759	764	730
- 1989 prices					735	
Total economy:						
Balance sheet value:						
- 1990 prices			4,065	4,175	4,682	5,216
- 1989 prices					4,500	

[118] As these expenditures are only available for the years 1987 onwards, the expenditures for the years 1985 and 1986 have been derived from the 1987 estimates using an annual deflation rate of 5 per cent. Source: Automation Statistics, Statistics Netherlands, several years.

[119] See footnote 117.

3. Entertainment, literary or artistic originals

9.46 The SNA defines the category of entertainment, literary or artistic originals as: "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 and embodied. Included are works produced on own account. In some cases, such as films, there may be multiple originals." (SNA, p. 307)

9.47 According to the SNA, valuation of these assets should be pursued: A...at the acquisition price when these intangible assets are actually traded on markets. In the case of intangible assets that have been produced on own- account, it may be necessary to value them on the basis of their costs of production, appropriately revalued at prices of the current period and written down. Otherwise, it may be necessary to use estimates of the present value of the expected future receipts to be received by the owners of such assets.@ (SNA para. 13.45)

9.48 In our approach, the valuation of these assets has been based on the present value of future receipts, estimated from expenditure data of publishing agencies and record companies, and payments from the rest of the world. Straightforward estimates of future receipts by the owners of artistic originals are not available.

9.49 This approach is based on the notion that the expenditures of publishing agencies and record companies usually recur as a regular compensation to the owners of artistic originals. On the other hand, publishing agencies and record companies sometimes also buy the artistic originals proper (thereby investing in artistic originals). In this case, the balance sheet value of the artistic originals could be approximated on the basis of the perpetual inventory method. In most cases, however, the artistic originals are not bought from the original owners so that an approach based on the present value of future receipts is more appropriate.

9.50 Basically, the annual expenditures on these assets have been derived from the production statistics of publishing agencies (honoraria) and record companies (studio recordings, artist and pressing fees, purchase of repertoire, broadcasting fees, etc.), as collected by Statistics Netherlands (only the payments to resident owners have been included here). Film rights, honoraria and other payments for artistic originals from abroad have been derived from the balance of payments. These expenditures have been considered as incomes to the owners of artistic originals. Assuming a useful service life of five years, the owners annually receive a part of the income. It has been assumed that they receive 50 per cent of the income in the current year (for the originals created in that year), 20 per cent in the following year and 10 per cent in each of the remaining three.

9.51 For the years 1986 to 1989, it has been assumed that half of the current expenditure relates to originals developed in the respective years. From 1990 onwards, current income has been set as equal to current expenditure. For instance, current income in 1990 from all investment is 1,400 and the same value in 1991 is 2,032. Consequently, the income from the originals created by the investment in the current year has been derived as a residual, i.e. 860 million guilders in 1990 and 1,346 million guilders in 1991 (see table 9.6).

9.52 The balance sheet value at the beginning of 1990 has been set as equal to the net present value of the receipts from 1990 to 1994. Similarly, the balance sheet value at the end of 1990 is equivalent to the net present value of the receipts from 1991 to 1995. The net present value of the future receipts is based on a discount rate of 8.0 per cent in 1990 and 7.8 per cent in 1991 (equivalent to a moving 10-year average of the long-term rate of interest).

Table 9.6. Entertainment, literary or artistic originals: valuation

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	Total
					(million guilders)						
Expenditure (total)	688	997	1,131	1,292	1,400	2,032					
- Recorded media (cd's etc.)											
Honoraria, studio rec., etc.	17	23	41	33	33	28					
Artist and pressing fees, adv.	125	87	89	111	174	285					
Broadcasting fees	35	49	43	56	55	58					
- Publishers: honoraria	273	280	287	302	326	304					
- Abroad: film rights, hon. etc.	238	558	671	790	812	1,357					
Incomes											
derived from expenditure in 1986	344	138	69	69	69						
derived from expenditure in 1987		498	199	100	100	100					
derived from expenditure in 1988			566	226	113	113	113				
derived from expenditure in 1989				646	258	129	129	129			
derived from expenditure in 1990[120]					860	344	172	172	172		
derived from expenditure in 1991						1,346	538	269	269	269	
Opening balance sheet for 1990											
Incomes: current values[121]					1,400	686	414	301	172		
Incomes: present values (01/01/90)					1,296	588	329	221	117		2,551
Incomes: advance productions[122]											128
Balance sheet total (01/01/90)											2,679
Closing balance sheet for 1990[123]											
Incomes: current values						2,032	952	570	441	269	
Incomes: present values (31/12/90)						1,885	820	455	326	185	3,671
Incomes: advance productions											150
Balance sheet total (31/12/90)											3,821

9.53 The balance sheet values for entertainment, literary or artistic originals at the beginning and end of 1990 appear in table 9.6. The amounts have been increased by the book values of advance productions as derived from the annual reports of Dutch broadcasting corporations.

D. Produced assets: valuables

9.54 The SNA defines valuables as: "Produced assets that are not used primarily for production or consumption, that are expected to appreciate or at least not to decline in real value, that do not deteriorate over

[120] From 1990 onwards, current income is set as equal to current expenditure. In 1990, it is 1,400. Thus income in 1990 originated from the expenditure in 1990 is calculated as a residual. For instance for 1990, it equals 1,400 -(69+100+113+258)=860. The incomes generated by the 1990 expenditure in subsequent years are assumed to be 50% for the second year, 20% for the third year and 10% for the rest (see para. 9.50). To be consistent with this assumption, income for 1991 by the same expenditure is calculated as (860/0.5)*0.2=344 and in the next three years by the formula (860/0.5)*0.1=172.

[121] The calculation of opening balance sheet in 1990 is based on the sum of incomes received from 1990 to 1994. For 1990, income received from intangible assets is equal to expenditures in that year (1,400). For 1991, income from assets accumulated until 1990 totals 686=(100+113+129+344). The amount 1,346 is not counted in the calculation of the opening balance sheet of 1990 since it is generated by the assets acquired in 1991. Incomes for other years from 1990 assets are similarly calculated.

[122] The advance productions of broadcasting corporations include the following enterprises: NCRV, NOP, AVRO, EO, KRO, TROS, VARA, VERONICA, VPRO, NOS, IKON and WO.

[123] The closing balance sheet for 1990 which is the opening balance sheet for 1991 is similarly calculated.

time under normal conditions and that are acquired and held primarily as stores of value. Valuables consist of precious metals and stones, antiques and other art objects and other valuables..." (SNA, p. 308). Valuables are further classified as follows:

(a) Precious metals and stones that are not held for use as inputs into production processes ;
(b) Antiques and other art objects such as paintings and sculptures;
(c) Other valuables such as collections of jewelry of significant value fashioned out of precious stones and metals.

9.55 Valuables are predominantly owned by households and governments, but other sectors are also likely to own (substantial) stocks of valuables. Corporations, for example, often possess paintings and sculptures which are used for decoration purposes. Nevertheless, these valuables are usually not separately recorded on their balance sheets.Thus far, stocks of valuables have not been recorded by Statistics Netherlands.

9.56 The value of these assets may be derived from the accounts of insurance corporations, which normally keep records of valuables such as precious stones and consumer durables. Such information, however, cannot be easily converted to SNA concepts. Moreover, valuables are seldom insured, as premiums are usually prohibitive.

9.57 On the other hand, a project to estimate the stock value of valuables is a huge and costly operation. For example, the central Government possesses substantial stocks of art objects which are mostly stored in the national museums. These museums store a collection of about 800,000 pictures and drawings which range widely in value. As a central registration of the collections does not exist, the 700 or so museums must be surveyed individually.

9.58 Valuation of these paintings is difficult as the collection is neither recorded on the balance sheet nor insured. Valuation is also subject to a high degree of uncertainty for lack of transactions. In addition to these paintings, sculptures and other valuables must be taken into account as well. Finally, sectorization of these assets may be hazardous, as objects stored in museums may belong to other owners.

9.59 It is interesting to note that valuation on the basis of future returns is also not fruitful, as the average operating costs of the museums far outweigh their receipts (from donations, tickets, etc). In view of these conceptual and practical difficulties, estimation of stocks of valuables is not undertaken as yet.

E. Non-produced assets: tangible assets

9.60 This section deals with non-produced tangible assets such as land, subsoil assets, non-cultivated biological resources and water resources. These categories are discussed in detail below.

1. Land

9.61 The SNA defines land as: "The ground, including the soil covering and any associated surface waters, over which ownership rights are enforced. Also included are major improvements that cannot be physically separated from the land itself. Excluded are any buildings or other structures situated on it or running through it; cultivated crops, trees and animals; subsoil assets; non-cultivated biological resources and water resources below the ground.@ (SNA, p. 309)

9.62 The category of land is further classified in the SNA into land underlying buildings and structures, land under cultivation, recreational land and associated surface waters, and other land and associated surface waters.

9.63 The category of land underlying buildings and structures is defined as: ALand on which dwellings, non-residential buildings and structures are constructed or into which their foundations are dug, including yards and gardens deemed an integral part of farm and non-farm dwelling and access roads to farms.@

9.64. Land under cultivation is defined as: ALand on which agricultural or horticultural production is carried on for commercial or subsistence purposes, including, in principle, land under plantations, orchards and vineyards.@

9.65. Recreational land and associated surface waters are defined as: @Land that is used as privately owned amenity land, parklands and pleasure grounds and publicly owned parks and recreational areas, together with associated surface waters.@

9.66. Other land and associated surface waters are defined as: ALand not elsewhere classified, including private gardens and plots not cultivated for subsistence or commercial purposes, communal grazing land, land surrounding dwellings in excess of those yards and gardens deemed an integral part of farm and non-farm dwellings and associated surface water.@ (SNA, p. 309)

9.67. The value of land should include "the value of the stock of major improvements that cannot be physically separated from the land itself. Thus, although expenditures on land improvements are treated as gross fixed capital formation in the System, they do not lead to tangible assets that can be shown in the balance sheets separately from the land itself. Land is valued at its current price paid by a new owner, including written-down costs of ownership transfer." (SNA para. 13.55)

9.68. The SNA further recommends to identify specific pieces of land and to price them accordingly, since the prices of land usually vary enormously with their location and use. Furthermore, it is often difficult to separate the value of land from the buildings erected on it. In these cases, the estimated value of land or of the buildings may be deducted from the combined land and buildings. If this is not possible, the composite asset should be classified in the category representing the greater part of its value (SNA paras. 13.56 and 13.57).

9.69. The Land Use Statistics (Bodemstatistiek) are the major data source available to estimate the quantities of land use by type in the Netherlands. They yield a complete set of data according to the main categories as recommended in the SNA (see above). The smallest unit is a plot of 25 hectares. These data are based on maps from the Topographical Service, complemented with information from aerial views and urban plans.

9.70. The data for 1 January 1989 have been taken as a basis to estimate the quantities of land at the beginning and end of 1990, as data for subsequent years are not yet available. However, comparison with earlier data reveals that changes in the use of land tend to be rather small, in both absolute and relative terms.

Table 9.7. Land: hectares under cultivation

	Source data	
	1990	**1991**
Land under cultivation (total)	2,388,105	2,388,105
- Cultivation under glass	13,457	13,457
- Farmland	796,291	805,373
- Grassland	1,114,008	1,096,496
- Market gardening	101,370	103,739
- Hedges and paths	196,872	217,120
- Allotments	4,796	4,796
- Others	161,311	147,124

	1990 balance sheet	
	1 January	**31 December**
Land under cultivation (total)	2,388,105	2,388,105
- Cultivation under glass	13,457	13,457
- Farmland	860,144	864,452
- Grassland	1,203,337	1,176,931
- Market gardening	109,499	111,349
- Hedges and paths	196,872	217,120
- Allotments	4,796	4,796

Notes: The area under "hedges and paths" is calculated residually as follows:

	1990	**1991**
Land under cultivation (without allotments)	2,383,309	2,383,309
Less: Cadastral surface cultivated land (total)	2,186,437	2,166,189
Hedges and paths	196,872	217,120

In the second part of the table, the category "Others" has been proportionally distributed over the categories "Farmland", "Grassland" and "Market gardening".

Sources: Land Use Statistics, 1 January 1989, for estimates of land under cultivation (total) and cultivation under glass; Census of Agriculture, May 1989 and May 1990 for farmland, grassland, market gardening and cadastral surface cultivated land (total).

9.71. The Land Use Statistics yield data on the total quantity of land under cultivation (including the cultivated area under glass) but do not provide information on the quantities of other sub-categories of land under cultivation (which is necessary for subsequent valuation).

9.72. Therefore, the land under cultivation is further broken down by sub-categories as used in the Census of Agriculture (Landbouwtelling). This source provides specific information on different types of use for agricultural purposes. These sub-categories (i.e. farmland, grass land, and market gardens) are similar to those used in the Statistics on Rents and on Prices of Farmlands (Statistiek overdrachten en verpachtingen van landbouwgronden), which serves as the basis for the valuation of land under cultivation.

9.73. The Census of Agriculture is usually held in May, i.e. according to the situation of the following crop year. Most changes in ownership and/or use take place in the first half of the year, from January to May. The

balance sheet quantities of 1 January 1990 are therefore based on the May 1989 census and the quantities of 31 December 1990 are based on the May 1990 census.

9.74. The estimations of the hectares of land under cultivation appear in table 9.7.

9.75. The estimated quantities, prices and values of the different categories of land appear in table 9.8 below. The values are obtained by multiplying quantities and prices.

9.76. Residential areas are by far the most important category in value terms. It has been subdivided into plots (40%) and other areas including streets, parking lots and public greens (60%) on the basis of information on land under buildings and total residential land in a large number of municipalities in order to allow for differences in prices (derived from the Land Use Statistics). The plot prices have been derived from information published by the Ministry of Housing, Physical Planning and the Environment (Development of Soil and Plot Prices, 1991). Prices for other areas (usually owned by local government) have been set as equal to the weighted average of the prices of farmland and grassland as an approximation of their purchase prices.

9.77. A similar procedure as that described above has been applied in the cases of industrial and dock areas, building sites, other trade areas, sociocultural facilities and other public facilities.

9.78. The prices for industrial and dock areas have been derived from detailed price data (selling prices) of industrial sites made available by the Department of Physical Planning (Ministry of Housing, Physical Planning and the Environment) and further processed by Statistics Netherlands. Prices for building sites have been tentatively set at 75 per cent of the price of industrial and dock areas. In the absence of other information, prices for other trade areas have been set as equal to those for residential areas (see above). It is important to note that the above prices have been applied uniformly, although in practice they may vary considerably, depending on location and type of use. Prices may also show large fluctuations from year to year (and even within years).

9.79. The estimates for airfields and airports have been obtained from Schiphol Airport. The prices for other infrastructural land such as land under railways, tramways and metros and the prices of roads (metalled and unmetalled) have been tentatively set at the weighted average of the price of farmland and grassland, as more direct information was not available (see below).

9.80. The valuation of land under cultivation has been based on the annually issued Statistics on Rents and on Prices of Farmlands which yield information on purchasers' prices of land with different types of cultivation (farmland, grassland, and market gardening). These purchasers' prices show considerable fluctuations over time, as they are based on incidental transfers of land. In order to mitigate these fluctuations, moving four-year averages of these prices have been utilized for valuation purposes. Thus, for prices on 31 December 1989 (equals 1 January 1990) moving four-year averages of the prices from 1 January 1988 until 1 January 1991 have been used while for 31 December 1990 (equals 1 January 1991) moving four-year averages of the prices from 1 January 1989 until 1 January 1992 have been used.

9.81. In the absence of other information, the price of allotments has been set as equal to the price of grassland. The category "Hedges and paths" has been valued tentatively at the weighted average of the prices of farmland and grassland.

mechanisms, electrical and electronic circuits and devices, pharmaceutical formulations and new varieties of living things produced by artifice." (SNA, p. 310)

9.119. According to the SNA, patented entities should be valued "at current prices when they are actually traded on markets. Otherwise, it may be necessary to use estimates of the present value of the expected future returns to be received by the owners of such assets.@ (SNA, para. 13.63). As market prices or expected returns of patented entities are not available at Statistics Netherlands, valuation of these assets has been based on a cost approach (see below).

9.120. The value of the patented entities is usually not separately available from the enterprise accounts. Intangible assets are often recorded as a single item in the enterprise accounts and usually include both produced and non-produced intangible assets (whereas the SNA clearly distinguishes between these types of assets). Moreover, intangible assets as recorded in the enterprise accounts sometimes include assets which are treated as current expenditures in the SNA such as preliminary expenses for starting an enterprise and issuance of shares, and costs for research and development.

9.121. Therefore, the value of patented entities has been based on the costs of Dutch patent applications submitted to the Dutch Patent Office and the European Patent Office.[131] The total costs of patent applications has been obtained by the number of patent applications rejected times the costs of the patent applications rejected plus the number of patent applications granted times the costs of the patent applications granted (both in the Netherlands and Europe). The patent offices record the number of applications submitted and the patents granted. The number of patents rejected has been arrived at on the assumption that the decision to grant or reject is taken after three years. The patents rejected are thus estimated on the basis of the patents submitted less the patents granted after three years.

[131] See Dutch Patent Office (Nederlandse Octrooiraad), Annual Report 1993, pp. 14 and 45, and European Patent Office, Annual Report 1993, pp. 72 and 78.

Table 9.11. Patented entities: expenditures

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	199
ıts													
ıcations													
	1,900	1,900	1,875	1,889	1,840	1,939	1,866	1,970	2,158	2,205	2,147	1,605	1,75
	1,604	1,586	1,594	1,615	1,639	1,767	1,725	1,823	2,028	2,083	2,031	1,500	1,65
	460	462	444	296	314	281	274	201	172	141	147	130	12
ation (in guilders)													
	1,070	1,130	1,180	1,240	1,300	1,370	1,440	1,510	1,580	1,660	1,740	1,830	1,92
	7,950	8,350	8,770	9,210	9,670	10,150	10,660	11,190	11,750	12,340	12,960	13,610	14,29
000 guilders)													
	1,720	1,790	1,880	2,000	2,130	2,420	2,480	2,750	3,200	3,460	3,530	2,750	3,17
	3.660	3,860	3,890	2,730	3,040	2,850	2,920	2,250	2,020	1,740	1,910	1,770	1,74
	5,380	5,650	5,770	4,730	5,170	5,270	5,400	5,000	5,200	5,440	4,520	4,910	5,04
ıtents													
ıcations													
	800	800	878	1,009	1,123	1,204	1,289	1,473	1,668	1,821	2,021	2,051	2,41
	443	319	325	364	518	550	449	559	743	865	866	925	1,19
	200	200	199	357	481	553	645	605	654	840	914	925	95
ation (in guilders)													
	7,260	7,620	8,000	8,400	8,820	9,270	9,730	10,220	10,730	11,260	11,830	12,420	13,04
	59,400	62,370	65,480	68,760	72,200	75,810	79,600	83,580	87,750	92,140	96,750	101,590	106,67
000 guilders)													
	3,220	2,430	2,600	3,060	4,570	5,100	4,370	5,710	7,970	9,740	10,240	11,490	15,52
	11,880	12,470	13,030	24,550	34,730	41,920	51,340	50,570	57,390	77,400	88,430	93,970	101,98
	15,100	14,900	15,630	27,610	39,300	47,020	55,710	56,280	65,360	87,140	98,670	105,460	117,50

Patent Office, Annual Report 1993, and European Patent Office, Annual Report 1993.

Table 9.12. Patented entities: valuation

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
						(in million guilders)				
(total)	20	21	21	32	45	52	61	61	71	92
ıts	5	6	6	5	5	5	5	5	5	5
atents	15	15	16	28	39	47	56	56	65	87
(rev.)	33	33	31	45	60	66	74	71	78	97
(acc.)	33	66	97	142	202	268	342	413	491	588
(spread out in 10 years) of										
xpenditure in 1980	3	3	3	3	3	3	3	3	3	3
xpenditure in 1981		3	3	3	3	3	3	3	3	3
xpenditure in 1982			3	3	3	3	3	3	3	3
xpenditure in 1983				5	5	5	5	5	5	5
xpenditure in 1984					6	6	6	6	6	6
xpenditure in 1985						7	7	7	7	7
xpenditure in 1986							7	7	7	7
xpenditure in 1987								7	7	7
xpenditure in 1988									8	8
xpenditure in 1989										10
xpenditure in 1990										
(acc.)	3	9	18	32	52	79	113	154	203	262
t value:										
										326
										310

xpenditures have been revalued to 1990 prices on the basis of an assumed annual increase of 5 percent.

9.122. All patent applications, whether rejected or granted, involve costs, as can be derived from the Dutch Patent Office and the European Patent Office.[132] The cost of each patent application rejected amounts to 2,020 guilders in the Netherlands and 13,690 guilders in Europe in 1993. The cost of each patent application granted amounts to 15,000 guilders in the Netherlands and 112,000 guilders in Europe in 1993. In both cases, these costs have been deflated by 5 per cent per annum for other years (1980 to 1992). The costs of patent applications appear in table 9.11.

9.123. The subsequent valuation of patented entities on the balance sheet is based on the perpetual inventory method (assuming an average useful service life of 10 years). The estimations appear in table 9.12. It is clear that these figures represent a lower bound of the actual stock value of patents (as they are based on the costs of patent applications submitted rather than their actual, often much higher, value).

2. Leases and other transferable contracts

9.124. The SNA defines leases and other transferable contracts as: "Leases or contracts where the lessee has the right to convey the lease to a third party independently of the lessor. Examples include leases of land and buildings and other structures, concessions or exclusive rights to exploit mineral deposits or fishing grounds, transferable contracts with athletes and authors and options to buy tangible assets not yet produced. Leases on the rental machinery are excluded from non-financial intangible assets." (SNA, p. 310)

9.125 Valuation of these assets is not pursued in view of the difficulties of obtaining data and their presumably rather small value. For example, the value of transferable contracts with football players is not usually disclosed by their clubs. In addition, the transfer of leases of residential buildings, which is usually a main item in this category, is mostly prohibited in the Netherlands.

3. Purchased goodwill

9.126. The SNA defines purchased goodwill 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. The value of goodwill, therefore, includes anything of long-term benefit to the business that has not been separately identified as an asset, as well as the value of the fact that the group of assets is used jointly and is not simply a collection of separable assets." (SNA, p. 310)

9.127. The SNA only considers goodwill an economic asset if it is substantiated by a purchase/sale.

9.128. Valuation of purchased goodwill of an unincorporated enterprise is pursued on the basis of the excess of the purchase price over its net worth (derived from its separately identified and valued other assets and liabilities). Valuation of purchased goodwill of a corporation or quasi-corporation is pursued on the basis of the excess of the purchase price of its shares and other equity over their value just prior to the sale/purchase (SNA para. 12.22).

9.129. The value of quoted shares can be derived from the stock exchange, while the value of unquoted shares may be estimated on the basis of the price of quoted shares that are comparable in earnings, dividend

[132]The costs of rejected patents include those for filing new patent applications, search and supplementary search, and examination (Dutch Patent Office), and the cost for filing and search, and examination, opposition and appeal (European Patent Office).

history and prospects, adjusting downward, if necessary to allow for the inferior marketability or liquidity of unquoted shares (SNA para. 13.73).

9.130. Furthermore, the SNA recommends to amortize purchased goodwill over a period of time after the purchase of an enterprise, following country-specific accounting standards (SNA para. 12.34).

9.131. Purchased goodwill by non-financial corporations, equals 4.3 to 7.8 billion guilders annually for the period 1990-1994 (derived from Financial Statistics of Enterprises, Statistics Netherlands), while purchased goodwill by financial enterprises amounts to about 0.8 to 1.8 billion guilders annually in that period (derived from several large banks and insurance corporations and proportionally adjusted on the basis of total assets in this sector).

9.132. In the Netherlands, purchased goodwill is normally fully amortized to equity in the year of acquisition, although other accounting methods are in some cases also applied such as amortization over the total useful life (Dutch Civil Code, section 386 and 389). Following these practices, the above-mentioned purchased goodwill which has not been recorded on the balance sheet should be added. However, past research has revealed that a very small part of purchased goodwill is capitalized as part of intangible assets (which also include items such as licences, patents, trade marks, and research and development costs). Nevertheless, these amounts have not been estimated here, as they are not separately available from the Financial Statistics of Enterprises.

9.133. Moreover, goodwill may occur as an unlimited company becomes a limited one through legal transformation or purchase. Data on purchased goodwill of this nature, however, are not available. Nor are data on purchased goodwill of medical practitioners and/or related professions such as midwifes.

G. Summary and concluding remarks

9.134. This chapter has presented estimation methods and preliminary estimates for produced intangible assets and non-produced assets in the Netherlands. The balance sheet values at the beginning and end of 1990 have been estimated for nearly all these asset categories. However, balance sheet valuation of valuables was not pursued due to lack of sufficiently reliable quantity and especially price data. Due to lack of transactions, valuation of these assets is hardly possible.

9.135. The values of the categories of produced intangible assets and non-produced assets are summarized for 1990 in table 9.13 below. In value terms, land is by far the most important item, while the reserves of natural gas and oil come second. The value of the remaining asset categories appears rather small.

9.136. The valuation of assets has been pursued through various methods. Valuation on the basis of market prices normally yields the most reliable results, and is therefore also recommended by the SNA. Nevertheless, appropriate market prices are sometimes difficult to obtain, as in the case of land. As a consequence, these prices may only be approximated by using assumptions. The other valuation methods are also subject to some qualifications. The results of the perpetual inventory method are affected by the availability of sufficiently long time series and the rate of amortization, while the results of the net present value method are very much affected by the rate of discount.

9.137. The source data did not always offer a sufficient basis for the compilation of sectoral balances, especially in the case of land and patented entities. For these asset categories, therefore, only national estimates are available for the moment.

9.138. The estimates presented here are still preliminary. They bear the weaknesses of the source data and valuation methods. Finally, the results shown still need to be combined with estimates for financial assets and liabilities and for other fixed capital stocks to yield a complete picture of net worth in the Netherlands.

Table 9.13. Produced intangible assets, valuables and non-produced assets in 1990

SNA Code	Categories	1990 balance sheet	
		1 January	31 December
		(million guilders)	
AN.1	Produced intangible assets and valuables	9,829	11,723
AN.112	Intangible fixed assets	9,829	11,723
AN.1121	Mineral exploration	2,650	2,686
AN.1122	Computer software	4,500	5,216
AN.1123	Entertainment, lit. or art. originals	2,679	3,821
AN.1129	Other intangible fixed assets	0	0
AN.13	Valuables	..	..
AN.131	Precious metals and stones	..	..
AN.132	Antiques and other art objects	..	..
AN.139	Other valuables	..	..
AN.2	Non-produced assets	376,630	379,880
AN.21	Tangible non-produced assets	376,320	379,516
AN.211	Land	331,730	329,127
AN.2111	Land underlying buildings and structures	176,046	171,987
AN.2112	Land under cultivation	106,597	108,312
AN.2113	Recreational land and associated surface waters	43,984	43,889
AN.2119	Other land and associated surface waters	5,103	4,939
AN.212	Subsoil assets	44,503	50,300
AN.2121	Natural gas and oil reserves	44,466	50,262
AN.2122	Metallic mineral reserves	0	0
AN.2123	Non-metallic mineral reserves	37	38
AN.213	Non-cultivated biological resources	87	89
AN.214	Water resources	0	0
AN.22	Intangible non-produced assets	310	364
AN.221	Patented entities	310	364
AN.222	Leases and other transferable contracts	0	0
AN.223	Purchased goodwill	..	..

.. = Not estimated

0 = Negligible.

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