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Series F No. 39

**STUDIES IN METHODS**

**HANDBOOK  
OF NATIONAL ACCOUNTING**

**ACCOUNTING  
FOR PRODUCTION:  
SOURCES AND METHODS**



**UNITED NATIONS**

DEPARTMENT OF INTERNATIONAL ECONOMIC AND SOCIAL AFFAIRS

STATISTICAL OFFICE

STUDIES IN METHODS

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OF NATIONAL ACCOUNTING  
ACCOUNTING FOR PRODUCTION:  
SOURCES AND METHODS**



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## PREFACE

The Statistical Office of the United Nations Secretariat is currently preparing a series of manuals on sources and methods for compiling the statistics needed for the United Nations System of National Accounts (SNA), as reflected in the National Accounts Questionnaire. 1/ These manuals will appear in a series entitled Handbook of National Accounting. The Handbooks are being developed in conjunction with the ongoing review of SNA standards, which has been undertaken by the Statistical Office in co-operation with other international statistical organizations. The SNA review, which is intended to result in a new version of SNA by 1990, thus will not only provide improved national accounting standards but also improved guidelines on sources and methods for the use of national accountants, particularly those in developing countries. This manual is based on the present SNA. It will be revised after the conclusion of the SNA review. In those instances where revisions are currently under consideration, this is indicated in appropriate sections in the text.

The present volume describes sources and methods for compiling gross domestic product, both as the sum of the output of different producers and as the sum of final uses of that output. It is concerned only with estimates at current prices; a separate publication, A Manual on National Accounts at Constant Prices, 2/ deals with constant price estimates of gross domestic product and its components. Conceptual questions are not dealt with in detail in the present volume; readers interested in those questions are referred to the basic document on SNA cited above. The National Accounts Questionnaire tables to which this volume is relevant are those on the composition of gross domestic product in part 1 (tables 1.1, 1.3 and 1.10), and those in parts 2 and 4 containing more detailed subclassifications. These tables are of basic importance for the analysis and planning of economic production.

The present volume is divided into four parts. The first part is a general introduction to the subject. It includes the essential definitions and classifications, presents an overview of national accounts methodology and reviews the basic sources of the necessary data. The second part deals with gross domestic product by kind of activity, the third with the cost components of gross domestic product, and the fourth with final expenditures on gross domestic product. Annexes I to VI present the detailed classifications referred to in the text. The bibliography contains publications prepared by international statistical offices on methodology and standards for compiling national accounts statistics.

The present Handbook was prepared by the Statistical Office of the United Nations Secretariat with the assistance of Nancy Ruggles, acting as a consultant to the Organization. Much useful advice and many helpful suggestions were, however, received from national accountants and other experts throughout the world. The Statistical Office gratefully acknowledges this generous assistance, which has made a substantial contribution to the form and content of the manual.

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The first part of the document  
 discusses the importance of  
 maintaining accurate records  
 for all transactions. This  
 includes both income and  
 expenses. It is essential  
 to ensure that all receipts  
 are properly filed and  
 categorized.

In addition, it is important  
 to review the records  
 regularly to identify any  
 discrepancies or errors.  
 This will help to ensure  
 that the financial statements  
 are accurate and reliable.  
 Consistent record-keeping  
 is the key to successful  
 financial management.

Furthermore, it is crucial  
 to keep track of all  
 assets and liabilities.  
 This includes real estate,  
 vehicles, and other  
 valuable items. Regular  
 appraisals should be  
 conducted to determine  
 the current market value  
 of these assets.

Finally, it is important  
 to consult with a  
 professional advisor, such  
 as a tax accountant or  
 financial planner, to  
 ensure that all tax  
 obligations are met and  
 that the most favorable  
 tax strategy is being  
 implemented.

The second part of the  
 document provides a  
 detailed overview of the  
 financial statements. This  
 includes the balance sheet,  
 income statement, and  
 cash flow statement. Each  
 statement is accompanied  
 by a detailed explanation  
 of the items included and  
 the methods used to  
 calculate them.

The balance sheet shows  
 the company's financial  
 position at a specific  
 point in time. It lists  
 all assets and liabilities,  
 along with their respective  
 values. The income  
 statement, on the other  
 hand, shows the company's  
 performance over a  
 period of time. It  
 details all revenues and  
 expenses, as well as the  
 resulting net income.

The cash flow statement  
 provides a clear picture  
 of the company's  
 liquidity. It tracks all  
 cash inflows and  
 outflows, including  
 operating activities,  
 investing activities, and  
 financing activities. This  
 information is essential  
 for understanding the  
 company's ability to  
 generate cash and meet  
 its obligations.

In conclusion, the  
 financial statements provide  
 a comprehensive view  
 of the company's financial  
 health. They are essential  
 tools for management,  
 investors, and creditors.  
 By carefully reviewing  
 these statements, users  
 can gain valuable  
 insights into the company's  
 performance and future  
 prospects.

## PART ONE. OVERVIEW

### I. WHAT IS PRODUCTION?

1. In the United Nations System of National Accounts (SNA), the basic measure of the output arising from economic activity is known as gross domestic product (GDP). The present volume of the Handbook of National Accounting describes the various ways of compiling GDP, and some of the sources and methods that may be used for doing this. It is not the purpose of this volume to examine the conceptual issues involved, or to explain in detail the structure of SNA. That is done in the basic publication, A System of National Accounts. In the present volume, the definitions as set out there (and as used in most country systems of national accounts) are followed. To make the discussion easier to follow, however, the essential definitions are repeated.

2. The first question that must be answered is what constitutes an economic activity, since this determines what falls within the scope of the national accounting system. There is no difficulty in defining as economic those activities that result in the production of goods and services for sale on the market. There is also general agreement that government activities in the areas of public administration, law and order, health, education, and social services (and activities in similar areas carried out by private non-profit organizations) should be counted as economic, even though their output is not sold on the market. Borderline problems do, however, arise in connection with some other kinds of non-market activities. The coverage of non-market production in GDP is being appraised as a part of the SNA review, and there may be some changes when the revision is completed. For the present, however, except for services of Government and private non-profit institutions, SNA does not include goods and services that are not marketed in GDP unless identical or very similar goods and services are also sold on the market. GDP includes, for example, the construction of buildings by households and enterprises for their own use, and the production of crops and livestock for consumption on the farm. There are usually close market parallels for those activities. However, SNA does not include unpaid services rendered by housewives and other household members.

3. Once the boundary of economic activity has been established, GDP may be derived in three ways (or combinations of them). The first approach looks at the way output is produced. It measures the contribution to output made by each producer, by deducting from the total value of its output the value of the goods and services it has purchased from other producers and used up in producing its own output. What is left is the value added by the producer in question; what is used up in production is intermediate consumption. With some minor adjustments, the total value added by all producers equals GDP. This method of compilation is commonly known as the production approach to GDP. The second approach considers the costs incurred by the producer within his own operation: the incomes paid out to employees, indirect taxes, consumption of fixed capital, and the operating surplus; this also adds up to value added. This method is often called the income approach, but may more exactly be referred to as the cost approach. The third method, known as the expenditure approach, looks at the final uses of the country's output for private consumption, government consumption, capital formation and net exports; in other words, it shows what becomes of the output once it has been produced.

4. Either the production approach or the cost approach may be used to estimate the contribution to GDP of producers engaged in various kinds of economic activity, to produce a table such as table 1. Table 1 is essentially the same as table 1.10 of the National Accounts Questionnaire. Some version of table 1 is often the first national accounting table to be compiled by countries newly embarking on the development of national accounts. The three adjustment items shown in the table are explained later on (paras. 88-90).

Table 1. Gross domestic product by kind of economic activity

<u>Kind of economic activity</u>	
1	Agriculture, hunting, forestry and fishing
2	Mining and quarrying
3	Manufacturing
4	Electricity, gas and water
5	Construction
6	Wholesale and retail trade, and restaurants and hotels
7	Transport, storage and communication
8	Financing, insurance, real estate and business services
9	Community, social and personal services
	Subtotal
	Adjustments:
	Less: imputed bank service charge
	Plus: import duties
	Plus: value added tax
	Equals: gross domestic product

5. The information generated by the cost approach may also be arranged as shown in table 2, which is the same as table 1.3 of the National Accounts Questionnaire. Table 2 includes the same elements of producers' costs as table 1, but in table 2 they are added up by type of cost rather than by kind of activity of the producers.

Table 2. Cost components of gross domestic product

Indirect taxes, net
Indirect taxes paid
Less: subsidies received
Consumption of fixed capital
Compensation of employees paid by resident producers
To resident households
To non-resident households
Operating surplus
Gross domestic product

6. Part two of the present manual is devoted to a discussion of sources and methods for compiling table 1 and its more detailed breakdowns by the production approach. Part three discusses the cost approach and its use for compiling both table 1 and table 2.

7. The expenditure method of estimating GDP leads to a table such as table 3, which is the same as table 1.1 of the National Accounts Questionnaire. Estimates of final expenditures on GDP may be obtained in two ways. First, the output of goods and services can be traced through the economy from their original producers to their final users; this is known as the commodity flow approach. The commodity flow approach is discussed in section I of part four.

8. Alternatively, the receipts and expenditures of the various economic actors of the system can be looked at directly in order to identify the expenditures that are final; this is often referred to as direct estimation of final expenditures. Direct estimation of final expenditures is discussed in sections II, III and IV of part four.

Table 3. Expenditures on gross domestic product

---

Government final consumption expenditure
Private final consumption expenditure
Households
Private non-profit institutions serving households
Gross capital formation
Increase in stocks
Gross fixed capital formation
Residential construction
Other construction, land development etc.
Other
Exports of goods and services
Less: imports of goods and services
 Gross domestic product

---

9. Tables 1, 2 and 3 are intimately related to one another, and their interrelationships can be of great use to compilers of national accounts in ensuring consistency and completeness in the estimates made. The following section discusses those interrelationships and the basic worksheets to which they lead.

10. It is seldom the case that national accountants will be able to use all three approaches for making complete and independent estimates of GDP. In developing countries, domestic production, import and export statistics are often more abundant and more reliable than cost and expenditure data. In such countries the production approach is widely used to estimate the output of goods-producing industries, whereas the cost approach is used for services. Wherever possible, however, the use of more than one approach is desirable, not only because of the analytic usefulness of the figures but also as a check on the reasonableness of the estimates.



11. Even though they are conceptually equivalent, different methods of estimating GDP will not yield identical statistical results. Such differences are known as statistical discrepancies. Where they are large, efforts should be made to improve the quality of the underlying data, and the methodology employed in making the estimates should be examined carefully. But the remaining statistical discrepancies should not be hidden; they provide valuable information to the user with regard to the reliability of the figures. Of course, when it is necessary to estimate some component residually, as for instance consumption expenditure in the case of the expenditure approach, or operating surplus in the case of the cost approach, no explicit statistical discrepancy will appear. Rather, the statistical discrepancy will be included in the residual.

## II. BASIC RELATIONSHIPS

12. To describe any national accounting system (whether SNA or any other), it is necessary to specify certain attributes or characteristics. The first attribute is the identity of the actors whose activities are to be accounted for. In SNA, these are known as the transactors of the system, and they include such entities as enterprises, Government and households. The second attribute defines the actions of these transactors that are to be covered. In SNA, these are known as transactions, and the transactions are grouped into like kinds; examples are payments of compensation of employees, final consumption expenditures, and various kinds of taxes. The final characteristic relates to the level of consolidation at which the accounts are to be presented and the resulting summary aggregates that serve as measures of economic performance. In principle, at one extreme, accounts could be drawn up for each separate transactor. At the other extreme, accounts could be drawn up only for the economy as a whole, without any subdivisions. Between these two extremes, accounts can be drawn up for like groups of transactors: for all households, for example, or for all manufacturers.

13. The transactors are grouped in SNA in two ways. The first grouping, by kind of activity, deals with producers' sectors where production decisions are mainly taken. SNA associates each activity with an establishment, where a most homogeneous collection of goods and services is produced at a single location; activities of the establishments must be intended to be self-sustaining, whether for production through the market or for own use. The detailed grouping applied here is the International Standard Industrial Classification of All Economic Activities (ISIC) 3/ breakdown, and major groupings distinguished are (a) industries, (b) producers of government services, (c) producers of private non-profit services to households and (d) domestic services of households. The second grouping deals with institutional sectors into which transactors engaging in financial decisions are grouped. The institutional unit is a legal entity which may include more than one establishment. SNA recognizes five primary institutional sectors: (a) non-financial enterprises, corporate and quasi-corporate; (b) financial institutions; (c) general Government; (d) private non-profit institutions serving households; and (e) households including private non-financial unincorporated enterprises. The activity grouping is useful for estimating cost components of GDP and final expenditures in terms of supply of goods and services to final users. The institutional grouping is needed in estimating directly final expenditures on GDP. Section A below discusses production and cost interrelationships in terms of kind of activity groupings of producers. Section B briefly considers income and outlay interrelationships among institutional sectors. As already noted, methods of estimation based on income and outlay relationships are beyond the scope of the present manual.

## A. Production and cost interrelationships

14. Chart 1, which is a simplified version of what in national accounting is known as an input-output table, displays production and cost interrelationships. The simplified version differs to some extent from what is presented in chapter III of A System of National Accounts.

15. The chart shows how the various types of input into economic activity (listed in the rows of the chart) flow through the economy and are purchased by various users (listed in the columns). The chart is divided into three quadrants (what would be the fourth quadrant is blank).

16. Quadrant I (the upper left-hand corner) is concerned with the intermediate consumption of producers. Across the top, producers are grouped by the kind of activity in which they engage. Down the side, the goods and services which they purchase for use in production are listed, by type. Although the labels on the columns and rows of this quadrant are the same, their content is not. Not all agricultural goods, for example, are produced by establishments classed in agriculture and, conversely, establishments classed in agriculture may produce some goods and services classified elsewhere. The column headings refer to whole establishments, classified by their principal activity. The rows, on the other hand, refer to goods and services, classified by their own nature. The subtotal row at the bottom of this quadrant shows total intermediate consumption of producers engaged in each kind of activity. The subtotal column at the right side of this quadrant divides the same total intermediate consumption up by the types of goods and services of which it is composed.

17. Quadrant III (the lower left-hand corner) is concerned with the rest of the production costs of producers (that is, costs that do not arise from purchases from other producers). These remaining costs are the components of value added as listed in table 2: indirect taxes, consumption of fixed capital, compensation of employees, and operating surplus. Adding across the rows of this quadrant yields, in the total column at the right, the entries in table 2. Adding down the columns yields, in the total row at the bottom of quadrant III, the entries in table 1. The grand total row, Gross Input, at the bottom of the chart is the sum of all production costs and profits of the producers classified in each kind of activity; it is, of course, necessarily equal to the sum of intermediate consumption and value added. Thus, another way of deriving table 1 is by subtracting the total row of quadrant I, intermediate consumption, from the grand total row, Gross Input.

18. Finally, quadrant II (the upper right-hand corner) is concerned with the final uses of GDP. Across the top, the column headings are the categories of final expenditure that appear in table 3. Down the side, the classification is once more goods and services, by type. The total row at the bottom of this quadrant contains the entries of table 3. The total column at the right side of this quadrant shows the kinds of goods and services that go to make up GDP.

19. The grand total column, Gross Output, at the extreme right of the chart is the sum of intermediate purchases by producers (shown in quadrant I) and final purchases by others (shown in quadrant II), classified by type of goods and services. Total gross output is, by definition, equal to total gross input.

20. The interrelationships displayed in chart 1 may be used to construct worksheets for compiling GDP in forms that lend themselves readily to data collection.

Chart 1. Integrated framework for measurement of GDP

		Intermediate consumption by kind of activity									Final demand					GROSS OUTPUT		
		ISIC No. 1	ISIC No. 2	ISIC No. 3	ISIC No. 4	ISIC No. 5	ISIC No. 6	ISIC No. 7	ISIC No. 8	ISIC No. 9	Total all activities	Government consumption expenditures	Private final consumption expenditures	Gross capital formation	Exports of goods and services	Less: imports of goods and services	Total final expenditures	(Column 10+16)
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
T Y P E S O D S A N D S E R V I C E S	1	ISIC No. 1 Agriculture, hunting, forestry and fishery																
	2	ISIC No. 2 Mining and quarrying																
	3	ISIC No. 3 Manufacturing																
	4	ISIC No. 4 Electricity, gas and water																
	5	ISIC No. 5 Construction																
	6	ISIC No. 6 Wholesale and retail trade and restaur- ants and hotels	Quadrant I [Intermediate consumption]									Quadrant II [Final expenditures]						
	7	ISIC No. 7 Transport, storage and com- munication																
	8	ISIC No. 8 Financing, insurance, real estate and business services																
	9	ISIC No. 9 Community, social and personal services																
10 Total goods and services												TABLE 3					GDP	
11 Indirect taxes, minus subsidies																		
C O S T S	12 Consumption of fixed capital	Quadrant III [Value added]																
	13 Compensation of employees																	
14 Operating surplus																		
15 Total value added		TABLE 1																GDP
16 GROSS INPUT (Line 10+15)																		

21. Chart 2 is a worksheet appropriate to the production and cost approaches. The first column is the same as row 16 of chart 1; it shows gross output (=gross input) for the producers in each kind of activity. The second column is the same as row 10 of chart 1; it shows intermediate consumption of the same groups of producers. The difference between columns 1 and 2 is value added; it is the same as row 15 in chart 1. The remaining columns of chart 2 are the same as rows 11 through 14 of chart 1; they show the cost components of value added, again distributed by kind of activity of producers. As in chart 1, they can be totalled either across the rows or down the columns, to produce either table 1 or table 2.

22. Chart 3 is a worksheet appropriate to the commodity flow approach to the estimation of final expenditures. It derives the total supply of goods and services (by type) as the sum of domestic output and imports. The figures shown here, however, differ from those shown in chart 1 in one important respect, and that is the treatment of transport and distribution costs. In chart 1, transport and distribution are shown as separate industries (part of ISIC 7 and 6, respectively). Thus, in column 10 total intermediate consumption of agricultural goods and services, for instance, is equal to the total received by agricultural producers. The cost of transporting and distributing agricultural goods is included in intermediate purchases from the transport and distribution industries, ISIC 7 and 6. This, however, is not generally a convenient arrangement for estimation purposes, and chart 3 is rearranged to reflect data availability. Data on total supply are generally available as shown in chart 1, that is, without transport and distribution margins and for domestic producers only. Information on intermediate and final uses, on the other hand, is generally available in purchasers' prices which include all margins, and both domestic supply and imports. In chart 3, therefore, imports are added to domestic supply to obtain total supply of each type of good and service, and transport and distribution mark-ups are added to the cost of the total supply, in order to obtain a distribution of total supply at the prices which purchasers have to pay for it. This total supply is then distributed among intermediate and final users. The commodity flow method follows the flow of output through the columns of this worksheet, adding to domestic output of each kind of good and service first imports of the same kind, and then transportation and distribution costs. Goods and services used for intermediate consumption are then deducted, and the remainder distributed to the various final purchasers.

23. These worksheets are schematic representations, and will need to be adapted to the particular circumstances of any given country. Some countries will not have all of the data necessary to complete all parts of both worksheets, and it may be necessary to combine several approaches in order to obtain complete coverage of the economy. On the other hand, where data are available it will usually be desirable to introduce additional detail. SNA provides standard classifications for doing this; they are discussed in parts two to four and presented (in some cases in summary form) in the annexes. Countries may wish for their own use to adapt the SNA standards in various ways, but it is important that where adaptations are made they should be applied consistently throughout the statistical system. For international reporting, the use of the SNA standards is essential for comparability.

Chart 2. Production and cost approaches to measuring GDP

	Gross output	Inter-mediate consumption	Value added				Subtotal value added originating from
			Indirect taxes, minus subsidies	Consumption of fixed capital	Compensation of employees	Operating surplus	
Economic activities	Agriculture, hunting, forestry and fishery						
	Mining and quarrying						
	Manufacturing						
	Electricity, gas and water						
	Construction						
	Wholesale and retail trade and restaurants and hotels						
	Transport, storage and communication						
	Financing, insurance, real estate and business services						
	Community, social and personal services						
	Subtotal - components of value added						

Chart 3. Commodity flow approach to measuring GDP

	Total supply			Total disposition of goods and services			
	Gross domestic output	Imports c.i.f.	Trade and transport margin	Government final consumption	Private final consumption	Gross capital formation	Exports
Agriculture, hunting, forestry and fishery							
Mining and quarrying							
Manufacturing							
Electricity, gas and water							
Construction							
Wholesale and retail trade and restaurants and hotels							
Transport, storage and communication							
Financing, insurance, real estate and business services							
Community, social and personal services							

## B. Income and outlay relationships

24. Production and cost interrelationships are not the only ones that are useful to the national accountant, even when the objective is solely to measure total output (GDP). Chart 1 illustrates what are essentially technical kinds of constraints, namely, that output depends upon the provision of certain inputs, and that no more output can be used than has been produced. But transactors also face income and outlay constraints. Their total receipts must equal their total outlays plus their saving. Estimation of final expenditures on both consumption and capital formation can often be approached most easily by looking at the total income of the various sectors and considering what uses are made of it. This is particularly likely to be helpful in the case of Government, where the basic source is often some form of government budgetary account. At early stages in national accounts compilation, furthermore, it is often the case that final consumption expenditure of households is obtained as a residual, by deducting other final uses from an estimate of GDP obtained by the production or cost methods. When this is true, an examination of household income and outlay can provide a valuable cross-check. Estimates of final consumption expenditure that are substantially larger than total household income, for example, call for re-examination. In order to make effective use of these income and outlay interrelationships, however, a complete set of sector accounts is needed. Because such sector accounts are extremely powerful, both as tools in the compilation process and for analytic uses, it is important that they be undertaken as soon as possible. Estimates based on the methods described in the present manual should be considered to be first approaches, but essentially incomplete.

## III. GENERAL SOURCES AND METHODS

25. In a statistician's dream world, all the basic data needed to construct the national accounts would be available, collected as frequently as needed and in as much detail as needed. No country, however, is willing to provide the resources that would be needed to achieve this - nor, in view of competing demands on scarce resources, would it be justifiable to do so. The national accountant's task, therefore, is on the one hand to devise efficient ways of planning and carrying out basic data collection programmes, and on the other hand to make the fullest possible use of all data that are available. Where, as is frequently the case, national accountants do not control or even greatly influence basic data collection programmes, the second aspect is crucial. The essence of national accounting is integration: bringing together data from many different sources, and arranging them so that they present a coherent picture of the whole economy. This requires persistence in tracking down possible data sources, and ingenuity and imagination in using them. National accounting, to a greater degree than other branches of statistics, is an art, not a science. No two countries' circumstances will be identical, nor will the circumstances of any one country remain the same over time. The present manual can suggest possibilities, but the national accountant must make his own choices.

### A. Types of data for national accounts

26. Data for national accounting use come, broadly, from two kinds of collection programmes. The first is data collected in programmes designed and administered by statistical offices or other agencies, with the primary objective of statistical

use. The second is data that arise as a by-product of some administrative function: tax collection; regulation and control of imports and exports, banking, or other industries; standardized accounting acts; rural development projects etc.

27. Data specifically collected for statistical purposes can be designed to meet specific standards; samples may be drawn to yield data within the required limits of sampling error. Questions may be asked that respond to specific needs. This is the kind of data collection that statistical offices are accustomed to, and it is what statisticians think of first. But it is not cheap, and it is often possible to find other, less costly, sources for at least some of the data needed for national accounts. Data arising from administrative activities is seldom exactly what the national accountant wants, and must always be examined carefully to make sure that the data will give valid results in a proposed use. But the data are generally cheap and often abundant.

#### B. Benchmark principle

28. Given these constraints, what often proves to be the most efficient use of statistical resources is a two-stage technique. Detailed data, specially designed to meet anticipated needs (which may be, and usually are, wider than simply compiling national accounts), are collected at infrequent intervals, and from these data "benchmark" estimates are made. Between benchmark years, series are extrapolated on the basis of much less detailed indicators of movement. When new benchmark data are collected, the extrapolated figures for the intervening years can be checked and, if necessary, adjusted.

29. Indicators used as extrapolators should, for national accounts in current prices, reflect changes in values - for instance, sales of particular crops, or wages paid. What is often available, however, are indicators of quantity change - quantities of crops harvested, or number of employees. It is then necessary to combine such quantity indicators with appropriate price indexes in order to reflect changes in values.

30. A number of factors will need to be taken into account in deciding how often it is necessary to collect a particular type of benchmark data. Cost and the resources available are of primary importance. Few countries can afford the major expenditures needed oftener than every five years, and 10 is often the best that can be done. But it is also very important to take into consideration the expected rate of change in the variables being measured. Data on relatively stable sectors - for example, rural households engaged in subsistence agriculture - will need to be collected less frequently than data on rapidly changing sectors - for example, urban construction or newly established manufactures. Careful planning is needed to achieve a suitable balance among competing demands for available statistical resources.

#### C. Sources of benchmark data

31. Most benchmark data are collected by statistical offices in censuses and surveys which they undertake themselves. Censuses, or complete enumerations, are usually limited to population and housing, and sometimes industrial establishments. Most other topics are covered by sample surveys. For benchmark purposes, such sample surveys usually must be large-scale undertakings, with



samples scientifically drawn so as to provide data of adequate reliability in as much detail as desired. Of particular importance in providing national accounts benchmarks are surveys of household income and expenditure, integrated or multi-purpose rural surveys covering both production and consumption of rural households, establishment surveys (either of broad coverage or of particular industries such as manufacturing, distribution, or services), and cost structure surveys designed to obtain breakdowns of producers' inputs. In all such inquiries, there is a trade-off between number of cases covered and quantity of information collected from each respondent. In censuses, the objective is to cover the universe and identify all members of it, and it is possible to ask only a few questions of each respondent. In cost structure surveys of establishments or nutrition surveys of households, on the other hand, the objective is to obtain very detailed data from each respondent, and the number of respondents may be quite small.

#### D. Sources of annual data

32. Indicative series for use in extrapolating benchmark data to later years are often based on frequent small-scale surveys. Typical of such surveys are those dealing with employment/unemployment, retail sales, and prices of all types. Such surveys may be taken quarterly, monthly or even weekly. Coverage of such frequent surveys is often limited: they may cover urban areas (or even the capital city) only, or certain industries only. Where this is the case, other indicators must be sought for the missing components.

33. Data arising from administrative sources can also be used to extrapolate benchmark estimates to later years. Such data include registers of licenced practitioners in various fields - fishermen, veterinarians, beauticians; tax returns of various kinds - sales taxes, property taxes, business licence fees; building permits; school and hospital records; and many others. Private or semi-private organizations such as trade associations also often have useful data.

34. In some instances, administrative data are useful directly for making annual estimates. This is likely to be true for financial data, and often for large enterprises required to file annual reports either under standardized accounting acts or for regulatory purposes. In some countries, income tax data can be used, at least for the larger establishments, and social security data may provide information on wages. In most countries, data for Government will be available, although sometimes with too much delay for use in making annual estimates.

#### E. Extrapolation techniques

35. Most methods of extrapolation rely upon one or two general techniques. The first applies the percentage change observed in an indicator series to benchmark figures; the second applies benchmark percentage distributions to aggregates for later periods.

36. Where a benchmark estimate of comprehensive coverage is to be extrapolated on the basis of an indicator of lesser or different coverage or of somewhat different concept, the indicator is generally used to compute an index of change from the benchmark to the current year, and the same percentage change is then applied to the benchmark data. If there are known differences between the coverage of the benchmark and that of the extrapolator, it may sometimes be possible to allow for

the differences by making use of additional information from other sources. If an extrapolator, for example, refers only to large firms in a particular industry, and there is tax or regulatory data that suggest that small establishments are growing less rapidly than large ones, the rate of growth based on the large firms may be adjusted downward. If the indicator series refers to quantities rather than values, it is also necessary to multiply the benchmark figure by an index of the change in prices in order to obtain a value figure in current prices.

37. Frequently, the problem of extrapolation is somewhat different. Figures may be available upon which to base a current year total of some sort, but not to provide a breakdown of that total into its components. A typical example is the commodity composition of intermediate consumption. In such a case, it is often assumed that the percentage composition has remained unchanged since the benchmark year. Where it is known from price data that prices of some components have risen more than those of other components, the benchmark year percentage distribution may be adjusted to reflect the differences in relative price change.

38. One special case that should be mentioned occurs when the change in gross output is used as an indicator series to extrapolate changes in intermediate consumption and value added, by assuming that the relationships between inputs and outputs have remained unchanged since the benchmark year. This is often done for relatively unimportant industries, but may be quite misleading when applied to major activities.

39. The same general sources and methods may be applied in all three approaches to the estimation of GDP. Specific sources and estimation techniques that have proved useful for each component of the estimates are discussed in the parts that follow.

## PART TWO. GROSS DOMESTIC PRODUCT: THE PRODUCTION APPROACH

### I. DEFINITIONS AND CLASSIFICATIONS FOR THE PRODUCTION APPROACH

40. The production approach to the estimation of GDP, as was pointed out in part one, involves estimating, for each producing establishment, the value of its gross output and the value of intermediate goods and services it consumes in producing that output, in order to obtain its value added as the difference between those two figures. For convenience in the estimating process, establishments are usually grouped by kind-of-activity categories for the purpose of making these estimates. Part two therefore first describes the standard kind of activity classification that is used in SNA. It then discusses the statistical units needed for the production approach, and defines the concepts needed, which are the same for most kinds of activity. Later sections of part two discuss the approaches that may be useful for each kind of activity group. Although each country will need to adapt the sources and methods suggested to fit its own circumstances, statistical resources and institutional arrangements, a survey of methods that have proved to be useful elsewhere is often helpful.

#### A. Kind of activity classification

41. The classification by kind of activity shown in table 1 is the first level of the International Standard Industrial Classification of All Economic Activities. Annex I to the present volume shows this classification in more detail. Indexes to the classification have been published by the United Nations, and reference should be made to this publication for questions concerning details of the classification. 4/ The National Accounts Questionnaire calls for data at the most summary (1-digit) ISIC level in some tables, and at the next (2-digit) level in other tables. A number of tables also call for "mineral fuels and power" as a memorandum item; this category is composed of ISIC categories 21, 22, 353 and 41.

42. ISIC is intended to meet needs for internationally comparable data by reconciling differing national requirements and possibilities. Hence, it is not necessarily identical with the classification of any one country. It provides for separate identification of kinds of economic activity (a) which are of importance in practically every country, or (b) which, while not found in all countries, are of considerable importance in the world economy. It reflects the structure of production, that is, the way economic activities are combined in producing establishments and how they are distributed among establishments, as it has been found to exist in most countries. The objective is to set up categories of activities with similar characteristics and experience. The similarities sought reflect the output, the intermediate and primary inputs into production, and its technology.

43. ISIC is a classification of kinds of economic activity, and not of goods and services or of occupations. In particular, it is important to distinguish the classification of establishments according to major kind of economic activity from the classification of goods and services according to type. Establishments classified in a given category of ISIC will produce a range of items characteristic of that category, but in addition they are likely to produce a variety of other goods and services that are not characteristic of that activity. Conversely, goods and services typically produced by establishments in a given category of ISIC may also be produced, atypically, by establishments classified in other categories of ISIC.

44. ISIC does not draw distinctions according to kind of ownership, type of economic organization or mode of operation. Establishments engaged in the same kind of economic activity are classified together in ISIC, regardless of whether they are part of corporate, unincorporated, governmental, or non-profit enterprises. Similarly, no distinction is made between traditional and modern technology, or between work done in a factory or in a household. Unless these principles are followed, it is not possible to maintain comparability among countries that differ in the way the ownership of establishments is distributed, or in their stage of economic development.

45. For their own use, countries may wish to make some modifications in the ISIC classification. For instance, some countries may wish to supplement the list for agriculture by a distinction between export crops and other crops, or between the production of estates and small-holdings. For manufacturing, some categories may need to be combined because of a lack of information. Conversely, there may be special circumstances calling for the identification of particular categories in more detail.

46. For some national policy purposes it may also be useful to group together establishments engaged in particular key activities. This would usually involve combining the more detailed categories of ISIC in different ways. For example, some countries have found it useful to identify "sugar industries", including growing sugar cane (ISIC 111) and sugar refining (ISIC 311); or "tourist industries", including restaurants and hotels (ISIC 63), car hire firms (ISIC 7116), shops that cater mainly to tourists (ISIC 62) and some transport firms (ISIC 71); or "petroleum industries", including prospecting (ISIC 83), drilling (ISIC 50), pipeline operations (ISIC 71), and refining (ISIC 35). For international reporting, however, the standard ISIC classification should be used.

47. The National Accounts Questionnaire does not classify the output of producers of government services or producers of private non-profit services to households by kind of activity. With possibly very minor exceptions all of these producers fall into ISIC category 9, and the attempt to classify them further by kind of activity is seldom worthwhile. A classification of these kinds of producers by purpose or function may be more relevant for economic analysis. For producers of government services, this classification is given in the separate publication, Classification of the Functions of Government; 5/ a summary of the main headings is given in annex II below. For private non-profit producers, a classification by purpose is given in annex III.

#### B. Statistical units for the production approach

48. SNA identifies five main categories of transactors according to the way in which they participate in the production of goods and services. These are: (a) industries; (b) producers of government services; (c) producers of private non-profit services to households; (d) the domestic services rendered by households. They may engage in a number of different kinds of economic activity. This is true not only of ordinary profit-making industries, but also of producers of Government services, producers of private non-profit services and also includes domestic services of households. Collection of statistics by kind of activity is based on the establishment which serves as the statistical unit where a group of homogeneous production activities usually takes place at a single location. The establishment may be part of an incorporated or unincorporated business, and may be owned or controlled by private individuals, private non-profit institutions or

organs of Governments. Establishment-type units are needed for compiling GDP by the production approach, and they are sometimes helpful for the income approach. The following sections discuss the problems of identifying establishment-type units for industries, producers of government services, and those of private non-profit services. No establishment-type units are defined for households rendering domestic services.

### 1. Establishments of industries

49. The core of industries is made up of establishments the activities of which are financed by sales of their goods and services in the market at a price that is normally designed to cover the costs of production. The establishments should be limited to as homogeneous a group of production activities as possible, usually conducted in one place. The homogeneity that can actually be achieved depends upon the data available, and that in turn depends upon the data available, and that in turn depends upon prevailing accounting practices. For an establishment to serve as a statistical reporting unit, it must be possible to obtain data on its gross output, employment, all intermediate and direct inputs into production, and capital formation. The inputs should include the costs of ancillary activities such as supervision and control, repair and maintenance, supply of electricity, fuel and water, warehousing, accounting, advertising, purchasing, and sales.

50. Establishments are usually most easily distinguished when the different kinds of activities engaged in by a single enterprise are carried out at different locations - different manufacturing plants, stores, plantations or mines. In such cases many of the associated ancillary activities are also carried on at these locations. Head office functions that cannot be allocated to specific establishments can usually be distributed in proportion to each unit's direct costs, or in some other reasonable way.

51. There are some kinds of activities, however, for which isolation of activities taking place at a single location may not be practical. These include transport, construction and often communication and production of electricity and gas. Enterprises engaged in these activities often operate over a wide area, and it is frequently not possible to obtain figures on even the direct inputs used at each location. The same sorts of problem, though not as severe, may arise in distributive trade, services and financial activities. In such cases, if the entire enterprise engages in one kind of activity, it may for most purposes be treated as one establishment. Where regional considerations are important, however, it may be worthwhile for statistical offices to devote the additional resources necessary to identify the locations at which activities take place.

52. Considerable difficulty is often encountered in identifying establishments when different activities are carried out at a single location by a single enterprise and the firm's own accounts do not make an appropriate separation among the different activities. Any separation into different establishments attempted by the statistician in these circumstances is likely to be somewhat arbitrary, and all of the activities are usually considered to be one establishment. The resulting mixed establishment is classified in the kind of activity that accounts for the largest share of its total output. Cases of this sort are especially likely to arise when enterprises are vertically integrated, producing their own raw materials or distributing their own output.

53. For unincorporated enterprises, the establishment unit is usually the same as the enterprise unit. Although such sole proprietorships and partnerships may sometimes engage in more than one kind of activity - making a product and selling it in a shop, for example - they usually do not have the data to separate the different activities into different establishments.

54. Industries should encompass government departments, establishments and similar units mainly engaged in selling the kinds of goods and services which are often produced by business establishments, though as a matter of policy, the prices (charges) set for these goods and services may not approximate the full cost of production. Following the practice of the International Monetary Fund (IMF), such industries of Government are often called "departmental enterprises". Usually, those government departments and similar units which are included in industries are limited to (a) establishments selling most of their output to purchasers outside Government, but on a small scale and with financial accounts integrated with those of their parent agencies to such an extent that separating them out as public enterprises is difficult; and (b) ancillary government agencies producing goods and services of a type often produced by private business, but for use by other government agencies and departments and not for sale to the general public. Government enterprises and public corporations which are entirely, or mainly, owned and/or controlled by the public authorities are termed public enterprises. They are divided into establishments wherever possible and classified by kind of economic activity.

55. Difficulties have arisen in applying these criteria for identifying such government departments and similar units which are classified into industries. This is one of the matters under study in the review of SNA. With respect to the small-scale units selling mainly to the general public, these units are left in Government precisely because the data to separate them are not available, so that it is usually futile to try to set them up as separate establishments. With respect to ancillary agencies producing for other governmental units, the problem is one of identifying appropriate units for this designation. The vast majority of government activities today are similar in most respects to activities commonly carried on by business enterprises, and it is frequently the case that one government agency will perform services for another. Sometimes there is compensation for such services, and sometimes there is not; where there is compensation, its amount is often quite arbitrary, bearing little relation to the market prices charged for similar services by profit-making organizations. It is not at all clear that such activities performed by one agency for another for which compensation is paid should be treated differently from similar activities performed without compensation or by an agency for itself. Because of these ambiguities, no consensus exists on what activities should be included in the category of industries of Government, and many countries do not assign any establishments to this category. It may be used, however, when the national accounts statistician considers that the prices charged for intragovernmental transactions are realistic market prices and that it is not desirable to classify the establishments involved as either producers of government services or public enterprises.

## 2. Establishment-type units of producers of government services

56. Producers of government services furnish common community services, administer the State and carry out its economic and social policy. They normally do not sell their output at prices intended to cover costs, although they may collect

incidental fees (i.e., for museum admissions) and sell by-products (i.e., products made at vocational schools, publications from statistical offices, timber from forest preserves). The costs of producers of government services are largely met by the Government itself, and the Government is considered to be the final consumer of most of the goods and services they produce. It is immaterial whether a unit is accounted for in ordinary or extraordinary budgets or financed from extrabudgetary funds; what is important for classification as a producer of government services is the nature of the activity undertaken.

57. Data in respect of the producers of government services are to be classified according to the kind of economic activity in which they engage, and the purpose served. The statistical units used in the case of the producers of government services should also be establishment-type units which are as homogeneous as is feasible in respect of both the kind of services they perform and the purpose they are designed to serve. In general, it will be necessary to select certain types of governmental administrative units as the establishment-type units for the producers of government services.

58. Some departments of a government may render a single major kind of service aimed at a single purpose, and can be considered as one statistical unit. Other departments of Government may carry on more than one major kind of activity in order to serve a single purpose. In the latter instance, it will be necessary to use subdivisions of departments, perhaps bureaux or sections of bureaux, as statistical units so as to reach a sufficient degree of homogeneity in respect of the kind of activity conducted and the purpose served.

### 3. Establishment-type units of producers of private non-profit services

59. Like the producers of government services, the producers of private non-profit services furnish, on a non-profit basis, social and community services to households which would not otherwise be available. For producers of private non-profit services serving households, the establishment-type unit needed is again one whose activities are as homogeneous as possible. For private non-profit producers, however, it is often the case that the entire organization is engaged in one type of activity. Where this is not true, the feasibility of dividing the different types of activity into different units will depend on how the institution is organized and managed and how its accounts are kept.

60. Private non-profit producers sometimes engage in secondary or subsidiary commercial activities such as rental of housing, operation of restaurants, publishing, and selling goods made in workshops for the handicapped. Where sales receipts from these subsidiary activities normally cover their associated costs and where the activities are a significant part of the institution's programme, they should, if possible, be separated into different establishments so that they can be more appropriately classified by kind of activity. In some cases, such subsidiary activities take place in legally separate corporate entities; there is then, of course, no problem in separating them from their parent organizations.

### C. Definitions for the production approach

61. The concepts of gross output and intermediate production required for the production approach are the same for most kinds of activities. This section presents the general definitions; special considerations are pointed out in the sections relating to each kind of activity.

#### 1. Gross output

62. Establishments may dispose of their products either by selling or bartering them in the market, or by using them themselves. Since the circumstances surrounding marketed and non-marketed output are often quite different, it is useful to discuss the two types separately.

##### (a) Marketed output

63. The gross output of establishments producing for the market is equal to the value of the goods and services they produce during the period of account. This is usually not the same as the value of their sales during the period. There are two reasons for this. First, for goods-producing establishments, some of the goods sold during the period come from stocks produced or purchased for resale in earlier periods, and some of the goods produced or purchased during this period will enter into stocks for sale in later periods. Secondly, for both goods- and services-producing establishments, some of the sales may consist of second-hand goods, such as machinery, buildings, ships or other equipment, or tools, which are still usable, or scrapped fixed assets. Since these goods were not produced by the establishment that sells them, they are not considered part of the gross output of that establishment. Instead, the receipts from their sale are deducted from the establishment's purchases of similar items in the current period. However, sales of scraps and wastes that are by-products of a production process are included in gross output.

64. Marketed output is valued at producers' prices, that is, the prices at which the product is sold against immediate cash payment, net of rebates and other discounts, at the place at which the output leaves the establishment of the producer. The price should include indirect taxes paid directly by the producer in question, whether levied on its output (e.g., sales taxes, excise duties) or in the course of producing that output (e.g., employment taxes, vehicle licences). It should not, however, include indirect taxes levied at later stages in the production process, costs of delivery to the purchaser, or any distributors' mark-ups added at later stages. Indirect taxes are defined in part three below. Changes in stocks of finished goods should be valued at average market prices ruling over the period, but this is normally not possible for work in progress, which is therefore valued at cost.

##### (b) Output of households for own consumption

65. The extent of production by households for their own consumption, particularly of agricultural and fishery products, varies considerably among countries. While such activities occur to some extent in countries at all levels of economic development, they are particularly widespread in the rural areas of Africa, Latin America, Asia and the smaller islands of Oceania. In these countries, households not only grow their own food, but often repair their own houses, make their own furniture, store their own crops, mill their own grain, and perform various other



functions that are carried out by specialist producers in industrialized countries. To promote comparability among countries at different levels of development, SNA includes in the concept of gross output for own consumption the products of those non-market activities that are similar to goods and services that pass through the market in industrial countries.

66. The non-marketed output of households for their own consumption which SNA suggests should always be included in GDP are:

- (a) Crops, livestock and livestock products;
- (b) Firewood, building timber, reeds, grasses, and other forestry products collected;
- (c) Fish, crustaceans and shellfish, and other sea, lake and river products;
- (d) Wild animals and birds caught;
- (e) Water carried;
- (f) Goods such as flour, meat, dried fish, butter, ghee, cheese, wine, beer, spirits, oil, cloth, baskets and furniture made by processing items (a) to (d) above;
- (g) Storage of these items and their transport to market;
- (h) Services of houses occupied by the owner;
- (i) Other goods and services that are also produced for market.

67. This list is not intended to be exhaustive. Where other non-market activities of households are important their output should also be included. This may include, for instance, activities such as the making of bricks or the production of small metalware. It is not generally worthwhile to make estimates for production activities that are undertaken by only a few households, but all countries will need estimates for items (a) and (h) above, and most developing countries will also need to include items (b), (f) and (i). The scope of non-marketed activities that should be included in GDP is one of the topics currently under review.

68. Estimates of non-marketed activities should be distinguished from those for market transactions for the same kind of economic activity. This is useful for many reasons. Estimates of the marketed and non-marketed components of output may be of very different statistical quality. But even more important in most countries where subsistence output is large is the different behaviour of these two components. Usually, government policy actions can reach only the marketed components of output. Combining the estimates of marketed output with possibly larger estimates of non-marketed output, often of quite different composition, may lead to erroneous conclusions about the impact of proposed policies.

69. SNA excludes from gross output the goods and services produced within the household which are seldom or never marketed. Thus, SNA excludes the services of housewives and other family members on household maintenance, as well as the benefits of such activities as recreation and schooling. In recent years, however,

there has been considerable interest in accounting for such activities, and a number of experiments in measuring their output have been undertaken. Although such outputs are not included in GDP in SNA, countries may wish to estimate them (in units of money or time) as supplementary information.

70. The gross output of goods and services for own consumption should, where possible, be valued for inclusion in GDP at producers' prices for similar goods. It often happens, however, that the only prices available refer to village or even city markets, and the question arises whether they should be adjusted to "farm-gate" prices by deducting estimated delivery costs and distributors' mark-ups. This point is discussed further in part two. Where the transport and trade functions are customarily carried out by specialized producers, the adjustment can often be made. Frequently, however, members of the farm family carry their produce to a local market and sell it there, and in these cases the prices they receive in this market should be treated as producers' prices of the combined agricultural, transport and trade activity.

71. There are also other instances where own-account production involves two or more kinds of activities as defined in SNA, and the question arises how far these separate activities should be distinguished in the accounts. This may occur, for instance, in the processing of primary products. In most cases, the attempt to separate the purely agricultural activities from activities that would, if conducted by a commercial enterprise, be considered manufacturing is not very useful for subsistence activity. This is particularly true for the production and processing of livestock products, but may also be the case for other food preparation activities. Such activities, when undertaken by farm households, bear little resemblance to most manufacturing processes. Therefore, the entire chain of activities whose end is production of food for own consumption may be classed in ISIC major group 1 (Agriculture, hunting, forestry and fishing).

(c) Own-account fixed capital formation

72. Production of fixed assets by producers for their own use may be important in both developing and developed countries. All such production is included in gross output. Fixed assets include not only construction, but also tools, instruments, containers, and similar items that have an expected lifetime of one year or more. A major problem here is the proper definition of the establishments concerned. Where it is possible to separate construction activities, for instance, from the other activities of an establishment, it is useful to consider that such activities constitute a separate establishment, which would be classified in the construction industry and not the industry of the parent establishment.

73. Often, however, such a separation is neither feasible nor desirable, especially in a subsistence context. As an example of the problem, consider what happens when a farm family constructs a house in, say, a rural area in Africa. They may cut poles and gather thatching materials (ISIC 1), dig up clay (ISIC 2), mold and bake bricks (ISIC 3), and finally erect the structure (ISIC 5). While it might be possible to identify each of these operations separately and construct accounts that show the family members selling the output of their forestry, quarrying and brick-making activities to themselves in their capacity as house-builders, it would be a highly artificial exercise. Gross output would be inflated by the imputed sales of the family to itself in its successive guises as foresters, quarriers, brick-makers and house-builders. Moreover, the accounts would give a quite erroneous view of rural house-building, because they would imply an unrealistic degree of specialization and technological development. In

practice, the family members move repeatedly between the different kinds of activities in the course of their work and the ancillary activities are all directed to a single purpose, namely, the construction of a house. Since this is what they are doing, common sense requires that this is what should be shown in the accounts, and no attempt should be made to estimate ancillary activities separately. Gross output in rural house-building should therefore consist of the value of houses built.

74. Fixed assets produced on own account should, where possible, be valued at producers' prices of similar goods sold in the market. However, it may frequently be difficult to obtain information on the market price of comparable items. In these circumstances these assets should be valued at cost, including indirect or overhead costs, but not including any allowance for profit margin. In community development projects, where a group of individuals co-operate in the building of huts, roads, bridges etc., without payment for their labour, imputed wages should if possible be included in the cost of the project. The imputed wages may be estimated as the product of the number of man-hours worked on the project and the average remuneration for agricultural labour per man-hour in the locality.

(d) Other non-marketed output

75. The gross output of producers of government services is not sold. It therefore cannot be valued at a market price, and an alternative measure is needed. In SNA, the alternative measure is the cost of producing the output, that is, the sum of intermediate consumption of goods and services, compensation of employees, consumption of fixed capital, and indirect taxes (if applicable). These cost components are defined in section X of part two and in part three.

76. The gross output of producers of private non-profit services to households is defined in the same way as the gross output of producers of government services, and for the same reasons.

77. Goods and services that producers produce and furnish to their employees free or at reduced prices as wages and salaries in kind are included in their gross output. These goods and services are valued at producers' prices for similar goods that are sold, if such a price is available, or otherwise at the cost of production, including overhead but not including an allowance for profit.

## 2. Intermediate consumption

78. Intermediate consumption consists of non-durable goods and services that are purchased by producers and used up in the process of production. Non-durable goods are goods that have an expected life of less than one year. However, small tools and other durable goods with a small value are sometimes treated in producers' accounts as if they were non-durable, and it may not be possible to correct for this.

79. Goods and services acquired for intermediate consumption are valued at purchasers' prices. These are the prices of goods and services in the market at the time and place of delivery to the purchaser. They include transport costs to bring the goods from the producer's establishment to the establishment of the purchaser, as well as any wholesale or retail distribution charges involved. The goods used for intermediate consumption should, in principle, be valued at the moment the items enter into the production process, but this may be difficult to do

in practice, especially when the goods consumed are bought in bulk at infrequent intervals. Intermediate consumption is usually arrived at by subtracting changes in stocks of raw materials and supplies from purchases of these items during the period. Problems of measuring the change in stocks are discussed in detail in part four.

80. It should be noted that the concept of intermediate consumption required for the national accounts is somewhat broader than that called for in the International Recommendations for Industrial Statistics. 6/ That concept includes only agricultural and industrial inputs. In order to derive intermediate consumption in the national accounts sense, it is necessary to add the cost of non-industrial services rendered by others to the census concept.

81. A number of practical problems arise in distinguishing intermediate consumption from compensation of employees, household final consumption expenditures, and gross capital formation. Some of these are discussed in the following paragraphs.

(a) Intermediate consumption and compensation of employees

82. Business establishments often record as intermediate consumption the goods and services they buy to provide to their employees, either free or at reduced prices, as fringe benefits or wages and salaries in kind. When this happens, the cost of such goods and services should be subtracted from intermediate consumption and added to compensation of employees (and household consumption expenditures). The same should be done with outlays connected with dwellings employers own and furnish free of charge or at a reduced rate to their employees. When any charge is made, compensation of employees in kind (and household consumption expenditures) should include only net outlays (after deducting the actual amounts paid by the employee). This treatment is appropriate, however, only when the goods and services in question are clearly of benefit only to the employees. Outlays on health, medical and recreational services that are primarily incurred with the benefit of the employer in view, such as regular medical check-ups, sports facilities etc., should be left in intermediate consumption.

83. Adjustments may also be needed in the opposite direction, when employees have a contractual obligation to make purchases which, in the national accounts, should be treated as intermediate consumption of the employer; for example, under certain contractual arrangements, employees are required to supply their own tools or uniforms. The cost of purchasing the tools or uniforms should be deducted from the wages and salaries of the employees concerned (and from household consumption), and, depending on their estimated life, added to intermediate consumption or capital formation of the employer.

(b) Intermediate consumption and household consumption

84. Travel, entertainment and similar expenses which are incurred by employees in connection with the business of their employer and which are reimbursed by the employer should be treated as outlays on intermediate consumption. However, expenditures on travel to work and similar outlays are classed as household consumption expenditures and not as intermediate consumption, even though they contain an element akin to business expenses. This treatment is adopted because the outlays concerned normally depend upon the decisions of the individuals who incur them and not on decisions of their employers.

(c) Intermediate consumption and capital formation

85. SNA classifies minor repairs as intermediate consumption, but major repairs are considered to be capital formation. Serious practical difficulties may be met in trying to make this separation. The difficulties arise partly because no clear distinction is made between minor and major repairs in most business accounts and partly because of the prevalence of borderline cases. As a general rule, minor repairs cover work undertaken to make good breakage and replace parts of fixed assets deteriorated by wear and tear, while major capital repairs cover work that lengthens the expected life of a fixed asset or significantly increases its productivity. According to this rule, for example, the replacement of an entire drainage system of a dwelling is a major capital repair, while the cost of repairing leaks is a minor repair.

86. All outlays on the current cultivation of plantations or forests or the operation of mines or petroleum wells are included in intermediate consumption. However, outlays on land clearance and reclamation, irrigation works, extension of mining sites and shafts, drilling of oil wells, and planting and cultivating new holdings of fruit-bearing and sap-bearing trees until they begin to yield products are treated as purchases of fixed assets.

87. Expenditures on advertising, market research and public relations designed to improve the goodwill of business units are treated as intermediate consumption. Expenditures on general research, development and exploration directed either towards specific business purposes, such as prospecting for minerals, developing new products or improving production processes, or towards more general ends, such as basic scientific research, are in the present SNA also included in intermediate consumption, even though these outlays may be capitalized in the accounts of business units. The reasons for this treatment are that it is not certain that outlays of this type will yield concrete benefits, and serious problems of valuation and of estimating depreciation would arise if they were classed as purchases of fixed assets. Some modification of this treatment is, however, under consideration in the review of SNA, on the ground that in some kinds of activity (such as petroleum extraction) exploration and development is a continuous process, with results that are on average predictable, and that this activity is a necessary capital outlay before production is possible.

3. Value added

88. In estimating GDP using the production approach, value added for each kind of activity is obtained by deducting intermediate consumption from gross output for that kind of activity. Value added for all kinds of activity is summed to obtain gross domestic product for the economy as a whole. In computing GDP, however, three adjustment items are needed, as shown in table 1. These are the imputed banking service charge, import duties and the net value added tax. These adjustments are part of intermediate consumption of the economy as a whole, but they are difficult to assign to particular consuming units, and thus to distribute to particular kinds of activity.

89. The imputed banking service charge is discussed more fully in part two, in connection with financial services. It arises because banks and other financial institutions generally receive payment for the services they render in the form of interest, which is not treated in SNA as a payment for the sale of a service, or a production cost. An imputation for the value of these services is therefore made

and charged as intermediate consumption of all producers as a group. Since it is not distributed to producers in different kinds of activity, it is necessary to deduct it as an adjustment to aggregate value added.

90. Import duties, like any other taxes, are part of the purchasers' price of goods and services purchased for intermediate consumption. However, since they are considered to be levied on foreign rather than resident producers, they cannot be distributed by kind of activity.

91. Value added taxes could be distributed by kind of activity, and some countries do so. However, since this form of indirect taxation is of primary importance in the member countries of the European Community, adoption of the Community's recommendations for its treatment is desirable in order to maintain international comparability. A detailed discussion of this treatment may be found in the Community's publication on the European System of Accounts (ESA), 7/ which should be consulted in cases where this form of taxation is important. For the measurement of value added, ESA employs the net treatment of value added tax: value added tax refunded on purchases is deducted from value added tax paid by each producer. Net value added taxes for the economy as a whole are recorded as an adjustment to aggregate value added, as is done in table 1; value added of individual kinds of activity is recorded, excluding all value added taxes. For comparability, the National Accounts Questionnaire adopts the same treatment. In countries that do not have this form of taxation, of course, this adjustment is not needed.

## II. AGRICULTURE, HUNTING, FORESTRY AND FISHING

92. This group includes all establishments in ISIC major division 1. The activities included are agricultural and livestock production (ISIC major group 111), agricultural services (ISIC major group 112), hunting, trapping and game propagation (ISIC major group 113), forestry and logging (ISIC division 12), and fishing (ISIC division 13). Problems often arise in distinguishing these activities from one another, as well as from manufacturing, transport etc. Some of these problems are discussed in connection with each major group below. Each section then goes on to discuss sources and methods for that group.

### A. Agriculture and livestock production

#### 1. Content and general considerations

93. Agricultural and livestock production includes growing of field crops, fruits, nuts, seeds, tree nurseries (except forest trees), vegetables and flowers, tea, coffee, cocoa and rubber; raising of livestock; and production of milk, wool, honey etc. Combinations of agriculture and livestock production with forestry, hunting or fishing activities are common. Farmers may supplement their income by fishing for their own consumption or for sale; timber tracts adjacent to agricultural holdings are frequently owned and exploited by farmers; and hunting and trapping are also often undertaken by farmers. The possibilities and desirability of separating these activities are discussed below in connection with each of the supplementary kinds of activity.

94. The gross output of agricultural crops during a period of account should cover the value of the crops harvested during the period which are (a) sold (for money or through barter), (b) used as payments of wages and salaries in kind, (c) consumed by the farmer's own household or (d) added to stocks. The gross output of livestock and livestock products during a period of account is the sum of the value of the livestock disposed of for slaughter or exported, the value of the output of livestock products such as milk, eggs and wool, and the value of the physical change (plus or minus) in herds of livestock during the period, adjusted for livestock imports, if any. Gross output of livestock products should not, in principle, include meat products. Meat is a product of the food processing industry, and is discussed in section IV. However, in the case of meat produced for own consumption on farms, it may not be worthwhile to try to separate meat production from livestock production.

95. The period of account used in SNA is the calendar year. However, agricultural statistics are, in most countries, recorded on the basis of the agricultural year, which often - especially in the southern hemisphere - does not coincide with the calendar year. Adjustments are therefore needed to convert the data from agricultural years to calendar years. Data for months or at least calendar quarters are frequently available for the output of livestock products, but are not likely to be available for the output of crops or for inputs into agriculture. One possibility is to convert the data to a calendar year basis by taking an average of the figures for the adjacent agricultural years which include the calendar year in question. As an alternative, the total production of crops may be counted in the calendar year in which the majority of the crops are harvested. This method has been adopted by the Food and Agriculture Organization of the United Nations (FAO) for its statistics of crop production. When the harvest falls mainly within the first calendar year included in the split agricultural year, the method adopted by FAO ensures approximate correspondence between inputs and outputs within the same accounting year, since the inputs also take place in that calendar year. However, if the harvest falls mainly in the second calendar year of the split agricultural year, no technical relation can be established between inputs and outputs within the accounting period. The procedures applied in converting output from agricultural to calendar years should be described in footnotes, so that users of the data will know whether outputs and the corresponding inputs are recorded in the same or different calendar years.

96. In general, the agricultural holding as defined for agricultural statistics and used in censuses of agriculture corresponds to the establishment as defined in SNA. The standard definition of a holding is all the land that is used wholly or partly for agricultural production and is operated as one technical unit by one person, alone or with others, without regard to title, legal form, size or location. 8/ Agricultural holdings also include establishments producing livestock or livestock products, even if they have no land attached to them and are located in urban areas.

97. In a few countries all agricultural and livestock holdings are treated as though they form part of a single "national farm". Sales by agricultural holdings of goods that enter into the intermediate consumption of other agricultural holdings are then excluded from the gross output and intermediate consumption of agriculture. This approach may simplify the problems of estimation, although it is still necessary to estimate (a) the gross output of agricultural commodities disposed of to uses other than the intermediate consumption of the agricultural industry itself, and (b) the intermediate consumption of goods and services acquired from other industries. The disadvantage of the national farm approach is

that the information contained in the national accounts on gross output and intermediate consumption cannot be reconciled with data from farm censuses or surveys, which generally relate to individual holdings. For this reason it is preferable, so far as possible, to use the individual holding as the statistical unit for agriculture in the national accounts. As will be noted below, however, estimation on the basis of the agricultural holding as a statistical unit is not always feasible, and other approaches may be needed.

98. There are a few special considerations that should be taken into account in measuring the gross output of agricultural and livestock production. First, standing crops are not included as part of gross output. Amounts received for sales of standing crops for delivery at the time of harvest should be considered financial advances rather than current sales; when delivery is made the sale should be recorded and the advance extinguished. Secondly, as in any other activity, SNA does not include in gross output crops that are harvested and used as intermediate consumption on the same holding during the same period of account, as for instance hay and grain fed to livestock. However, data to permit this exclusion are not usually available in developing countries, so that it may be necessary to include the total amount of crops harvested in gross output, and to include the value of seeds, fodder etc. that were grown on the same holding during the period concerned in intermediate consumption.

99. Own-account construction and alteration of structures, roads or wells, and own-account extension of vineyards, orchards etc. until they become productive should be included in gross output. Where separation is possible, however, such outputs should be classified as construction rather than agriculture. In order to make such a separation, it must be possible to measure not only the gross output of construction activities, but also the intermediate consumption involved.

100. Certain simple processing activities undertaken on farms should also be included in gross output. These consist mainly of basic processing of staple food crops - husking rice, drying cassava, shelling ground-nuts, threshing wheat etc. They also include the processing of cash crops on plantations (such as copra, tea, coffee and cocoa) and of other agricultural goods on farms (such as milk into butter and cheese, grapes into wine, or sugar-cane into raw sugar and molasses). As carried out on the farm, these activities are quite different from normal manufacturing, not involving any specialization among workers. It may be quite artificial in these cases to try to set up separate manufacturing establishments to cover them. In order to do so, it is necessary to obtain as a minimum information on the quantities processed and on the normal inputs per unit of processed goods. Where such information is not available, the output of the processing activity should be classified as part of gross output of agriculture. This is especially relevant for output for own consumption.

## 2. Main sources

101. The main sources used to estimate agricultural output and its costs include censuses of agriculture, household sample surveys and nutrition surveys, farm management surveys, surveys of large and medium-sized farms, special surveys of small farms, livestock surveys, reports of marketing boards, co-operatives and large factories, crop statistics, and statistics on prices received and paid by farmers. Information in population censuses, industrial production statistics, external trade statistics etc. may also be useful. This list is not exhaustive, and some of the sources listed are alternatives. Large-scale sample surveys may be



used as substitutes for agricultural censuses. Comprehensive integrated annual rural surveys may obviate the need for separate surveys of large and small farms.

(a) Agricultural censuses

102. Censuses of agriculture are large-scale statistical operations which few countries are able to undertake more frequently than approximately every 10 years. The main purposes of such censuses are to provide as complete data as is feasible on the major aspects of agriculture for benchmark years, and to serve as a frame for current sample surveys. Nevertheless, the data collected in such censuses may not be appropriate for estimating gross outputs and inputs of crop and livestock production. Sometimes, they furnish information on the quantity of land sown and harvested for various crops, while information on quantities of crops harvested is limited to the most important crops or not covered at all. Supplementary data on quantities harvested per unit of area sown or per tree may be gathered by means of small-scale sample surveys undertaken in connection with the censuses. The data on livestock in agricultural censuses are often confined to the number of each kind in existence, sometimes distributed by age groups.

(b) Large-scale sample surveys of agriculture

103. Large-scale sample surveys of agriculture are an alternative means of collecting benchmark data on agricultural activities. In order to limit the burden of collection and processing, such surveys may be limited to large and medium holdings only. They may be conducted either independently or as part of multi-purpose rural surveys designed to provide basic data on all essential aspects of the rural population, such as household composition, occupation, consumption, land use etc.

104. Topics covered might include (a) the land area planted with different field crops and with sap- or fruit-bearing trees, (b) yields of farm crops and trees, (c) household consumption of food (from own production and purchased), (d) prices paid for items of purchased food and items of intermediate consumption in crop and livestock production, (e) quantities sold and receipts from sales, and (f) use and ownership of capital assets. For livestock production, information may be collected not only on the quantity of the existing stock of poultry and the number of horses, cattle, pigs, goats, sheep etc. by age group, but also on animals sold, purchased and slaughtered for own consumption and the quantities of the main livestock products sold. Such sample surveys may also provide information in quantity and value terms on the distribution of the output, for instance, to marketing boards, for sale on local markets or for home consumption. Information on items of intermediate consumption, such as animal feeds, fertilizers, insecticides, fuel and electricity, hire of machinery, and insurance may be obtained, together with information on the amount and type of farm equipment and on capital expenditures.

(c) Farm management surveys

105. The best sources of reliable basic data on intermediate consumption in crop and livestock production are often farm management surveys, also known as sample surveys of farm income and expenditure. Such surveys are usually based on standardized accounting records kept by a sample of farms, combined with periodic interviews during the accounting period. They have to be carefully planned and executed in order to obtain exact and representative information, and therefore require a well-developed survey organization and trained interviewers.

106. Because of the cost involved, relatively large-scale sample surveys of farm income and expenditure can only be conducted at infrequent intervals, say every 5 or 10 years. They should yield relatively detailed and reliable estimates of intermediate consumption for the benchmark years and also provide a basis for making annual estimates between these years from less complete data. The benchmark surveys may be designed to yield data on the value and quantity of each major intermediate input used, per unit area sown and cultivated for field crops, per tree or vine for fruits and saps, per head for livestock, and per tractor or unit of other agricultural machinery for fuels and spare parts. The figures on unit inputs would in themselves be useful for evaluating the efficiency of agricultural holdings differing in size, type, location, and so on.

(d) Supplementary surveys

107. Often small farms are not covered either in large-scale sample surveys or in farm management surveys. When this is the case, it is desirable when feasible to conduct separate periodic sample surveys of these small farms in order to obtain benchmark data. Relatively large resources in terms of money and statistical manpower are needed to undertake such surveys, however, because of the large number of farms involved and their lack of systematic accounting.

(e) Other sources

108. Countries obviously have more comprehensive and detailed basic data in the years when they take censuses and large-scale sample surveys of agriculture than in other years. Statistical information available for other years may come from a wide variety of scattered sources, including basic data on the gross output of main crops collected by agriculture ministries, sales to marketing boards, exports, and estimates of domestic consumption from household surveys. Current data may be available on purchases of agricultural products by major wholesalers of agricultural products, slaughterhouses and processors. These sources may be used to extrapolate the more comprehensive estimates of crop and livestock production for the years of agricultural censuses or large-scale sample surveys to other years. For intermediate consumption, estimates for non-census years are sometimes based on ratios established from the most recent special surveys on cost structure. Some information may also be available on sales of fertilizers, pesticides etc. either from large producers or from import statistics. These scattered sources are detailed in the discussion of specific outputs below.

### 3. Gross output

(a) Crops

109. For most crops, it is usually most practical to estimate the value of gross output by estimating the quantity and price separately.

(i) Quantities

110. As many crops as possible should be covered by direct information on output. The quantities of field crops harvested may be obtained by multiplying area sown, or preferably area harvested, by information on yield per unit of area for each type of crop obtained from annual sample surveys of agriculture. Similar procedures may be used for tree crops. If agricultural surveys do not cover minor crops or fruits and vegetables, separate estimates for these items may sometimes be made using data from household surveys.

111. Estimates of the disposal of the gross output of crops among the various final and intermediate uses are desirable, not only because information on disposals is needed in itself but also because the estimates serve as a check on the estimates from the production side. A combination of the two approaches - that is, from the production and disposal sides - is often used to take full advantage of all available information and to obtain estimates that are as complete as possible on the gross output of crops disposed of (a) to marketing boards, to co-operatives and large factories, (b) for sale on local markets, (c) for own consumption, and (d) for use as seed or animal feed on the farm, either in the current or succeeding periods.

112. In many developing countries there are marketing boards for all important agricultural crops and particularly for those that are mainly exported. Data on the quantity and value of purchases by marketing boards are readily available from the boards concerned. The quantity and value of crops purchased by co-operatives and large factories should also be relatively easy to obtain. The information obtained from these sources is usually quite reliable and the prices they pay are as close to producers' prices as it is possible to get in practice. The prices may include an element of transport cost, but this is usually very small and it is not worthwhile to try to make any adjustment for it, since it would be quite arbitrary in any event. If the prices paid by such producers do not include the cost of bags or other containers, a separate estimate of their value is needed, and should be included in the gross output and intermediate consumption of agriculture.

113. Estimates of the domestic consumption of crops may also be based on household consumption surveys. Estimates of the gross output of vegetables and fruits and minor cash crops such as flowers and herbs can also sometimes be made on the basis of per capita consumption figures from household surveys, preferably separately for urban and rural households. If the vegetables or fruits are seasonal, annual per capita consumption can be estimated by multiplying per capita consumption per week by the number of weeks during which they are available. Total annual domestic consumption may then be estimated by multiplying the annual per capita figures by population.

114. Where gross output is estimated indirectly by means of data on consumption, it is necessary to convert quantities of processed products consumed into quantities of unprocessed ones produced: consumed quantities of rice into gross output of paddy, consumed quantities of shelled ground-nuts into gross output of unshelled ones etc. Conversion factors for this purpose can usually readily be obtained from agricultural experts. FAO has also established conversion factors that can be used as a guide. Adjustments would also be needed for any exports or imports, and possibly intermediate demand of the processing industries.

115. Gross output of crops should exclude losses that occur during harvesting. Losses that occur after harvesting but during the same accounting period as that in which they are produced should be included in output, but treated as intermediate consumption of agriculture processing industries and/or wholesale and retail trade, depending on where the losses occurred. Where such losses are greater than normal, for example owing to catastrophes, however, they should be considered capital losses rather than intermediate consumption. It may be possible to make approximate estimates of normal losses on the basis of small-scale studies of the proportions of the various crops that are commonly damaged or destroyed during harvesting, preparation for the market or while in storage. Losses in stored crops in accounting periods after that in which they were produced should in principle be treated as capital losses. In practice, however, it is not likely that it will be

possible to draw a distinction between losses in stocks of crops harvested during the current accounting period and those harvested earlier, except where the latter are substantial and the losses are also large.

116. For statistical reasons it is often necessary to equate gross output with deliveries, assuming that there is no wastage and no change in stocks. When this is done, it should be borne in mind that any item obtained as a residual will then contain all the errors caused by omitting wastage and change in stocks. For example, figures obtained from marketing boards etc. will refer to actual deliveries, and so will estimates of own-account consumption based on household surveys. If sales at local markets are then obtained as a residual by deducting deliveries to other uses from gross output figures collected in sample surveys, all the wastages included in the gross output figure, together with all changes in stocks, will be reflected in this residual.

(ii) Prices

117. In many developing countries, agricultural marketing is not well organized. Farmers may use the entire range of distributive channels: farm-gate sales, local village markets, wholesale and retail markets, and sales of export crops to marketing boards. In order to obtain prices that approximate producers' prices under these conditions, information on the marketing channels used for different crops and other agricultural outputs is needed, and average prices should then in principle be collected relating to the channels actually used: producers' prices at the farm-gate or at village markets, and prices obtained by farmers when they sell directly or through intermediaries to wholesalers, co-operatives and marketing boards. Where farmers supply their own transportation and distribution, the attempt to separate out a trade and transport component is usually neither practical nor useful; the prices that producers receive when they sell their output should be used, regardless of where and on what basis the sale takes place.

118. However, it is often very difficult to measure prices in rural markets. The price for a particular commodity may vary from stall to stall and for different periods of the day in the same market place. Therefore, if any other usable prices are available, it is preferable to avoid relying on prices in rural markets.

119. Weighting the prices to obtain an average for the entire country and the entire year also presents a problem. The prices should ideally be weighted by quantities sold by the producers in each area and each season, through each marketing channel. In practice, detailed sales figures of this type are not likely to be available. Where the major part of each crop is produced (i.e., harvested) over a relatively short period and in a few well-defined areas and sold through a single channel such as a marketing board, national average prices can be satisfactorily calculated as the average of producers' prices recorded in the main growing areas during the peak harvesting season, weighted by quantities grown in each area. Sales that occur in other areas often turn out to be not relevant to the calculation, either because the crops are sold by traders and not by producers, or because only small quantities are involved; sales that occur at other periods will include storage costs, which strictly speaking are not part of agricultural production.

(iii) Subsistence output

120. In most developing countries, farmers produce an enormous range of crops for their own consumption, and it will rarely be feasible to make proper estimates for every item. However, a relatively small number of crops - perhaps a dozen - will usually account for the bulk of total subsistence output and the aim should be to get good quantity and price data for these items.

121. Household inquiries of the size and complexity needed to make proper estimates of subsistence crop consumption cannot usually be undertaken on an annual basis. They are generally used to collect benchmark data, and current year estimates are obtained by extrapolating benchmark year per capita consumption using some index of rural population growth. This is a logical procedure since the available evidence suggests that subsistence consumption per head of the farm population tends to remain fairly constant. However, extrapolation with population growth rates gives only the underlying trend, and subsistence output in any particular year will depend on climatic factors.

122. Except in very bad years, the level of subsistence consumption for all crops taken together may remain fairly constant, but the product mix may vary significantly. In most African countries, for example, farmers keep plots of cassava, which are harvested only when preferred foods such as maize or rice are in short supply. Adjustments for year-to-year variations in the various different subsistence crops should ideally be based on direct estimates of annual crop production, but these are not available in many countries and are rarely very reliable. Usually the national accountant will be forced to make a more or less subjective assessment of year-to-year changes from data on food imports and exports, retail price movements, purchases by official marketing boards, and descriptive reports from agricultural and health officials or local administrators.

123. SNA values crops farmers grow for their own consumption at the relevant producers' prices. For use in compiling GDP, it is usually preferable that the prices used to value subsistence crops should reflect the actual marketing arrangements. If in practice farmers sell a particular crop at retail markets, then the retail market price may be used, without adjustment, to value that particular crop. Nothing is gained by deducting estimated trade and transport margins to approximate a farm-gate price for a crop that is never sold at the farm gate. Where retail market prices are not available, subsistence output may have to be valued at whatever prices are used to value the portion of output that is marketed.

124. Questions often arise concerning food processing activities undertaken in households for their own use, including such activities as the milling of maize, wheat and barley, the husking and polishing of rice, the drying of plantain and root crops, the extraction of vegetable oils and the preparation of drinks such as beer and arrack. The most difficult decision that must be made here relates to the boundary between what is to be included in agricultural output and what is to be considered an ordinary household activity, part of normal meal preparation. Common sense suggests that these products should be counted at the stage of processing at which they normally enter local markets. If grain is sold as grain, not flour, and the milling is an ordinary meal-preparation activity in non-farm as well as farm households, then what should be counted is the output of grain, at the price of grain in local markets. But if what is commonly sold is flour, flour is what should be priced. Whether it is useful to go beyond this and try to assign part of the value of processed foods to agriculture and part to manufacturing will depend

on local circumstances and the possibilities of obtaining suitable data, but in most cases the answer would probably be no. Where the product in question can only be consumed in the processed form, the division into two activity classifications has little use.

(b) Livestock

(i) Quantities

125. Comprehensive data on the type and age of livestock on agricultural holdings are basic both to the estimate of livestock disposed of for slaughter and export and to the estimate of the changes in the quantity of various types of livestock. Such data on the more important types of livestock may be gathered in livestock censuses or large-scale sample surveys. Annual statistics on livestock inventories may also be available from tax or veterinary offices and ministries of agriculture. However, such sources often omit poultry.

126. Where annual figures on the number of livestock on agricultural holdings are available, these statistics, together with data on foreign trade in livestock, can be used in estimating the net increase in livestock arising from domestic production. (Extraordinary losses owing to natural calamities should be treated as capital losses, not as a factor entering into the calculation of the change in stocks.)

127. In many developing countries, however, the number of livestock are available only from agricultural censuses which may be held every 10 years or so. The annual change in livestock numbers must then be extrapolated using reproduction, slaughter and export rates. The change in the number of each kind of livestock during a given year attributable to domestic production may be estimated as the number of live births each year per head (the reproduction rate), times the total number of livestock at the end of the previous year, less the number of live animals exported and the number of animals slaughtered during the current year. The normal reproduction rates for each type of livestock can be obtained from veterinary services.

128. Estimates of the number of animals sold for slaughter, exported and slaughtered for own consumption may sometimes be obtained from annual sample surveys of agriculture or special livestock surveys. When this source of information is not available, the total number of animals slaughtered may be estimated as a percentage of the total number of livestock of each type - the "take-off" rate. The annual take-off rates depend on local conditions. They may also vary significantly from year to year depending on the availability of fodder, marketing of imported meat etc. Some countries apply take-off rates of 7-9 per cent for cattle and 20-25 per cent for sheep and goats; appropriate rates in any particular case may be determined by small-scale surveys or by consulting agricultural experts. Information on the number of livestock slaughtered for sale may be gathered from abattoirs, marketing boards and veterinary inspectors, and the number of livestock slaughtered for own consumption can then be derived as a residual.

129. Where no other information is available, the number of livestock slaughtered both for sale and for own consumption is sometimes assumed to be equal to the number of hides and skins produced, and the latter is estimated on the basis of export statistics. However, if no information exists on the proportion of hides and skins that are used by the farmers themselves or that do not reach the export

market for other reasons this method is highly dubious, and it should therefore be considered a last resort.

(ii) Prices

130. The prices used for valuing livestock should approximate producers' prices as closely as possible. Among the prices most commonly used are (a) average auction prices, (b) prices paid by the main abattoirs for cattle and local market prices estimated by agricultural officials for other livestock and (c) average prices received by farmers for sales at primary markets. In most countries there are marked differences in livestock prices from one region to another and the estimates should therefore be made separately for each of the main producing areas. A study of marketing channels may be needed to gather information on the number of animals marketed through various channels and the prices at various stages.

131. If prices are available for cattle purchased for slaughter by abattoirs these prices may be used (after adjustment for trade margins, if relevant) in valuing slaughter both for sale and on own account. These prices may differ for different quality grades, such as "choice", "standard" and "commercial" grades, and for urban and rural abattoirs. Cattle slaughtered for own consumption may, for instance, be valued at a weighted average of the prices for "standard" and "commercial" grades. For sheep and pigs adjustments in prices for quality differences are likely to be impractical in most cases, except where prices received on local markets by small farmers are known to be lower than those paid by abattoirs. It may be necessary to use other sources of information, such as household surveys or spot checks, to obtain price data for valuing own-account slaughtering of goats, camels etc. For poultry, prices on local markets may be used.

132. In most countries the only price statistics available refer to transactions in mature beasts, usually when they are sold for slaughter. They are therefore too high for valuing the whole increase in herds which also include immature animals. Arbitrary adjustments may be made by assuming that the average price for the herd as a whole is a certain percentage, say 60 per cent of the average primary market price. The percentage will depend upon the proportion of mature and immature animals, which may be estimated by small-scale studies or by consulting agricultural experts.

(c) Livestock products

133. The value of livestock products is usually estimated on the basis of quantities produced, combined with appropriate average annual prices.

134. Data on the quantity and value of milk sold may be collected from dairies and other milk processing plants, and data on the sales of other animal products such as wool and eggs may be obtained from marketing organizations. Alternatively, estimates of gross output of livestock products may be based on data on the number of various kinds of livestock held and average yield of milk, eggs, wool clip etc. per animal. For instance, in order to estimate the total production of cow's milk by this method, the starting point is an estimate of the size of the total herd. It then may be assumed that cows account for a certain percentage, usually less than 50 per cent of the total, and that a certain portion of the cows, say one third, are producing milk at any one time. Average milk yields per cow may be obtained from ministries of agriculture, veterinary services etc. Egg production may be estimated by applying an estimated laying rate calculated by agricultural technicians to the estimated population of mature birds. Estimates of egg

production may also be based on consumption statistics by using data from household budget surveys or nutrition surveys. When the estimate is based on consumption data, an estimate of eggs used in hatching needs to be added. Such eggs may account for a large part - 30 to 50 per cent - of all eggs produced. The gross output of livestock products such as eggs and milk should be reckoned net of losses and wastage that occur before the products are ready for marketing.

135. Livestock products should be valued at producers' prices. The best approximations to producers' prices available may be prices paid for bulk purchases of milk by main bottling plants, prices offered by main marketing boards for various products, or export unit prices for hides and skins.

136. Separate estimates of own-account production of livestock products may be made either on the basis of household surveys or by multiplying data on the farm population by an estimate of the per capita own-account consumption of various livestock products. Sample farm income and expenditure surveys sometimes may furnish detailed data on the value and quantity of milk, eggs, wool clips etc. sold and on quantities consumed by the farmers themselves. Nutrition surveys may cover home-produced food products consumed.

#### 4. Intermediate consumption

137. Data provided in small-scale sample surveys of farm income and expenditure, coupled with data from benchmark inquiries, should provide a basis for making annual estimates of the intermediate consumption of agricultural holdings. If there are no survey data, less direct methods must be used. Estimates of the quantity of various inputs may be based on relationships of inputs to capital stock derived from benchmark inquiries or from special investigations. Thus, for example, the quantity of seeds, insecticides and fertilizer used per unit of area sown in benchmark years may be multiplied by the area sown in the current year; the quantity of animal feed used per head of livestock may be multiplied by the number of livestock held in the current year; the quantity of fuel used per tractor may be multiplied by the number of tractors in the current year, and so forth. Where this approach is used it will probably be necessary to include in intermediate consumption (and therefore also in gross output) seeds, fodder etc. which are produced and used on the same farm during the accounting period, rather than following the SNA definition that omits these items. The quantities of the various items of intermediate consumption estimated in this way should be valued by means of current data on purchasers' prices obtained from retailers or producers' co-operatives.

138. Seed, fertilizers, pesticides etc. may be used in one period of account for crops that are harvested in the following year if a calendar year accounting is used. The value of these items, whether purchased or self-produced, should in principle be allocated to intermediate consumption of the period of account in which they are actually used, although this may not always be possible. Depending upon the treatment adopted, the timing of the data on intermediate consumption and on output may not coincide. However, the distortion may not be great if abrupt changes do not occur in the operations of holdings or in the weather.

139. Wherever possible, the totals for intermediate consumption derived from agricultural sample surveys should be checked against information from other sources. For example, expenditures on fertilizers and insecticides may be checked against supplies from imports and domestic production, revalued at purchasers'



prices, and the estimated purchases of seed may be checked against sales by main suppliers.

140. Where direct estimates of intermediate consumption are not feasible, such information on the supply from domestic output and imports of the goods and services may be used as the sole source. Wholesalers or agricultural producers' co-operatives may supply information on the value of fertilizers, insecticides and animal feeds sold, oil companies on the supply of fuel to farms, electricity companies on the supply of power, bag-making companies on the sales of bags, and ministries of agriculture on artificial insemination and other minor items. Estimates of veterinary services may be based on information on the number of veterinary practitioners, multiplied by their estimated average income, with a percentage added to cover drugs and other expenses. Expenditures on small agricultural implements, such as hoes, rakes, scythes etc., may be based on import and domestic production statistics, with an addition for trade and transport margins and an allowance for implements sold to non-farm purchasers. Expenditures on spare parts and maintenance of machinery may be calculated by multiplying estimates of the number of machines by the average cost of spare parts and maintenance for each type of machinery. The value of tractor services purchased from owners of tractors outside agriculture may be estimated on the basis of information from ministries of agriculture on the number of tractor-hours purchased and the cost per tractor hour.

141. The composition of the intermediate consumption of agriculture depends on the technical level of the production process. Mechanized agricultural production requires spare parts and the repair and maintenance of machinery and consumes fuel oil. Since holdings which are mechanized to various degrees exist together with unmechanized holdings in many countries, a classification into modern and traditional holdings or estates and other holdings may be useful for purposes of estimation. Whether this is desirable and feasible, of course, depends on the available statistical information and the degree to which different modes of production coexist.

## B. Agricultural services

### 1. Content and general considerations

142. Agricultural services cover services provided to agriculture on a fee or contract basis. These services include pest and disease control, harvesting, grading and packing crops, artificial insemination services, and the provision of agricultural equipment along with operators. Agricultural services do not include the renting of agricultural equipment without operators (ISIC 833), veterinary services (ISIC 933) nor transportation of agricultural commodities (ISIC 71).

### 2. Gross output

143. Data on the total gross output of agricultural services are sometimes collected in censuses and surveys of establishments. Annual reports of government or semi-governmental agencies and of co-operative units engaged mainly in agricultural services are also valuable sources of information. Estimates of the output of government-owned units may be based on data from government accounts or provided by the units themselves. Special surveys for at least benchmark years will, however, be needed in most cases, in order to capture the full range of

output of establishments classified in this activity. Uncharacteristic products are important because of the seasonality of the main work done, such as letting agricultural machinery with operators, grading tobacco, packing fruits and the like. In the off season the same establishments may be involved in non-agricultural work, such as construction, forestry and transport. Where only benchmark year estimates are available, annual estimates may be extrapolated on the basis of information on changes in employment and wages and salaries.

### 3. Intermediate consumption

144. Special sample surveys for benchmark years are usually needed to obtain data on the intermediate consumption of agricultural service establishments. Estimates for other years may be based on the assumption that the relationships of inputs to outputs have remained unchanged since the benchmark year: the benchmark year relationship for each type of intermediate consumption is applied to the output quantity of the current year to obtain an estimate of intermediate consumption in benchmark year prices, and these estimates are then inflated by appropriate price indexes to arrive at intermediate consumption in current prices.

#### C. Hunting, trapping and game propagation

##### 1. Content and general considerations

145. Hunting, trapping and game propagation excludes hunting for sport, although for practical reasons part or all of such hunting may have to be included. As was mentioned above, hunting and trapping are frequently combined with agriculture, and it may then be difficult to separate these activities from agriculture proper. It is not worth trying to do so unless the hunting activities are important, and cost as well as output data are available for them.

##### 2. Gross output

146. Estimates of the value of the gross output of hunting and trapping may sometimes be based on data on the number of animals caught, coupled with appropriate price information. Most Governments attempt to regulate hunting, at least for the more important types of game, and the controlling agencies sometimes make annual estimates of the number of animals killed based on the number of licences issued. Usually, official estimates of this kind need to be adjusted for poaching or uncontrolled hunting. Based on knowledge of local conditions, it may be necessary to increase the number of licenced killings reported by controlling authorities by a significant percentage. Upward adjustments can be made after cross-checking with statistics on imports of hunting cartridges and trade in animal skins. To cover hunting of smaller animals and insects, direct surveys of some kind are usually needed. Household budget data and nutrition surveys can be used in estimating the consumption of snails, frogs' legs etc. Output of small animal hunting can also be estimated on the basis of surveys of the average time spent. The output will then be expressed in terms of hours rather than number of animals, and will need to be combined with estimates of the average catch per hour or per day.

147. Estimates of the numbers of animals killed may be converted into quantities of meat and skins produced, which may then be valued at prices for game in rural

markets, or the prices at which the catch is sold wholesale to traders. Where no data are available for game meat, prices for comparable products, such as mutton or goat meat, may be used.

148. A considerable part of the output of hunting and trapping is consumed by the hunters themselves, and it is usually very difficult to gather data on this part of gross output. It may, however, be worthwhile to include specific questions on hunting for own consumption in sample surveys of household income and expenditure.

149. In principle, the value of the catch of individuals hunting for sport should be excluded from the gross output of hunting, and expenditures on equipment, ammunition etc. for sport hunting should be classed as household consumption expenditure. In practice, the distinction between hunting as a sport and hunting for commercial purposes, including own consumption, is difficult to make both conceptually and because of lack of data. However, the government agencies that issue hunting licences may sometimes be able to furnish information that makes it possible to exclude the output of at least organized commercial sport hunting from the total output of the activity.

150. Game propagation is mostly a government activity. It should be treated as a public enterprise in agricultural services only if conducted on a commercial basis; otherwise, it should be classified as an activity of producers of government services. The information needed for estimating gross output should be available from the records of the agencies involved.

### 3. Intermediate consumption

151. Intermediate consumption of hunting and trapping consists mainly of ammunition and repairs and maintenance of hunting weapons, and sometimes vehicles; purchase of hunting weapons not used for sport hunting should be included in gross fixed capital formation, and not in intermediate consumption. Information on purchasers' prices of some of these items may be available from the supply side. However, satisfactory information on the total cost structure of the activity can only be obtained through special sample surveys. Since it is not practicable to undertake such surveys on an annual basis, current estimates of intermediate consumption in hunting and trapping may be extrapolated from benchmark year figures by means of indicators for a few items, such as hunting ammunition, or it may be assumed that the input-output relationships remain unchanged. Annual information on intermediate consumption in government game propagation is usually available in government accounts or in the annual reports of the agencies in charge.

#### D. Forestry and logging

##### 1. Content and general considerations

152. The main output of forestry and logging consists of the timber felled, prepared into logs and transported by logging establishments to the purchasers of the timber. Forestry establishments also engage in a number of additional non-characteristic activities. Clearance and afforestation of timber tracts by logging and forestry units, which should be considered as own-account construction, is one such activity; it should be recorded in the national accounts at the time it takes place. Forest tree nurseries and establishments mainly engaged in providing forestry services such as the marking and measuring of timber and planting and

conservation are also included, as are other own-account construction activities undertaken on forestry holdings. The value of the growth of standing timber, however, is not now considered to be part of either the gross output of forestry or the increase in stocks of forestry products, although this treatment is currently being reconsidered. Independent contractors engaged in trucking timber who do not perform any cutting operations should be classified under transport, not under forestry and logging.

153. Logging, including the transport of the logs, may be conducted in combination with sawmills, pulp mills or other converting establishments, and complete separate data may not be available from the records of the enterprises involved. Where such data are not available, the establishment should be classed in the kind of activity (logging or manufacturing) judged to make the greatest contribution to value added.

154. The gathering of wild berries, fruits, seeds and thatching grass; charcoal burning; and rough-cutting of timber for firewood or building poles are also considered to be forestry activities. In many developing countries, particularly in Africa, foraging for wild berries, roots and the like is a fairly important activity, both in terms of the time spent and its contribution to food requirements.

## 2. Gross output

155. The best sources of current estimates of gross output of forestry establishments are annual sample surveys of lumbering establishments and of households mainly engaged in forestry activities. Such surveys should cover the gross output, in value and quantity, of timber of various types, firewood and charcoal, and, if possible, also of uncultivated materials gathered, such as wild rubber, resins etc. The sample surveys should also cover own-account construction and intermediate consumption, including the value of purchased materials, spare parts, fuels and administrative services and the quantities of various fuels consumed. Forestry censuses, which may be undertaken at 5 or 10 year intervals, should be used as frames for these sample surveys. Such censuses usually provide information at least on the area of timber tracts and the quantities of standing timber, and sometimes on the output of various types of timber. The data provided in forestry censuses on the total area of timber tracts or the gross output of timber may be used as control totals in making ratio estimates based upon annual sample surveys.

156. Data on current forestry production is often provided by forestry departments, based on monthly or quarterly reports by district officers, forest concessionaires or sawmill operators. These statistics may include information on quantities of major forestry products such as timber, firewood production for sale, pulp and matchwood, round wood and charcoal wood. Sometimes, minor forestry products such as bamboos, gums and resins and collected firewood are also included in annual forestry statistics. Data on wholesale prices of major products, as well as on employment and construction in the industry, also may be collected in these surveys.

157. The valuation of the gross output of each type of timber should reflect average producers' prices. Since the prices vary among different regions of a country, the averages should preferably be weighted by the value of the gross output in each region. Sometimes, the prices of timber and logs are agreed on for a specific period of time through negotiations between producers' and purchasers' organizations; the price information is then readily available. In other cases, wholesale prices gathered at the assembly places for logs or purchasers' prices

obtained from manufacturing establishments or gathered at the building contractors' level may have to be used. All these price data should, if possible, be adjusted for trade and transport margins in order to arrive at approximations to producers' prices, if the trading and transportation of logs are not part of the activity of the logging establishments.

158. Where annual production statistics are not available or are insufficient, indirect estimates of the gross output of major forestry products can be based on data on the purchases of such products for use in mining, manufacturing, construction etc. and on imports and exports. Estimates of the use of timber and other major forestry products by the producers themselves for own-account construction may be based on special benchmark surveys if the quantities used are thought to be important enough. The ratios between the quantity of major forestry products used for own-account construction and the quantity put to other uses in the year to which the benchmark surveys relate, coupled with annual estimates of other uses, may serve as a basis for annual estimates of the quantities used for own-account construction.

159. Estimates of gross output in charcoal production also may be approached from the consumption side. Quantities used for household consumption may be based on consumption per household in urban and rural areas according to sample surveys of household consumption, multiplied by the total number of households that are assumed to use charcoal. In developing countries this will often be all rural households and a certain percentage of urban households, depending on local conditions. The figures may be extrapolated by an index reflecting the change in the number of households using charcoal. In calculating this index, annual migration from rural to urban areas should be taken into account. The quantity of charcoal used by industry, where it is not assumed to be negligible, may be estimated on the basis of industrial production statistics. Quantities exported will be available in foreign trade statistics. Prices prevailing at trading centres for charcoal in rural and urban areas may be used in valuing the output.

160. It may sometimes be possible to base estimates of the gross output of minor products on information about royalties and contract fees paid to the Government for the right to exploit the forests for these products. It may be necessary to adjust these estimates upwards by a certain percentage for underreporting. The output of minor products may be valued at retail prices in nearby markets.

161. It may also be possible to make estimates of the gross output of minor forestry products on the basis of consumption. For instance, estimates of the gross output of firewood and wild fruits and berries for household consumption can be based on data from sample surveys of household consumption. Figures on the consumption of such products per household or per capita from these surveys can be multiplied by the total number of households or individuals to arrive at approximate data on gross output. Benchmark year estimates made in this way can be extrapolated by means of an index of population growth.

162. In many developing countries, firewood collection accounts for the major part of minor forestry products. Where no sample surveys of household consumption in rural areas are available, national accountants may have to make "reasonable guesses" about the number of bundles, or headloads, of firewood used per year by each household. These figures are then multiplied by the number of households in rural areas to arrive at total quantities produced. If firewood is sold in nearby rural markets, prices paid per bundle or per headload in these markets may be used in valuing the output. Another way of estimating the value of collected firewood is to apply rural wage rates to the approximate time spent in foraging for firewood.

163. Own-account capital formation in lumbering and timber tracts, such as the construction of logging camps and roads carried out by the industry itself, is also a part of gross output. Estimates of this own-account construction may be based on annual surveys or on data collected by producers' organizations. If other information is lacking, data on the own-account construction in public logging and timber tracts, which are usually available from the government agency concerned with this activity, can be used as the basis for estimates of total own-account construction, on the basis of the ratio between total area of timber tracts and the area under government control. As in other activities, where it is feasible to make estimates of construction separate from the other activities of forestry and logging establishments, separate construction establishments should be set up and classed in construction. Where this is not feasible, however, the construction activities should be included with forestry and logging.

164. Estimates of the output of other atypical products of forestry, as well as estimates of the output of forestry service establishments and tree nurseries for benchmark years, may be based on special surveys. For extrapolation, the ratio between typical and atypical products may be kept constant or representative indicators of the output of some of these products may be used.

### 3. Intermediate consumption

165. The intermediate consumption of the forestry industry covers such items as seed and saplings, fuel oils, lubricants, feed and other upkeep expenses for draught animals, materials for the repair and maintenance of buildings and roads, hand tools and spare parts, and payments for contract work and other services. The intermediate consumption connected with the maintenance of timber tracts relates to the tracts as a whole and not specifically to the parts of the tracts that are currently being exploited. As a consequence, the gross output and intermediate inputs of logging may not match. This will not be serious as long as the pace at which timber tracts are being exploited remains relatively constant.

166. The best sources of data on intermediate consumption are sample surveys of logging establishments and of households having forestry as their main activity. Where such surveys are relatively infrequent, input-output ratios obtained from them might be used to extrapolate intermediate consumption in other years.

167. In countries where the Government owns and exploits all or a considerable part of the forests, data on the intermediate consumption of the main forestry activities obtained from government accounts or directly from the government forestry authorities may be assumed to apply to the industry as a whole. However, supplementary estimates based on input-output ratios obtained from special surveys may have to be made for activities such as the burning of charcoal, the output of minor forestry products, and tree nurseries and forestry services which are not provided by the Government, which have a quite different cost structure.

168. Where machinery and draught animals are used jointly by agricultural and forestry establishments, the total intermediate consumption relating to their use can be allocated between the two activities in proportion to the amount of time the machinery and draught animals are used by each. Where the same enterprises operate establishments in both agriculture and forestry but record machinery or draught animals as fixed capital in only one of the industries, an imputed rent should in principle be estimated for their use in the other industry, equal to market rents

actually paid for similar services. In most cases, however, making such an estimate may be impractical.

## E. Fishing

### 1. Content and general considerations

169. Fishing covers catching fish, whales or seals, and gathering seaweeds, sponges, sea shells, pearls, oysters and other shellfish from oceans, seas, lakes, rivers, rice fields, and fish farms. The processing of fishery products on board fishing boats and special factory vessels, such as salting and freezing, is included. The output should be recorded at the time the catch is landed. Producers' value of the output should include the cost of storage undertaken by the fishery establishments before delivery to the first purchaser. Fishery services undertaken on a fee or contract basis are also included. Sport fishing, however, should be excluded, if possible. As was indicated above, fishing is sometimes combined with agriculture, and where this is the case, separation may be difficult.

170. Fishing includes fishing in coastal waters belonging to the domestic territory of the country, or in areas where the country has the exclusive right of exploitation by virtue of an international agreement. It also includes the fish catches of resident establishments fishing in international waters. Operations in international waters should be considered resident in the country with whose economy they are most closely linked; criteria that may be considered are the flag of registration, the country of incorporation of the enterprise and the residence of the owners or the majority of the owners of the vessels. In view of the recent extensions of coastal waters by some countries, including exclusive economic zones of up to 200 kilometres, these residence rules are now under review.

171. Payments received for fishing rights in rivers and lakes should not be included in the gross output of fishing. If payments are made to the owners of the land bordering on the rivers or lakes, they are treated as land rent; if the payments are made to government or private non-profit institutions, they may be classed as royalties.

172. Own-account building and repair of fishing boats and own-account construction of structures, landing sites etc. by fishery establishments will usually, as a practical matter, be included in the gross output of fishing, though where separation is feasible, it should be done.

### 2. Gross output

173. Fishery censuses are often conducted at 5 or 10-year intervals in countries where fishing is an important industry, and usually supply information on employment (sometimes classified as unpaid family workers, employees, own-account workers and proprietors, or as fishermen, fishing boat crews and other workers), fishing equipment, area of fish-ponds and other data concerning the structure of the industry. Preferably, such surveys should also include information on the quantity and value of gross output and on inputs.

174. In countries where fishing is important, it is also useful to collect fairly detailed annual statistics covering at least the larger establishments of the industry, or all fishing vessels above a certain size. The data collected might

include number of licenced fishermen, number of persons engaged with fish-ponds, tonnage of fishing craft by type of gear, quantities caught by commercial fishing vessels by species, and area of fish-ponds and value of catch from them. Where annual data of this kind are not available, basic statistics usually contain at least some information on quantities landed of the main species of fish and on average producers' prices. Data on the quantities landed of the most important species of marine fish are also frequently available in the annual reports of trade or marketing organizations. Data on the outputs and inputs of the larger establishments of the whaling industry are included in special statistics required for purposes of controlling the number of whales caught according to international agreements.

175. Where only large-scale commercial fishing is covered by annual fishery statistics, the gross output of smaller establishments may be estimated on the basis of the average output per fisherman or fishing vessel and the estimated number of fishermen or fishing vessels engaged in small-scale fishing. The average output might be determined from special surveys, spot checks or information provided by fishermen's associations. Small-scale fishing establishments may own one or a few boats only. Registers are generally kept from which classifications of the fishing boats according to size and fishing gear may be derived. Alternatively, systematic or scattered data on gross output may be classified according to size of fishing boats and type of gear, and used in conjunction with registration data to estimate total gross output.

176. Data on the gross output of fish and other aquatic products from inland waters can sometimes be obtained from marketing organizations or gathered by means of special sample surveys. If such information is not available, the annual estimates can be based on data on average gross output per fisherman, coupled with the number of fishermen engaged in inland water fisheries. Average gross output per fisherman might be obtained from benchmark censuses, special surveys, spot checks, trade associations, government fishing authorities etc. Estimates of gross output of fish-ponds may be based on data on the area of different types of ponds and information on average gross output per unit of area. Possible sources of information on average gross output per unit of area are similar to those for average output per inland fisherman.

177. In many countries, fishing is regulated by government agencies which, as part of their control procedure, make estimates of the annual fish catch, and these frequently are the basis for estimates of gross output and value added. The quality of such data varies according to the importance of traditional fishing methods, and where a large part of the total catch is landed by small entrepreneurs, the official estimates may need adjustment for underreporting.

178. Where no data on total fish catch are regularly compiled, it may be possible to estimate the total quantities landed indirectly from data on fish consumption or information about the number and types of nets used. It may, for instance, be assumed that per capita consumption has remained constant since the latest household consumption sample survey. Benchmark year totals may then be extrapolated by means of population growth rates. Such indirect methods of estimation are not recommended except in countries where fishing is of little importance.

179. At least some of the fish caught for own consumption is not included in the figures on landed catches. Most of the fish consumed by the fishermen's own households is caught by smaller commercial fishing boats or by individuals fishing



mainly for their own consumption. The estimates of fishing for own consumption may be based on information in household expenditure surveys or on data collected by local authorities. Household survey data may be used to estimate own-account consumption for a benchmark year, and current year figures may be obtained by assuming that consumption per head or per household has remained constant.

180. The output of minor fishery products such as pearls, clams, oysters, and seaweed and of atypical products of the fishery industry is usually not covered by current fishery statistics. Estimates of the gross output of minor products may be based on information from wholesalers dealing in the products in question or from local fishery authorities or they may be based on information about the number of persons engaged in these activities according to censuses of population or surveys of employment combined with an assumed output per person. Estimates of the value of the output of uncharacteristic products such as transport services rendered by fishing boats and the production of fishing gear, boats and landing facilities for own use may be based on information provided by local fishery authorities.

181. Fish marketing is a specialized activity in most countries. Fishermen usually sell their catch to traders on a wholesale basis at established fish markets, and it is therefore relatively simple to identify producers' prices for each type of fish. In many countries, the wholesale or "landed" prices are regularly recorded by fishery officials, and these prices can be used directly in valuing fish sold on local markets or used for own consumption. Where landed prices are not available for freshwater fish, retail prices in nearby markets may be used, after allowing for transport and distribution costs, if these are supplied by others. The prices used should be weighted in such a way that price differences for different uses of the products and between different markets are taken into account. It is necessary to collect prices at several points of time during the year because of the price variations during the various fishing seasons.

### 3. Intermediate consumption

182. Data on the input structure of the fishery industry should preferably be estimated separately for subclasses based on the kind of fishing gear used, the type and size of fishing vessels, and whether the fishing is in coastal waters, on the high seas or in inland waters. The structure of intermediate consumption depends to a large extent on the degree of mechanization, and it may therefore be necessary to estimate intermediate consumption separately for fishing undertaken by mechanized and traditional units. Fishing for own consumption is usually undertaken with traditional gear and consumes few intermediate goods. This is also the case for the gathering of pearls, seaweed and other minor products. Intermediate consumption in these traditional activities may be estimated as an overall percentage of gross output, obtained by inquiries covering a limited number of fishermen.

183. The main items of intermediate consumption in mechanized fishing are outlays on petroleum products, spare parts for boats and their equipment, fishing gear, bait and ice, and insurance, communication and other services. Fishing nets are usually included in intermediate consumption, on the ground that the average life of a net is less than 12 months. Intermediate consumption also includes packing materials, salt, sugar, spices and chemicals used for the processing of products on board fishing boats and factory vessels. Where fishing is undertaken jointly with agriculture, problems may arise in distributing the intermediate consumption of some items such as fuel and services between the two industries. Frequently, the

only practical solution will be to distribute the intermediate consumption in the same ratio as the output of agricultural and fishing products in the joint activities.

184. Some benchmark fishery inquiries include information on the intermediate consumption in the industry, which may be used as the basis for extrapolation to subsequent years by means of quantity and price indicators. The size of the fishing fleet may, for instance, be used as an indicator of trends in the repair and maintenance of the fleet, and the gross output of various types of fish may be used for fuel, maintenance of fishing gear, and expenditure on bait and spare parts for fishing vessels. The components of the wholesale price index that are most clearly applicable to important items of intermediate consumption, weighted by the shares of these items in total intermediate consumption, may be used as price indicators.

185. Special annual surveys of income and expenditure of fishermen's households that collect separate information on the expenditures connected with their trade are often conducted in countries where the fishery industry is important. The results of such surveys may be used in estimating intermediate consumption of the items specified for the fishery industry as a whole by applying the ratios of intermediate consumption expenditures to gross output found in the survey to total gross output of fishing. For whaling, which is usually a large-scale industry, current data on intermediate consumption may be gathered directly from the establishments engaged in this activity.

### III. MINING AND QUARRYING

#### A. Content and general considerations

186. Mining and quarrying includes establishments classified in ISIC major group 2. It covers the extracting and preparation for further processing of solids such as coal and ores, liquids such as crude petroleum, and gases such as natural gas. Underground and surface mines, quarries and wells and all supplemental activities for concentrating ores and pre-processing other crude materials for marketing are included.

187. Mining and quarrying activities undertaken by households for their own use should be included in gross output regardless of whether the output is used in its entirety by the producing household or part is sold on the market.

188. The preparation of mining sites and similar works performed by other establishments on a contract or fee basis are classified as construction. If adequate information on similar activities carried out by mining establishments themselves are available, these activities should also be classified as construction. Prospecting for minerals on a contract basis is not considered to be a mining activity, but a business service. Prospecting and exploration done by mining establishments should also be segregated and classed as business services, if adequate information is available to do so. Imputations should be made for the internal transactions between the construction and exploration establishments and the mining establishments of the enterprise as a whole. Such transactions should be valued at producers' prices of the same products when sold in the market or, if comparable products cannot be found, at cost.

189. As mines are often located in quite isolated areas, companies may run their own schools, hospitals and other social services, and may even undertake production of basic consumer goods for their employees. Where possible, such activities should be set up in separate establishments classified in appropriate activity categories, even when the goods and services in question are provided to employees as wages and salaries in kind.

190. Although electricity generation by mining enterprises, if sold, should, in principle, be separated out and classified as electricity production, this is usually not possible in practice because separate figures on the intermediate consumption of this activity cannot be obtained. In that event, electricity generated will be included in the gross output of mining, and all intermediate goods used by the mining enterprises, including those consumed in the production of electricity, will then be included in the intermediate consumption of mining. Although most of the electricity produced by mining establishments is usually consumed by the establishments themselves, a small part may be sold. This part of the electricity production of mining establishments should be included explicitly in their gross output and their sales.

191. The bottling of natural spring and mineral waters is classed as manufacturing, not mining. The crushing and grinding of rocks to produce gravel is classified as a quarrying activity if carried out by units whose main activity is quarrying, but as manufacturing if done by units that are not also engaged in quarrying. Pipeline services should be included in transportation. The distribution of natural gas should, however, be included with electricity, gas and water production.

192. Vertical integration of mining with manufacturing, for example combination of the mining of iron ore and the production of pig iron and steel billets, or the extraction and refining of petroleum, may make it quite difficult to make separate estimates for mining and manufacturing activities. None the less, efforts should be made to distinguish them, in view of the importance of having separate data on the mining and manufacturing of a country. The main difficulties that will arise concern the valuation of the mining products and the allocation of common overhead costs between the mining and manufacturing establishments. Market prices may be substituted for stated transaction prices in valuing the mining products, a practice followed by many countries. Overhead expenses that can clearly be ascribed entirely to either manufacturing or mining should be so allocated, and the remainder may be allocated between the two in proportion to such measures as the value of their respective gross outputs or numbers directly employed. Similar problems may arise if there is vertical integration of stone, gravel or sand quarrying with construction of roads and other civil engineering works. If in some cases it remains impossible to separate establishments of vertically integrated companies, all their output should be classified in the activity to which the major part of the production cost relates.

#### B. Gross output

193. Ample information is generally available on mining for export of oil, copper, tin etc. in countries where such activities are important. The accounts of the companies engaged in these activities, which are often large and either public or foreign owned, will provide practically all the information needed for national accounts. Where the accounts themselves are not accessible to statisticians, the estimates may be based on reports received in connection with the collection of royalties by the government agencies that control mining. These reports usually

contain detailed information on the quantity and value of output and sales, intermediate consumption by type of goods and services, and value added. For public mining establishments, information will usually be available in published accounts or may be obtained directly from the government departments concerned with mining. Such accounts and records usually are not available for small-scale mining, however.

194. Annual surveys of mining may provide quite detailed information for all mining establishments above a certain size, for instance those with 50 or more employees, and sometimes also for a sample of smaller establishments with, for instance, 20 to 49 employees. The information collected may cover quantity and value at producers' prices of the output of various mining products, specified items of intermediate consumption, and wages and salaries paid. Where annual surveys are not available, less frequent surveys may be conducted to provide essentially the same information for benchmark years.

195. The output of large mining companies usually consists of only a few products. Since these products are often almost entirely exported, foreign trade statistics provide an alternative source of information on the quantities produced.

196. The main problem of estimating the total quantity of output of mining products is therefore to devise a method of covering the output of the smaller establishments. If benchmark year surveys are available that have a broader coverage than the annual surveys, the total gross output of specific mining products in the benchmark years may be extrapolated for later years in proportion to the change in the gross output of these products in the establishments covered in the annual surveys. This implies the assumption that the smallest establishments, which are not covered by the benchmark year surveys, do not produce these types of mining products. This assumption may be reasonably realistic, since the smallest mining establishments will often be mainly sand, stone and gravel quarries. It would, however, be preferable to conduct special sample surveys of these smallest mining and quarrying establishments at 5- to 10-year intervals. These surveys could be combined with similar sample surveys for small-scale manufacturing. Extrapolation of the survey results could then be based on annual figures on population or employment.

197. Where the output data collected cover only the major mining products, estimates of the gross output of minor products may be obtained by means of inquiries covering a small number of representative establishments. Alternatively, it may be possible to make reasonably comprehensive estimates of the gross output of mining products classified by commodity groups on the basis of data on the intermediate consumption of such products by manufacturing and construction combined with data on exports and imports.

198. Such indirect methods may have to be used to obtain annual estimates of the gross output of sand, stone and gravel. For instance, it may be assumed that these products are used only for construction and, if satisfactory data on the intermediate consumption of these products by the construction industry are available, these may be used as a measure of gross output. Sometimes, even more approximate methods may have to be applied, such as assuming an average output per employee and multiplying it by the numbers engaged in quarrying sand, stone and gravel, which may be available from population censuses or employment surveys.

199. When the gross output of mining and quarrying is estimated from annual establishment surveys, it may be useful to verify the results by comparing them with, for instance, data on exports in the case of products such as gold, diamonds, and raw copper, which have practically no domestic use, or with administrative records of mining ministries. Checking with export figures of precious metals and stones may not be of much use, however, in countries where smuggling of these items is substantial.

200. The gross output of metal ore mining should be valued at pit-head prices. The pit-head price may be obtained from a sample of mining enterprises or from the accounts of mining companies. Producers' prices of diamonds and other precious stones often reflect the cost of some preliminary processing. Both these prices and ex-establishment prices of sand, stone and gravel may also be obtained from a sample of establishments. Where the latter products are transported to the purchasers by the producers, the prices should, if feasible, be adjusted approximately for the transport element included in them, and the transport activity valued separately and included in the transportation industry. For small-scale operators, however, this may not be feasible, and the actual sales price may be used.

201. Particular problems arise in determining the prices to be used in valuing the output of crude oil. In most developing countries, production of crude oil is state-controlled and often state-owned. The state sales price, preferably calculated as a weighted average of the prices charged to different buyers, is the closest approximation to a producers' price for crude oil. There also exists a spot-market price, often quite different. The spot-market price is, however, normally not appropriate since it usually applies only to a small fraction of output.

202. For natural gas, a producers' price may not exist. It therefore may have to be derived indirectly, by deducting distribution costs from the price on delivery or purchaser's price.

### C. Intermediate consumption

203. Information on the intermediate consumption of large- and medium-scale mining establishments will often be available from company accounts or reports to regulatory agencies, or from an annual survey of mining. Benchmark year surveys often provide information for some of the smaller establishments. The ratio between the intermediate consumption of the establishments covered in benchmark year surveys and in annual surveys for the same years may be used in estimating the intermediate consumption of all but the smallest mining establishments between benchmark years. Benchmark input-output relationships may also be used to estimate intermediate consumption for later years, commodity by commodity, to obtain estimated gross output at benchmark year prices, which may then be inflated to current prices by means of appropriate price indexes.

204. No direct information will usually be available on the intermediate consumption of the smallest enterprises. These estimates may be based on the ratio of intermediate consumption to gross output obtained from spot checks or other scattered information. The result, however, is likely to be very arbitrary, and it may be preferable to assume that intermediate consumption of these establishments is negligible.

205. In SNA, exploration costs are considered to be part of intermediate consumption. Company accounts, however, often capitalize them. Care should therefore be taken to shift exploration cost to the current account and include it in intermediate consumption. Direct inquiries from the companies concerned may be needed to obtain appropriate data. Conversely, where mining companies include construction of mine shafts and other development costs in current expenditures, care should be taken to exclude these amounts from intermediate consumption.

#### IV. MANUFACTURING

##### A. Content and general considerations

206. Manufacturing includes establishments classified in ISIC major group 3. Manufacturing is defined as the mechanical or chemical transformation of inorganic or organic substances into new products, whether the work is performed by power-driven machines or by hand, whether it is done in a factory or in the worker's home and whether the products are sold at wholesale or retail. The assembly of component parts in factories, such as the assembly of automobiles or electronic equipment, the assembly and installation of machinery and equipment in the establishments of the users and the repair of machinery and equipment belonging to other producers on a contract basis are also classed as manufacturing. If the assembly and installation of the machinery and equipment is performed as a service incidental to the sale of the items concerned, however, it is included in the activity of the seller, which may be either manufacturing or wholesale trade. Establishments specializing in the installation of major household appliances, such as refrigerators, washers and dryers, are classified in repair services. Mints, which produce coins and sometimes paper currency, are classed as manufacturing rather than producers of government services. The assembly on the site of prefabricated, integral parts into buildings and other forms of construction such as bridges and railroad rights of way is classed as construction.

207. Problems may arise in distinguishing manufacturing from agricultural activities when the processing of agricultural products takes place on farms or plantations. If it is difficult to separate the processing from the agricultural activities or if the processing is on a small scale, it may be left with agriculture. The processing that is customarily done before products leave agricultural or fishing units, as for instance the selection and packing of fruit or the icing, salting or filleting of fish, should always be treated as an activity of these units.

208. Benchmark and annual surveys of manufacturing often contain information on sales and purchases of products that do not undergo any processing but are sold in the same state as that in which they were purchased. The trade mark-up on these products should be treated as an atypical product of manufacturing, if the activity cannot be set up as a separate trading establishment. Minor own-account construction is also an atypical output of manufacturing. Major own-account construction activity for which separate data can be obtained on both output and input should be treated as a separate establishment and allocated to construction.

209. All processing of textiles, food, clothing, minerals etc. should, in principle, be included in manufacturing. For instance, the value added by the slaughtering of animals should be included in the food processing industry, and the gross output and intermediate consumption of food processing should both reflect the value of animals slaughtered. The data needed to separate processing

activities from the production of the raw materials processed are usually available for products sold on the market because the materials to be processed are normally bought by the processing industry from the producers of the raw materials. For subsistence production in rural areas where both the raw materials and the finished processed products are produced and consumed by the same unit, however, no purpose is served by attempting to separate the two activities. The value added and gross output of the combined activity should be allocated to the industry that has contributed most to the value added.

210. Similar problems may arise where processing and trading activities resulting in a marketed product are combined. For instance, retail selling of bakery products by the baker should, in principle, be treated as an atypical product of manufacturing. In order to do this, separate estimates of the producers' value of the bakery products and of the sales services rendered would be needed. However, since in practice bakeries do not keep their accounts in such a way that a separation of the two activities is possible, common sense suggests that the total sales value of these products should be treated as a product of manufacturing.

#### B. Main sources

211. The industrial directory or register is a very important tool in keeping track of manufacturing activity. Such directories identify all manufacturing establishments, and associate them with the enterprises of which they are component parts. Industrial directories often include such key indicators as employment, quantities of output, use of electricity etc., which can be used to inflate totals of sample surveys or to allow for non-response for both establishment and enterprise data. Thus, the industrial register serves as the frame both for complete censuses and for sample surveys. They are also useful in adjusting data collected from enterprises to the establishment basis needed for the production approach to the measurement of GDP. The connection between kind of activity classifications based on enterprises and on establishments may be established if an industrial directory or similar source is available that identifies the establishments belonging to each enterprise and gives a measure of their size. Each establishment should be cross-classified according to its own kind of activity and the principal activity of its parent enterprise. This cross-classification furnishes a means of allocating data for each kind of activity category of enterprises among kinds of activity categories of establishments.

212. Such an industrial directory is essentially a repository for current information on the existence, birth and death of manufacturing establishments and enterprises, from all available sources. These will include tax authorities, administrators of any social security arrangements, regulatory agencies responsible for particular industries, ministries of industry and labour, employers, associations, municipal governments and other sources.

213. Censuses of manufacturing are undertaken in some developing countries at 5- or 10-year intervals, or on an irregular basis. Coverage of such establishment censuses varies. Less detailed information may be collected for the smaller establishments, those with fewer than 10, or 5, employees, or those with assets or sales under a specified limit. An effort should be made in such surveys to cover manufacturing in urban areas as completely as possible, but stratified sampling techniques may be used to reduce costs. All large and most medium-sized establishments should be included, in such a sample, but smaller establishments may be included, with a probability proportional to their size. In rural areas, it may

only be possible to cover the larger establishments because of the difficulty of locating the smaller units; such units can, however, sometimes be covered in household surveys.

214. For the larger establishments, information may be collected on (a) sales, classified by kind of good; (b) expenditure on intermediate consumption classified by (i) materials and supplies by kind, (ii) fuels by type, (iii) electricity, (iv) contract work, repairs and maintenance by others; (c) employment by kind of worker; (d) payroll by kind of worker and by salaries, wages, other remuneration, and benefits in kind. In addition, quite detailed information on gross fixed capital formation and on stocks can be obtained. For larger establishments, it is often possible to check some of the survey responses by information shown in published accounts.

215. Small-scale establishments may be important in manufacturing in developing countries. It is not feasible to collect as detailed information from these establishments as from the larger ones. Usually, totals can only be obtained for sales, intermediate consumption and gross fixed capital formation, and possibly also on wages and salaries in cash and in kind.

216. Few developing countries have the resources needed to conduct establishment censuses on a regular basis. It is important, before starting an establishment census, to be certain that enough resources will be available to complete it. Substantial amounts will be wasted if a census project has to be given up before it is completed. This has unfortunately happened in some instances.

217. In some countries, annual surveys of manufacturing cover larger manufacturing establishments, which may be defined as those with from 10 to 50 or more employees according to the circumstances of individual countries. Annual surveys should obtain the same types of information (though often in less detail) and use the same kind of activity and commodity classifications as benchmark surveys or censuses. Where all the large manufacturing establishments are covered, annual surveys will usually cover a considerable part of the total output of manufacturing, often 80 per cent or more. Sometimes specific criteria are applied in the selection of establishments to be included in annual surveys, such as their growth potential or the key status of the industry, or their "pioneering" aspect, or their status as an establishment receiving special protection from the Government.

218. It is very important that annual surveys be carefully conducted and followed up so that the information obtained is as reliable as possible. In particular, efforts should be made to ensure that the rate of non-response does not fluctuate widely from year to year. Data from surveys with widely fluctuating response rates are not comparable and can be highly misleading. As establishments are in most cases required by law to supply information, legal action may be taken if all other attempts to collect data have failed. If, for whatever reason, direct information cannot be obtained, imputations should be made on the basis of any information available.

219. Public enterprises are important in manufacturing in many developing countries. The main sources for these enterprises are (a) information supplied directly by the firms concerned, either independently or in annual surveys of manufacturing; (b) accounts of major enterprises such as steel works or textile factories, municipal breweries and slaughterhouses; and (c) accounts of municipalities in charge of public enterprises that do not provide independent accounts.



220. Special sample surveys may be undertaken at 5- to 10-year intervals to obtain information on rural or traditional small-scale manufacturing. These surveys may be limited to a few questions on sales and the value of inputs, and area sampling may be used. It is not worthwhile to spend large resources on such surveys if it is known that only a small part of the gross output of manufacturing originates in the traditional sector. Other sources of information about this type of manufacturing are demographic surveys, household income and expenditure surveys, and employment surveys.

### C. Gross output

221. Where annual sample surveys and benchmark year surveys with wider coverage are available, the gross output of the establishments covered in the benchmark surveys may be extrapolated to later years by using the movement of the gross output at producers' prices of the establishments included in the annual surveys. If special benchmark year surveys of the smallest establishments are also available, their share in gross output may be assumed to have remained unchanged. The extrapolation should be made for as detailed kind of activity and commodity groups as possible. Extrapolation by detailed commodity groups will facilitate the allocation of the gross output among different uses where the commodity flow method is used for estimating final uses.

222. In the absence of annual surveys of manufacturing, it may be possible to extrapolate data on total gross output for benchmark years in each kind of activity group by means of series on employment, or preferably man-hours, derived from annual sample surveys of employment by kind of economic activity. In order to be useful for this purpose, the employment surveys should be as comprehensive as possible. Employment series including working owners and unpaid family workers are better indicators for the extrapolation of gross output than series referring only to paid employees, because in small establishments working owners and unpaid family workers account for a significant portion of the total labour force. Often, however, available employment statistics cover only paid employees. Extrapolation by commodity group is, of course, not possible where employment is used as the indicator. For years between two benchmark surveys, estimates based on extrapolation without the use of annual surveys should be replaced by estimates based on interpolation as soon as the second benchmark becomes available, if the estimates are significantly different.

223. Extrapolations based on employment will be improved by an appropriate allowance for changes in productivity. Such an allowance may be based on extrapolation of the rate of change in gross output per employee or per man-hour worked between the two most recent censuses. If that is not possible, approximate estimates of the increase in productivity per employee or per man-hour worked might be based on information from persons with technical knowledge of the kind of activity in question.

224. The figures for total gross output arrived at by using employment or man-hours worked, with or without correction for productivity change, will be expressed in benchmark year prices and must be converted to current prices by means of price indexes appropriate to the various kinds of activities. If price indexes referring to the output of particular manufacturing industries are not available, the component of the producers' price index that is most relevant to the industry in question may be used.

225. Industrial production indexes are sometimes used for extrapolation of manufacturing gross output. However, such indexes are often prepared only for broad kind-of-activity groups, and are intended mainly to show aggregate monthly or quarterly movements. They are usually based on information from a small sample of larger establishments. The figures available from annual surveys of manufacturing are generally more detailed and therefore more suitable for national accounts purposes.

226. In countries that have neither benchmark nor annual surveys of manufacturing, it may still be possible to make usable estimates for a considerable portion of manufacturing activities from alternative sources. For example, reliable data on gross output of public enterprises classified by kind of activity and by commodity group can usually be extracted from their accounts. Also, reports on the operations of corporations and other large-scale private enterprises often have to be filed with tax authorities or with other government authorities under licencing, regulatory or company acts. External trade figures may be used when establishments processing raw materials export the major part of their output. Trade associations may be able to furnish useful information on the activities and commodities they encompass. These sources may also be used for extrapolation in countries where benchmark data are available. The benchmark data can then be used to estimate correction factors to be applied to these sources.

227. For large manufacturing establishments, it may often be possible to make use of published accounts or reports filed with appropriate ministries. This is especially true of public enterprises, where the data needed may be taken from their records or from government accounts.

228. The separation of own-account productive activities of households from their activities as consumers is certain to meet with serious statistical difficulties. Household income and expenditure surveys sometimes include data on items produced for own consumption and the related costs. Usually, however, it is very difficult for the households to supply separate data for their different types of own-account activity, and some judgement is called for in deciding what it is worthwhile to pursue.

#### D. Intermediate consumption

229. Benchmark year and annual surveys of manufacturing, if available, will provide figures on intermediate consumption classified by its main components for large establishments. Estimates of the intermediate consumption of the establishments not covered by such surveys may be made either by means of spot checks or scattered information or by simply assuming that their intermediate consumption behaves like that of the covered manufacturing establishments in the same kind of activity category.

230. Outlays on advertising, telephone and telegraph services, accounting, and legal and similar consulting services are frequently not covered in censuses and surveys of manufacturing. Estimates of these items may therefore have to be based on special surveys or on company accounts or administrative records. The special surveys may be undertaken at infrequent intervals and the input ratios obtained may be assumed to remain constant for the years between surveys.

231. Problems may arise in arriving at a commodity classification of intermediate consumption of manufacturing that is useful for national accounts purposes, both

because the classifications given in the returns from individual establishments often are not uniform and because use is made of broad outlay categories such as "consumable tools", "packing materials", "replacement parts for plant, machinery and vehicles", and "other costs". The allocation of these broad items to more meaningful commodity categories has to be based on supplementary information collected in special surveys or on information from establishments that have furnished more detailed classifications of the items in question.

232. An appropriate share of the costs incurred by central administrative offices and other central auxiliary units, such as the costs of record keeping, advertising, repair and maintenance, transport and warehousing, should be included in the intermediate consumption of the producing establishments of enterprises. The allocation of these costs to establishments may raise statistical problems. Information allowing an exact apportioning of the costs among the various establishments of an enterprise generally will not be available, and it will often be necessary to partition the costs on the basis of the gross output, employment, or the known elements of intermediate consumption of the constituent establishments.

233. Intermediate consumption should include semi-finished products and scraps and wastes purchased by one establishment from another, but not semi-finished goods both produced and further processed by the same establishment. The latter should also be excluded from the gross output of the establishments concerned. Inputs used in producing the semi-finished goods will, of course, be included in intermediate consumption.

## V. ELECTRICITY, GAS AND WATER

### A. Content and general considerations

234. Electricity, gas and water production includes establishments classified in ISIC major group 4. It covers the generation, transmission and distribution of electricity primarily for sale, the manufacture of gas in gas works, the distribution of natural and manufactured gas, and the production and distribution of steam and hot water if carried on primarily for sale. Water production in developing countries is often an activity of central or local government boards or corporations. Where water supply is a governmental function and is not charged for, it should be classed as an output of government services, and not included here. What should be included here is potable water production on a commercial basis, for which a charge is made that approximates total cost. However, the operation of irrigation works should be classed as agriculture. When electricity is generated by establishments engaged in some other activity for their own use, the electricity generation should be set up as a separate establishment if the information needed to do so is available. Where information is not available, it may be left with the using establishment.

### B. Main sources and methods of estimation

235. Enterprises engaged in the production and distribution of electricity, gas and water are frequently either government owned or are closely regulated by government authorities. It should be feasible to obtain data on gross output and intermediate consumption directly from the reports and records of the publicly owned enterprises or from the government regulatory authorities. Since private enterprises engaged in electricity and gas production and distribution are usually large and few in

number, it should be possible to obtain information on their gross outputs and intermediate consumption directly from these enterprises.

236. Information on gross output and intermediate consumption of gas, electricity and water production and distribution is also sometimes collected in general censuses and surveys of establishments which may be conducted either annually or at less frequent intervals. These sources may be used as alternatives to the accounts and records of enterprises. The latter are preferable, however, because they are likely to be more up to date and detailed than industrial censuses and surveys.

237. The annual accounts of enterprises engaged in electricity, gas and water production often show intermediate consumption in one amount, or broken down into only a few items. To obtain a classification by commodity groups, a special analysis of the payment vouchers of the enterprises will often be necessary.

238. The value of the natural gas purchased by the companies distributing it should be included in their intermediate consumption. If the establishments engaged in the distribution of natural gas also produce (extract) it, the output and intermediate consumption of the joint activity should be allocated between mining and electricity, gas and water. If separate information is not available on the intermediate consumption of each of these groups, that part that cannot be allocated may have to be distributed between them in proportion to their relative shares in gross output.

239. Figures on the gross output and intermediate consumption of corporations that supply water in urban areas may be extracted from their reports. Sometimes, annual censuses or surveys of establishments may contain this information. The value of carrying water from pumps or wells in rural areas may be estimated on the basis of the time involved and the opportunity cost of the labour.

## VI. CONSTRUCTION

### A. Content and general considerations

240. Construction includes establishments classified in ISIC major division 5. These are mainly general and special trade contractors primarily engaged in contract construction. General contractors undertake complete projects. Special trade contractors are engaged in only part of the work on a construction project, such as painting, plumbing, installing heating and air-conditioning equipment, excavating and foundation work, or repair of structures. The special trade contractors may work on subcontract from the general contractor or directly for the unit undertaking the construction project.

241. In developing countries, own-account construction accounts for a significant part of total construction activities. This is true not only for the construction of dwellings and farm buildings, but also for most other types of construction activity. Construction activities undertaken by producers classified in other ISIC categories are included here if it is possible to set up separate establishments to cover such activities, with information on both the value of their gross output and their costs; where such separation is not possible, these construction activities will be included in the gross output of the establishments undertaking them. The same is true of construction activities undertaken by the Government: these activities are included here only if it is possible to set up separate establishment units for them. In many countries, the Government engages in

important construction work. Construction that is carried out by public construction enterprises is discussed in the present section; that carried out directly by producers of government services is discussed in section X below. Treatment of construction activities undertaken by units classed as government departmental enterprises is now under review.

242. The gross output of the construction industry is composed of a mixture of buildings of various types, roads, piers, railway rights of way, athletic fields, electricity and communications networks, swimming pools, dredging and underwater rock removal services, pile driving, land drainage and reclamation, and repair services, including maintenance of buildings and roads. Construction does not, however, include the output of prefabricated buildings; this is classified as manufacturing. Much of the output of construction consists of essentially unique projects. As the products have very different cost compositions, it is desirable, if practicable, to classify construction establishments into categories according to the type of construction in which they mainly engage. Depending on the institutional arrangements and the available data, categories might be formed according to final products, such as residential buildings, electricity plants and roads, or according to the occupation of the subcontractors engaged in construction work, for instance, electricians, plumbers, plasterers, painters, bricklayers, carpenters, road contractors.

243. The product mix of the construction industry is likely to change considerably from year to year. Dwelling construction is usually a relatively stable component, depending upon such factors as population increase and movement, although the marketed component of dwelling construction will also reflect business conditions. But the construction of a major new road or railway line, the building of a textile factory or an ironworks may change the product mix of the construction industry in a small country radically from one year to the next. It is therefore important to isolate such new projects and treat them as separate components of the construction industry wherever it is possible to do so.

244. The period of construction for construction projects is usually relatively long and work started in one period of account is very frequently carried over to one or more future periods. In SNA, the value of work put in place is treated as final output of the construction industry and is classified as gross fixed capital formation, even when the project is not completed. This is not true, however, in the System of Material Product Balances (MPS), <sup>9</sup>/ the system of national accounting used in countries with centrally planned economies, where unfinished construction is treated as inventory until it is put into use. The treatment of unfinished construction is being considered in the present review of SNA. Differentiating between completed and uncompleted construction projects is analytically useful, and the National Accounts Questionnaire calls for this distinction. This in turn requires the maintenance of inventory accounts for unfinished construction projects.

245. Activities undertaken by the construction industry that are typical of other kinds of economic activity, such as the quarrying of stone, gravel crushing and the manufacture of bricks and cement, should be allocated to separate establishments, if feasible; if not, they should be retained as atypical outputs of construction establishments if sold to others. If such atypical outputs are used by the construction establishment itself as materials, they should not be included in gross output. The inputs into the production of the intermediate materials, but not the intermediate materials themselves, should be included in the establishment's inputs. Any part of the intermediate output that is carried over to a later period of account as stocks should, however, be included in the gross output of the construction industry as an atypical product.

## B. Gross output

246. The ideal source of data on the gross output of the construction industry would be comprehensive censuses or representative sample surveys that cover all or the major part of construction activities, including own-account construction. Such comprehensive surveys are undertaken in some countries for benchmark years, but are generally not available annually. Construction activity is also often included in infrequent establishment surveys covering all main industries, which may provide benchmark data on gross output, intermediate consumption, labour costs etc. The best of these cover all establishments in construction, sometimes even including own-account construction, but most only cover units above a certain size. Also, less detailed data are often collected for smaller units than for larger ones.

247. Annual surveys based on samples of units engaged in construction activity are conducted in some countries. These surveys may cover all types of construction activity, all privately owned units or only large privately owned units. The information gathered in annual surveys is generally the same as that collected in censuses or infrequent surveys, but often in less detail.

248. If information is obtained directly from the contractors, there is always a danger of duplication, because contractors subcontract out work to other contractors. In order to obviate this risk it is necessary to ask respondents to state separately the value of any work that has been subcontracted out.

249. Information on public construction activities is normally available from the ministries responsible.

250. Own-account construction frequently is not included in surveys of construction activity and information on it must therefore be obtained from other sources. Surveys of fixed capital formation sometimes contain information on own-account construction work undertaken. The own-account construction of dwellings is often covered in estimates of dwelling construction based on building permits and in information from responsible government departments and mortgage banks. Additional detail may be obtained from housing or population censuses or household expenditure surveys.

251. Where benchmark estimates based on infrequent surveys are available, extrapolations of the gross output of construction may be made by means of quantity indicators for each type of construction work undertaken, for example, floor space of dwellings finished and length of roads or railway lines made ready for use. It is, however, difficult to find suitable quantity indicators for a number of construction products, as for instance electricity works, dams, harbour works. For composite construction projects of this type, it may be necessary to use quantity or value indicators based on inputs of materials and labour, but it is preferable to use annual data on the value of work put in place gathered by means of sample surveys of projects or construction contractors. Price indexes for representative construction outputs are sometimes available. If not, indexes of prices of construction materials, in combination with an index of wages and salaries, may have to be used instead.

252. If direct estimates are available in annual surveys of the gross output of larger units of the construction industry, extrapolation of benchmark estimates of the gross output of smaller units may be based on data on changes in employment in the smaller units, combined with information on the change in prices from the

benchmark to the current year. Such extrapolations assume that the labour productivity of the smaller units has remained unchanged. Better results may be obtained by adjusting the changes in employment by the corresponding changes in output per employee in the smallest units covered by annual inquiries.

253. Estimates of the annual output of dwelling construction are frequently based directly on information furnished to obtain building permits. These data usually include the expected value or cost of the dwellings when completed, as well as the dates on which the work is expected to start and to be completed. Statistics on number of dwellings actually completed each month are also often available. Approximate estimates of dwelling construction put in place during each period may be made by distributing the value of each type of finished dwelling over periods of account according to the time it normally takes to produce these dwellings. If possible, allowance should be made for the fact that labour and material costs may not be distributed evenly over the period of construction of the dwelling since construction is a seasonal activity in many countries. Frequently, the expected value of buildings at the time of completion is underestimated in the building permits, and adjustment factors are required to correct for this. These adjustment factors may be based on data from project surveys and should of course only be applied to building permits actually used.

254. The value of dwelling construction may also be estimated by extrapolating data for benchmark years by means of volume and price indexes. The volume indexes might be based on the floor area of dwellings of different types that are under construction during the year in question, estimated from monthly reports on building permits or statistics on completions. The price indexes may be calculated from direct information on the prices of different types of standardized dwellings or from prices of building materials and wages and salaries in construction. Information on the financing of residential buildings obtained from financial institutions and inquiries on sales values of new dwellings may also be used.

255. Administrative records on permits may also be used to find out who the prospective owners of the various projects are, and the main contractors may be identified by asking the owners. Statistics on project implementation may then be collected annually or more frequently from the main contractors. These statistics should be supplemented by surveys of smaller contractors and of subcontractors who undertake work directly for the owners. Also, if this method is used, information on atypical products of the construction industry may have to be obtained by means of special surveys. The administrative information on construction permits may also be used to identify own-account construction and followed up by direct data collection from the units that execute these construction projects.

256. As an alternative to inquiries directed at units producing construction output, information may be sought from the purchasers of construction. Central and local government accounts and annual surveys of mining, manufacturing, electricity production, and distribution may be used to assemble statistics on outlays for construction that will generally cover a large part of the gross output of construction, with the exception of dwellings. Information on the number and value of dwellings constructed may be available from government departments concerned with the housing situation in the country (often a Ministry of Housing). Statistics on mortgage loans made by banks or building societies can also be useful. Estimates of own-account construction of dwellings may be derived from the housing census, population census or sometimes household consumption surveys. Additional information can be obtained through spot-check investigations.

257. Information on expenditures on various types of construction other than building and repair of dwellings is sometimes collected by means of annual or less frequent surveys of expenditures on fixed assets. Data on fixed capital formation, with a breakdown that shows construction separately, are also generally included in annual or less frequent establishment surveys of mining, manufacturing, distribution and transport. However, establishment surveys usually do not cover agriculture, forestry, fishing, or the service industries. The cost of legal, architectural and technical services paid for directly by the prospective owners should not be included in gross output of construction.

258. Indirect estimates of the output of construction may also be made by using the commodity flow method. This approach is discussed in part four below.

259. Much of the construction activity in rural areas consists of the own-account building of farmhouses, barns and storehouses and construction of fences, ditches etc. Often, few purchased materials are used. Collected materials such as poles, grass, leaves and mud and own labour or the help of neighbours on a reciprocal basis are frequently used. The value of the gross output of own-account construction activities may be estimated at the actual cost of materials purchased, plus imputed labour costs, based on the number of man-hours spent and the average wage for unskilled labour in agriculture in the area. Although it is generally not worthwhile to attempt to estimate the value of collected materials, an imputation for the value of the labour time spent collecting the materials should be made.

260. Self-help activities are important in many developing countries. The self-help schemes may include the building of teachers' houses, schools, nurseries, health centres and youth centres, the construction of sports grounds, piped water supplies, road culverts, fish-ponds, and cattle dips, and irrigation, terracing and tree-planting projects. Often, information will not be available about the number of voluntary workers or the hours of work they put in, and an imputation of the labour costs of the activities, therefore, is not possible. It is sometimes possible to obtain an estimate of the expected ratio of labour cost to purchased materials from contractors or ministries responsible for public works or housing. If not, the gross output of the activities then has to be valued at the cost of the paid labour and purchased materials only, unless an estimate can be made of the value of the finished product by comparison with other similar projects.

261. While censuses and surveys generally contain information on the classification of typical products of the construction industry according to kind of commodity, atypical products are usually shown in one item if they are included at all. Supplementary information, therefore, needs to be collected from a sample of units in order to obtain information on the output of atypical products classified by kind of commodity. If there is no reason to believe that the commodity composition of these products is changing significantly over time, these sample surveys may be taken at infrequent intervals, for example, every 5 or 10 years. The atypical products may consist of transportation services provided by the construction establishments themselves, the manufacture of bricks etc. Changes in the output of atypical products may not be the same as the changes in the output of typical products or in employment. If the output of atypical products is large and not used within the same establishment in the same accounting period, supplementary current information on the size and composition of this output should be collected, at least from the largest producers.



### C. Intermediate consumption

262. Annual or benchmark cost structure surveys based on a sample of establishments would be the best source for estimating intermediate consumption in construction. In the absence of cost structure surveys, censuses or other less frequent inquiries may be designed to include data on the composition of intermediate consumption in each subgroup of the activity, classified by kind of output (residential etc.) and type of contractor (painting, plumbing etc.). Annual establishment surveys will generally provide less detailed information on intermediate consumption, and, if necessary, the ratio between the intermediate consumption and gross output of each type of construction activity in the benchmark year estimates may be assumed to remain constant for years between benchmark year surveys, or to change over time according to a pattern observed in annual small-scale inquiries.

263. Smaller units of the construction industry are frequently not covered by annual inquiries, but may be included in benchmark year estimates. It may then be assumed that the intermediate consumption per unit of value of gross output or per employee in the smaller units is equal to that in benchmark year inquiries. If ratios per employee are used, the resulting estimates of intermediate consumption must be inflated to current prices by means of appropriate price indexes. Better results may occasionally be obtained by basing the extrapolation on the changes in input-output relationships for the smallest units that are covered by annual inquiries; changes in the relationships for the units included only in benchmark year surveys may be assumed to be the same as those for the smallest units covered in the annual inquiries.

264. Only the most important items of intermediate consumption are usually specified by commodity in surveys of the construction industry, while the rest of intermediate consumption is allocated to one or more broad categories. The content of these residual groups may differ considerably for different types of construction activity. The broad categories may be subdivided into their separate components for each type of construction activity by means of special sample surveys or other supplementary information, for instance, from benchmark cost structure surveys. This detailed allocation of intermediate consumption only needs to be made for benchmark years, because the input-output relationships may be expected to remain approximately constant in the short run. It will facilitate the work of allocation if it is undertaken in stages, that is, if the residual commodity groups are first divided into narrower groups that are as homogeneous as possible, and then the narrower groups divided into commodities, if possible. Payments to subcontractors and purchases of goods for resale should be deducted before the allocation is made.

265. Information on the intermediate consumption of services is often lacking in both annual and less frequent surveys of the construction industry. Separate sample surveys for benchmark years are therefore needed to cover these items. The benchmark year estimates may be extrapolated by assuming that the ratio of each service item to gross output has remained constant.

266. Estimates of intermediate consumption in rural construction activities may best be obtained by means of special surveys or by adding questions to multi-purpose household surveys on the costs of materials used. Inquiries of this kind are usually only undertaken for benchmark years. Extrapolations of the benchmark year estimates are very difficult to make because of lack of appropriate data, but indirect indicators such as data on the changes in the rural population, together with price indexes of building materials, are sometimes used as extrapolators.

## VII. WHOLESALE AND RETAIL TRADE, RESTAURANTS AND HOTELS

267. The establishments discussed in this section are those whose activities are classed in ISIC major division 6. Major division 6 includes wholesale trade (61), retail trade (62), restaurants (631), and hotels (632).

### A. Wholesale and retail trade

#### 1. Content and general considerations

268. This group includes the services entering into trade margins, which must be added to the value of goods as they leave their producers in order to obtain the cost of the goods to the ultimate purchaser. Estimates for this group, therefore, play an important role in the application of the commodity flow approach.

269. Wholesale trade covers units that buy new and used goods and resell them without transformation to retailers, industrial, commercial, institutional or professional users or other wholesalers. Agents who buy or sell merchandise and the separate sales branches and offices of manufacturing and mining enterprises are also included, provided that they take possession of the goods in which they deal and do not merely take orders to be filled by direct shipments from producing plants or mines. Wholesalers frequently assemble, sort and grade goods in large lots, break bulk, repack, bottle and redistribute in smaller lots, refrigerate, deliver and install goods. Marketing boards and similar units operated by government or co-operative organizations are also included. However, the leasing and rental of industrial machinery and equipment is classed as business services, not wholesale trade.

270. Large-scale wholesalers can usually be separated from large-scale retailers, but smaller units that combine the two activities are frequently not able to furnish separate information for each activity. Wholesale trade activities are also often performed by manufacturing, electricity and gas, and construction establishments. Except where these activities are important, separate data on the gross output and intermediate consumption connected with them are usually not available.

271. Retail trade covers units that mainly buy and resell without transformation new and used goods for personal or household consumption. Most retailers take title to the goods they sell. Establishments primarily engaged in renting goods for personal or household use are included, except those engaged in renting amusement or recreational equipment, such as boats and canoes, motor cycles, bicycles and saddle horses, which are classed in personal services, or renting automobiles, which are classed as transportation. Repair and installation services rendered by establishments mainly engaged in retail trade are included in the gross output of retail trade.

272. Combinations of retail trade with other kinds of activity are common. Where eating facilities are combined with retail trade, the two activities can only rarely be reported on separately, and the entire establishment must be classified in the kind of activity that accounts for most of its gross output. Combinations of retail trade with manufacturing or with personal services are also often found. For instance, custom manufacture of shoes and sale of shoes without transformation are often combined, and the repair of watches, radios etc. is frequently performed by the retail outlets that sell similar goods. It is generally impossible to treat

the non-trade activity as though it were being performed by a separate establishment, and the non-trade activity is usually classified with retail trade since trade is almost always the more important component. Transport services may also be rendered by units of wholesale and retail trade; if it is not possible to treat them as if they were being performed by separate establishments, the gross output of these transport activities will be included with trade.

273. The gross output of establishments engaged in wholesale and retail trade is defined differently from that of establishments in other activities. It is equal to their gross trade margins, that is, the difference between the cost of goods bought for resale and the receipts from their sale, less the cost of goods destroyed by wastage or for other reasons during the period between purchase and sale. Intermediate consumption consists only of goods and services needed to run the trading establishment, such as packaging materials, electricity, rent, office supplies, and cleaning materials. It does not include goods purchased for resale. If feasible, the gross output of atypical products such as own manufactures or transport services should be excluded from the calculation of gross margins, but added as a separate output of wholesale and retail trade.

## 2. Gross output

274. Censuses of distribution provide most of the data needed for making benchmark estimates of the gross output of wholesale and retail trade. In practice, distribution censuses are usually large-scale sample surveys, because it is too costly (and quite unnecessary) to cover exhaustively all the establishments engaged in wholesale and retail trade. Such surveys should cover all the larger enterprises, a relatively large sample of the medium-sized ones and a small sample of the smallest enterprises. It is, however, important that the surveys should be comprehensive in the sense that no part of wholesale and retail trade is entirely left out. Because surveys of this type are expensive and require large inputs of manpower and equipment, they can be conducted only at infrequent intervals, such as every 5 or 10 years.

275. If distribution censuses do not distinguish purchases of goods for resale from intermediate consumption, or provide insufficient information on the commodity composition of intermediate consumption, it is desirable to conduct cost structure surveys of a representative sample of establishments for benchmark years. Because of differences in the cost structure of the various types of wholesale and retail trade and in the nature of the services they render, it is useful to collect data separately for a number of subgroups of the industry, for example, (a) joint wholesale and retail trade, which is very important in many developing countries, (b) trade in principal export and import products, such as petroleum, with separation of wholesale and retail operations, (c) wholesale trade in all other products, and (d) retail trade in all other products.

276. Sufficiently detailed information may be collected from the larger establishments to make possible estimates of gross trade margins classified not only by commodity groups but also by type of purchaser - for example, retailers, manufacturers, Government or households. Information may also be collected on the gross output of atypical products, including sales of self-produced manufactured goods and transport services that cannot be treated as separate establishments. The data collected for the smaller units, however, may only suffice to estimate their total gross margins. In the absence of detailed information for the smaller units, it may be assumed that the composition of their gross output is the same as

that for the smallest among the larger establishments. It would be useful, however, to make special inquiries of the important group that covers mixed wholesale and retail establishments in order to obtain information on sales by type of customer, by method of payment and by commodity group.

277. On an annual basis, the minimum requirement consists of data on the sales of various types of trading establishments. Preferably, these data should be collected in sample surveys covering all types of traders, and should be classified by kind of trading activity and by commodity group.

278. Index numbers of total sales may be used to extrapolate benchmark year estimates of trade margins if the indexes are based on a representative sample of trading outlets, including stalls, street hawkers and other itinerant merchants. Although the published index numbers may not always be classified by kind of trading activity, unpublished material may sometimes be available that makes such a classification possible. To classify annual sales by commodity group, the commodity composition of sales in a benchmark year may be adjusted to reflect changes in the composition of the supply of goods from domestic production and imports between the benchmark and current years. Spot checks and special surveys of important representative trading firms may be helpful in making these adjustments.

279. Some annual sample surveys of trading establishments cover only the larger units, but include detailed data on the composition of the sales of these units classified by type of trading activity. If there are annual employment statistics, the sales of the smaller establishments that are not covered by the annual surveys can be extrapolated for each trading activity by assuming the same change in sales per person engaged as in the smallest establishments covered by the annual surveys.

280. Employment data combined with the wholesale and retail price index may be used to extrapolate benchmark estimates of total sales of wholesale and retail trade, if no other data are available.

281. Where direct information on sales by wholesale and retail traders is lacking, it may be possible to combine annual estimates of the supply of groups of goods with average percentage margins to arrive at rough estimates of sales. One way of doing this is to make as exhaustive a list as possible of the supply of all the goods that go through wholesale and retail trade channels, and then to add approximate percentage margins to the supply estimates. The goods to which trade margins apply originate in agriculture, mining and manufacturing and may be imported or exported. The gross margins may be based on a recent census of distribution, if one is available, or they may be established either on the basis of small-scale sample surveys or by means of spot checks. This will yield estimates of sales for each commodity group, which may be summed to obtain an approximate sales figure for total wholesale and retail trade. The size of the margins applied will depend on the stages of distribution the goods go through and the nature of the goods, so that the calculations should be made separately for groups of wholesalers and retailers selling different goods. The comprehensiveness of estimates obtained by this method depends on the coverage of the supply statistics on which they are based. Goods sold by stalls, street hawkers and other itinerant merchants should be included, as well as those sold through ordinary trade channels. Care should be taken, however, to make allowance for that part of the supply that does not pass through trade channels because the goods are used by their producers or sold directly to ultimate purchasers.

282. Extrapolations based on sales assume that percentage margins have remained unchanged since the last benchmark estimate. This is usually realistic over short periods, but efforts should be made to update the margin figures regularly, at least every five years. If new benchmarks do not become available, small-scale checks should, as a minimum, be undertaken.

### 3. Intermediate consumption

283. The value of the intermediate consumption of wholesale and retail trade is quite small compared to purchases of goods for resale. It consists mainly of purchases of wrapping and packing materials, stationery, office and store equipment, payment of rent for stores and warehouses and payments for telephone, electricity etc. SNA does not make an imputation for rent of owner-occupied business premises. The services rendered by these premises will instead be automatically reflected in the value added and gross operating surplus of the businesses that use them.

284. Because of its small magnitude, the intermediate consumption of wholesale and retail trade is frequently not shown separately from purchases of goods for resale in censuses of distribution. It is then necessary to obtain benchmark data on intermediate consumption from another source, such as a small-scale survey of representative establishments. It is useful to classify the data by a number of fairly homogeneous subgroups of wholesale and retail trade because the importance and composition of intermediate consumption may differ among the groups. For instance, wholesalers dealing in bulk commodities such as grain or rice need larger storage facilities than those dealing in electronic equipment. Also, the rent paid, which is an important component of intermediate consumption, usually increases with the size of an establishment, and the average size of establishments within the different subgroups of trade differs. If gross output is estimated for a number of subgroups of trade, intermediate consumption should be estimated for the same subgroups.

285. Annual surveys of the various kinds of trade rarely contain information on intermediate consumption. It is therefore usually assumed that their input-output relationships have remained stable since the latest benchmark estimate. It may be desirable, if feasible, to adjust the estimates of intermediate consumption arrived at by this method to take into account relative changes in the prices of the various components of intermediate consumption. To do this, the percentage distribution of intermediate consumption by commodity group may be adjusted by the ratio of the change in the price index of each commodity group to the average change in the price index for the total. The price indexes used may be the closest applicable component of the producers' price index, or they may be estimated from the basic price data collected for that index.

286. If no adequate census or survey is available even for a benchmark year, it is very difficult to arrive at usable estimates of the intermediate consumption of wholesale and retail trade. Very approximate estimates may be made by applying ratios derived from small-scale samples or even spot checks to gross output. Some information for the larger establishments may be derived from regular company reports or from standardized accounts prepared under government accounting acts.

## B. Restaurants and hotels

### 1. Content and general considerations

287. This category includes two subgroups, restaurants, cafes and other eating places (ISIC 631), and hotels, rooming houses and other lodging places (ISIC 632).

288. Restaurants, cafes and other eating and drinking places covers mainly establishments selling prepared foods and drinks for consumption on the premises, including bars and hawker stalls. Catering and independently operated dining car services are also included, as well as canteens in plants, offices and clubs for which data can be separately reported. However, restaurant facilities operated in connection with the provision of lodging are included with "hotels, rooming houses and other lodging places".

289. Hotels, rooming houses and other lodging places includes the provision of lodging for payment, whether open to the general public or restricted to members of a particular organization. Lodging facilities operated by clubs and enterprises are also classified here, if these activities can be segregated into separate establishments.

### 2. Gross output

290. The gross output of restaurants and hotels includes the receipts for food and drinks prepared and sold and the fees received for lodging etc. If separate estimates are made for restaurants and for hotels, the gross output of each of the two activities will often cover products that are typical of the other, for which separate data are unavailable.

291. Restaurants and hotels are sometimes covered in censuses of distribution, but they are more frequently included in comprehensive surveys of service establishments undertaken at infrequent intervals. The information on restaurants and hotels collected in surveys of services is usually less complete than that collected in censuses of distribution, but such surveys may still provide valuable benchmark data.

292. Separate surveys of the hotel industry may be undertaken in countries where tourism is important. Small-scale benchmark surveys of the income and outlay of a limited number of representative units in the restaurant and hotel industry are also useful. It is very difficult to obtain data that can be used to make reliable estimates for the many small bars, coffee shops and other eating and drinking places and lodging and boarding houses that are common in many countries. However, a number of such units should be included in any sample surveys of the restaurant and hotel industry that may be conducted.

293. When benchmark year estimates of gross output are available, current indicators may be applied to extrapolate them. The indicators may be based on number of guest-nights spent in hotels, employment in hotel and restaurant services and payment of tourist, hotel or similar special taxes. The extrapolations should be made in as great detail as the benchmark estimates permit. In the case of hotels, for instance, separate indicators should, as far as possible, be applied to lodging and restaurant services. It is also desirable, if feasible, to use separate indicators for any retail trade activities of establishments primarily engaged in the provision of eating and drinking facilities. If the extrapolations

are primarily made by means of quantity indicators, the resulting estimates at constant prices should be converted to current prices by using price indexes that are as suitable as possible. These price indexes may be constructed from the basic price data collected for the consumer price index.

### 3. Intermediate consumption

294. The intermediate consumption of hotels and restaurants includes rent, purchases of office supplies etc., purchases of food and beverages, cleaning materials, linen supplies etc. Data on the intermediate consumption of hotels and restaurants and its composition will usually have to be collected by means of cost structure surveys or special sample surveys, since censuses of distribution or services usually do not furnish these data. The input structure of these activities varies considerably among subgroups. It is therefore desirable that benchmark year estimates be made for as detailed and homogeneous subgroups as possible.

## VIII. TRANSPORT AND COMMUNICATION

### A. Content and general considerations

295. Major division 7 includes land transport (711), water transport (712), air transport (713), allied services, including storage (719), and communication (720). Apart from the last subgroup, these are the services that enter into the transport margin needed to convert output figures valued in producers' prices to the prices paid by purchasers. The establishments discussed in this section are only those whose services are sold for prices approximating total cost. Some services in this area are provided by the Government free or at prices that do not reflect costs; the units supplying these services are classed as producers of government services.

296. Land transport covers passenger and freight transport by rail and road, including taxicabs, special buses and animal-drawn vehicles; pipeline transport; supporting services such as the operation of terminal facilities, toll roads, bridges, tunnels, and parking lots; and the rental of railroad cars, automobiles, trucks without drivers, and terminal facilities. Dining and sleeping car services in railway trains are included if they are not provided by independent units. Restaurants and hotels operated by railway companies, however, are classed under restaurants and hotels. Train and car ferries are classified under water transport. The provision of ambulance services is classified under medical, dental and other health services. Own-account construction, alteration and major repair of railway tracks, tunnels, bridges, roads, parking lots etc. should be classified with construction, if its costs can be separated out. Trading and manufacturing enterprises often run their own fleet of road freight vehicles; these freight units should be classed under land transport if their costs and output can be distinguished from those of their parent bodies.

297. Water transport covers ocean, coastal and inland water transport of passengers and goods, and supporting services such as the operation and maintenance of canals, piers, docks, and associated facilities; pilotage; loading and discharging of vessels; rescue of distressed vessels and cargoes; and chartering of ships.

298. The operation of ferries in ocean and coastal waters for the transport of railway trains, motor vehicles or passengers is a part of water transport. The activities of weather observation ships should be classified with research and scientific institutes. Establishments mainly engaged in raising sunken ships for breaking up, repair or alteration should be classified as manufacturing. The own-account construction, alteration and major repair of piers, docks, navigation aids and canals should be separated from water transport and included under construction if these activities can be reported on separately.

299. Air transport covers passenger and freight transport by air, the operation of airports, air navigation facilities, and the rental of aircraft. The alteration and major repair of aircraft and airports, including own-account work, should be separated out and classified as manufacturing and construction, respectively, if these activities can be reported on separately.

300. Services allied to transport includes activities such as freight forwarding, travel agencies, ship and aircraft brokers, and the operation of warehouses and storage facilities as independent services. Delivery departments and warehouses operated by establishments in other activities for their own use should be included with the activities concerned. Agencies hiring out transport should be included under land, water or air transport, as appropriate.

301. Communication includes the operation of facilities rendering communication services to the public by mail, wire and radio. Services consisting of the exchange or recording of individual messages are also included. Studios and stations for general radio and television broadcasting are, however, excluded from communication and included with recreational and cultural services. Own-account building and repair of telephone and telegraph lines and other communication facilities should be classified in construction, if possible.

302. Where an enterprise carries on railway, road, air, water or pipeline transport within the domestic territories of two or more countries and is jointly owned by the Governments of these countries, the share of each participating country in the total receipts of the jointly owned enterprise may be based on the proportion of total passenger-kilometres and ton-kilometres of freight originating within the domestic territory of each. The figures for passenger-kilometres and ton-kilometres may be combined by using the average price per passenger-kilometre and per ton-kilometre as weights. The intermediate consumption allocated to each of the countries should include the costs actually incurred within the country, plus a share of common head office, central repair shop and other current operating costs estimated in proportion to the country's share of total gross receipts.

303. Air and water transport enterprises operating between countries that are not jointly owned by the Governments concerned should be considered resident units of the country or countries whose residents own the equity of the enterprise. If the equity is owned by residents of two or more countries, the gross output and intermediate consumption should be allocated to each of the countries in proportion to the equity held by its residents.

#### B. Gross output

304. Establishment surveys undertaken at infrequent intervals may furnish benchmark data on gross output for each type of service for all but the smallest transport and communication establishments. The establishments may be classified by main kinds of activity, such as road transport, water transport and storage and



warehousing. The information collected is usually limited to total gross output of each establishment, although some countries have carried out sample surveys that collect benchmark data on intermediate consumption and value added.

305. Public enterprises are important in transport and communication. Governments invariably provide postal services. In many countries, railways, airlines and telephone and telegraph services are public. Piers, docks and associated facilities, and canals may also be owned and operated by the public authorities. Where charges are made for the services involved, these activities are often organized as public enterprises. Important public enterprises may also operate beside private ones in road transport and ocean and coastal shipping. The public enterprises operating transport and communication establishments usually publish annual reports that include accounting statements. Sometimes, information on their incomes and expenditures is included in local or central government accounts, and if further details are needed they may be obtained from the responsible government authorities. In some countries, government railways or local authorities provide passenger and freight transport by bus or truck; information on the gross output of these activities should be readily available in the accounts of the railways and local authorities.

306. Private railways, airlines and communication establishments are usually large and either publish annual reports or are required to file annual statements on their incomes and expenditures with government authorities. All information needed to estimate gross output should be available in these sources.

307. Supporting services to transport are also generally supplied by public or large private enterprise. Most of the data needed to estimate the gross output of supporting services to water transport, such as the operation and maintenance of piers and docks, may be obtained from harbour authorities. Local offices of foreign shipping lines also provide supporting services to water transport. Data on the operations of the larger offices may be obtained by questionnaire, while the gross output of smaller offices may be estimated by assuming the same ratio between their labour costs and gross output as for the larger offices. Their labour costs may be estimated on the basis of information in annual surveys of employment and earnings. The gross output of local offices of foreign airlines may be estimated by a similar method. Information on the revenue and expenditure of airports, where these are organized on a profit-making basis, may be obtained from the records of the public authority that is in charge of them. The gross output of airports consists mainly of airport landing fees, rental of terminal facilities and similar user charges.

308. The data needed to estimate annual figures for the gross output of small-scale road and water transport are usually not readily available. An annual series of indicators that can be used in extrapolating benchmark data will therefore need to be built up from a variety of sources.

309. One approach is to use the number of vehicles and boats classified by size from licencing registers coupled with data collected in small-scale surveys or spot checks on gross output per transport unit classified by size or per person engaged. If possible, an estimate for animal-drawn vehicles should also be included where these are important. If significant changes in the value of gross output per transport unit are not likely to have taken place over the short run, the special surveys need not be undertaken annually but at approximately three-year intervals. To extrapolate the gross output of passenger transport by private bus and taxicab, an index of the number of vehicles in circulation, based on official registers, may be combined with indexes of bus and taxi fares.

310. Another approach for road transport first estimates average labour costs for different types of vehicles, for example, buses, taxis, utility vans, minibuses, and trucks, by multiplying average wages for operators of each type of vehicle, derived from annual sample surveys of employment and wages, by an assumed average number of operators per vehicle. Ratios between gross output and labour costs for each type of vehicle, derived from a recent benchmark year survey of land transport, may then be used to estimate gross output per vehicle. Multiplying by number of vehicles of each type, obtained from official registers, and adding up the results yields an estimate of gross output of road transport.

311. It is usually quite difficult to obtain reliable information from which the gross output of small-scale water transport may be estimated. However, it may be possible to obtain information from marine authorities on the number and tonnage of dhows, sampans, junks, small freighters and the like plying coastal waters. The same authorities may also be able to furnish an estimate of the number of crew members per boat and to provide a rough estimate of average earnings per crew member. Inland water transport by ferry is sometimes provided by railways, and data on the gross output may then be derived from the accounts of railway companies.

312. Annual traffic statistics, often collected in traffic surveys, are another important source of information on transport services. These statistics usually cover passenger-kilometres and ton-kilometres of freight transported by railway, road, water or air, the number of telegraphic and cable messages sent and the number of telephone outlets installed.

313. Traffic statistics are usually available with considerably less delay than company accounts, and if it is difficult to obtain accounts for the enterprises that provide public transportation, or if the accounts become available only after considerable delay, it may be preferable to use traffic statistics to extrapolate benchmark estimates of the total gross output of the various types of transportation. Traffic statistics usually cover all traffic by rail, bus, air etc., but only rarely is a distinction made either by size of establishments or between public and private carriers. It is therefore usually not possible to use them in extrapolating gross output for small and medium-sized establishments only.

314. Traffic statistics should be collected separately for freight and passenger transport by rail, road, air and water. Volume indexes for freight by each type of carrier should be classified by length of haul and type of goods. The volume indexes for passenger traffic should, if feasible, be classified by class of service and average length of journey.

315. Weighted price indexes for each type of traffic are needed to convert volume indexes to current prices. These indexes should be built up from information on freight or passenger rates classified in the same ways as the volume indexes. Freight rates classified by type of goods and average length of haul are also needed for estimates of transport margins where the commodity flow method is used.

316. Traffic statistics may also be used in making direct annual estimates of the gross output of transport, where no benchmark figures are available. For this method, data should be collected not only on passenger-kilometres and ton-kilometres of freight transported by railway, road, water or air and the number of telegraphic or cable messages sent, but also on prices of these services classified according to the main factors with which these prices vary. Passenger fares per kilometre vary with the class of service and distance travelled, while freight rates differ according to type of carrier, kind and lot size of goods and distance hauled.

317. It is usually not possible to take all of these factors into account. However, as a minimum, differences in rates for each class of service for passenger transport and for groups of similar goods and distance hauled for goods transport should be allowed for. The weights used to compute average passenger and freight rates should be proportional to estimated passenger-kilometres travelled by each type of service for passenger transport and broad categories of goods and distance hauled for goods transport.

318. Services allied to transport are predominantly private in most countries. In some countries, however, special agencies organized as public enterprises book passages and clear goods for the Government. Information on the gross output of these agencies may be obtained from the government office concerned. It is desirable to undertake special sample surveys of private booking and travel agencies for benchmark years if reliable information for them is not available in establishment surveys; indicators that may be used in extrapolating their gross output to current years may be derived from annual surveys of the larger agencies. Annual information on the gross output of the larger firms engaged in storage and warehousing may also be collected; gross output of the smaller firms in this area may be estimated by using ratios of gross output to compensation of employees in the larger firms, if annual information on employment and average wages and salaries are available.

319. If units rendering communication services such as post, telegraph and telephone offices are either publicly owned or regulated private companies, annual data on the gross output of the various kinds of communication activities are usually available in their accounts. The classification by kind of service provided by the accounts may not, however, be detailed enough for national accounting purposes, and special benchmark surveys may be needed to obtain more detailed information. The benchmark year estimates may be extrapolated to current years by means of indicators such as number of telephone calls, classified by long distance and local, or number of cables, letters and postal parcels, coupled with appropriate price indexes. The price indexes should be based on rates charged for each kind of communication service weighted in proportion to the percentage distribution of the value of the various kinds of communication service during the benchmark year.

320. In some countries, private messenger services, parcel delivery services and express mail services play an important role in communications. Information on their activities may be obtained from the same sources as information on similar transport companies. Some are large, and will have published accounts. Many, however, may be small and informal, and will need to be covered in the same way as small-scale transport. Indeed, it is often difficult to establish a boundary between transport and communication when the same establishment delivers electronic mail, letters, parcels, and large freight shipments, and some judgement will be called for in assigning such establishments to the proper ISIC category.

321. Information on the gross output of own-account construction activities, where these are left in transport and communication because their inputs cannot be identified, should be available in the accounts of large transport and communication companies. In the absence of data which make possible direct estimates of the own-account construction activities of smaller establishments, it may be assumed that own-account construction is generally not important for these small establishments.

322. It would be useful to check the estimates of gross output of transport and communication services against estimates of such services from the user side. Estimates of passenger fares paid in small-scale road and water transport may, for instance, be checked against information in household expenditure surveys. Estimates of freight incomes of different types of carriers from the transportation of mail may be checked against information in the accounts of the postal services. Also, sometimes purchases of goods for resale are valued f.o.b. the seller's warehouse in surveys of wholesale and retail trade, and the freight paid is treated as a separate item of intermediate consumption. If the freight is specified by type of carrier, this information may be of help in estimating the gross output of the various types of transport services.

### C. Intermediate consumption

323. Special sample surveys for benchmark years may be needed to obtain data on the cost structure of services provided by smaller companies that do not publish accounts. These surveys should cover transport by animal-drawn vehicles where such transport is important. Sometimes it may not be possible to cover all types of transportation in one survey, and separate surveys may have to be undertaken, for example, of taxi companies and travel agents. If the surveys do not cover all establishments, estimates of the intermediate consumption of those not covered within each subgroup of the industry may be made by assuming that the input-output relationships are the same as for the smallest establishments within each subgroup that are included in the surveys.

324. For public and large-scale private transport and communication establishments, annual data on intermediate consumption classified by broad groups of goods and services are usually available from the same reports as the figures on gross output. Direct inquiries from a representative selection of these establishments may yield information that can be used to estimate this classification in more detail. The detailed percentage distribution of intermediate consumption by groups of goods and services may be assumed to be the same for all units engaged in the same activity.

325. Annual estimates may also be made by extrapolating benchmark year estimates. Trends in the value of intermediate consumption for this purpose may be available from annual sample surveys or spot checks or from trade associations of enterprises engaged in bus operation, ship owning and operation, pipeline operation etc.

326. Some important items of intermediate consumption of transport establishments, such as diesel oil for locomotives and ships and gasoline for buses, taxis and boats, may be estimated indirectly on the basis of approximate information about the average distance run, the average consumption in litres per kilometre or nautical mile and the current price of the fuel in question.

327. Input-output relationships derived from infrequent benchmark surveys may also be used to make annual estimates. The input-output relationships should be adjusted for changes in relative prices if these have been substantial since the benchmark year survey was conducted.

## IX. FINANCE, INSURANCE, REAL ESTATE AND BUSINESS SERVICES

328. This section discusses establishments that are classed in ISIC major division 8. It includes financial institutions (81), insurance and pension funds (82), real estate (831), and business services (832). A number of the kinds of economic activity included in this group present special problems in identifying gross output and value added for national accounts purposes.

### A. Financial institutions

#### 1. Content and general considerations

329. Financial institutions include three subgroups: monetary institutions, other financial institutions and financial services. Monetary institutions include the central bank, commercial banks and savings and other banks that receive deposits which are transferable by cheque, otherwise used in making payments, or available on demand. Savings banks that do not receive deposits transferable by cheque are included in other financial institutions, along with building societies and savings and loan associations, agricultural credit institutions, industrial development banks, rediscount and financing institutions, personal credit institutions, loan correspondents and brokers, trust companies, investment companies, security and commodity brokers, dealers and underwriters. Financial services encompass foreign exchange dealers, units primarily engaged in cheque cashing and exchange or rental of safe deposits, money-lenders and pawnshops, security, commodity and bullion exchanges, investment research and counselling, stock quotation services, and lease and patent brokers, dealers and underwriters.

330. Doubts may arise about whether a particular government financial operation should be classified as a public enterprise or in producers of government services. In general, units that primarily engage in financial transactions on the market, that is, both incurring liabilities and acquiring financial claims on others, should be classified as public enterprises. Public lending institutions that have the legal authority to incur liabilities to the public or to other financial institutions should be treated as public enterprises, even though they in fact have liabilities only to the public authorities. On the other hand, public savings institutions whose funds flow automatically into the balances of the public authorities or into special issues of the public debt, and public lending authorities that may obtain their funds only from the Government, are treated as producers of government services. Mints, that is, establishments which manufacture new coins and print paper currency, are excluded from financial institutions and classified in manufacturing.

331. Boundary problems may also arise with regard to the treatment of private establishments that exchange currency or lend money but also engage in other activities such as retail trade or the operation of travel bureaux. Although separate data are likely to be available on charges levied for money exchange or money lending, it may not be possible to allocate the appropriate share of total intermediate consumption of the joint enterprise to each of its activities. The joint activity may then be allocated to whichever kind of activity predominates.

332. Only a minor part of the income of banks and similar financial institutions comes from charges made for services rendered to their customers. Most of their income is generated by charging a higher rate of interest on loans made than they pay to their depositors. If these institutions were treated like other

establishments and their gross output measured by charges for services rendered, they would have a negative operating surplus and in many cases also a negative value added. SNA, however, considers that in addition to the explicit transactions in which banks engage they also perform implicit services to their depositors and borrowers, in return for the use of the depositors' funds. It therefore includes an imputed bank service charge in the gross output of these units, in addition to the explicit service charges actually received. The imputed service charge is measured by the implicit cost of providing the service, and is equal to the excess of interest and dividends received on funds acquired through deposits over interest paid out on deposits. Interest received from the investment of own funds should be excluded from the imputation, if feasible, but it is seldom possible to do so.

333. Sometimes the Government makes transfers to public or private financial institutions in order to enable them to keep their interest rates below the market rate. These transfers should be included in interest received in estimating the imputed service charges for the financial institutions concerned. SNA does not regard these transfers as subsidies (as they would be regarded in other kinds of activity) because interest is not regarded as a receipt for the sale of a service.

334. The imputed bank service charge is an imputed receipt by banks and an imputed component of intermediate consumption for the enterprises and Governments, and of final consumption for the households, that use banking services. However, as it is very difficult to allocate imputed bank service charges to specific users, SNA deducts the total imputed bank service charge in a single line entry from total value added, as was done in table 1 in part one. This treatment is, however, under consideration in the review of SNA, and may be modified in the future.

## 2. Gross output

335. The data needed to estimate the gross output (actual and imputed service charges) of the central bank, commercial banks, savings banks and development banks are available in most countries in statistics compiled annually by supervisory financial authorities. Published accounts are also generally available for all public monetary and financial institutions and for the larger private commercial and savings banks.

336. In some countries, a considerable part of banking activity is carried out by branches of foreign banks. In line with the general principles of SNA, these branches should be treated as resident establishments of their country of location and their gross output and intermediate consumption should therefore also be allocated to that country. Sometimes, difficulties will arise in estimating the imputed service charges of the branches of foreign banks because information may not be available to make it possible to identify the property income earned on the funds deposited in each branch. The total deposits of a branch bank will be known, however. If it is also possible to obtain information on total deposits and total property income of the parent company as a whole, a share of the total property income that is equal to its share in total deposits may be allocated to each branch.

337. Special surveys may be needed to obtain information on private financial institutions such as rediscount and financing institutions, personal credit institutions, loan correspondents and brokers, trust companies, investment companies, and security and commodity brokers, dealers and underwriters. A register of the financial institutions concerned is usually available as a sample frame. Information on the operations of these financial institutions may also be obtained from income tax data.

338. Statistical information on other financial services such as foreign exchange dealers and money-lenders is more difficult to obtain. Censuses of establishments or benchmark year surveys of service industries may sometimes include some information on financial services. In most countries, however, special surveys are needed in order to obtain the necessary data for other financial services.

339. Rents received for dwellings and other buildings owned by banks etc., the operation of which cannot be separated out and allocated to the real estate industry, are also part of the gross output of financial institutions. Output of atypical products such as rent may be quite important for banks, and should be estimated by means of separate surveys if these items are not available in statistics of financial institutions.

### 3. Intermediate consumption

340. The intermediate consumption of financial institutions consists of rent, general administrative costs, such as stationery and office supplies, telephone, insurance service charges, data processing, and the costs of minor repairs and maintenance of their premises and equipment. Where atypical products such as property rental are included in output, intermediate consumption will include the associated operating and maintenance costs. The intermediate consumption of the central bank includes the price of new coins and paper currency purchased. The statistics issued by bank supervisory bodies do not usually include a detailed classification of these expenditures and it is therefore necessary to undertake supplementary inquiries, at least for benchmark years.

#### B. Insurance and pension funds

##### 1. Content and general considerations

341. The treatment of insurance companies and pension funds is one of the topics under consideration in the current review of SNA. The discussion below relates to the present SNA; some of the revisions under review would considerably simplify the treatment of these entities.

342. Insurance companies include insurance carriers engaged in life, fire, marine, accident, health, title, financial obligation, casualty, fidelity and surety insurance; insurance agents and brokers; organizations servicing insurance carriers; consultants for policy holders; and adjusting agencies. Independently organized pension schemes established with the purpose of providing incomes on retirement for specific groups of employees are also included here.

343. SNA does not treat the full amount of insurance premiums as gross output. Instead, it assumes that premiums paid for casualty and life insurance and contributions to pension funds are composed of three elements: (a) a charge for the service of insuring, (b) a payment for risk and (c), in the case of some life insurance, a substantial element of saving, and only the charge for the service of insuring is considered gross output. It is therefore necessary to separate the service charge from the other components of the premiums paid.

344. For a country as a whole, the payment for the risk of carrying casualty insurance during a given period is defined as equal to the claims paid during the period, adjusted by the net change in provisions for unexpired risks, and the

service charges of casualty insurance companies are therefore equated to the difference between the gross premiums received and the adjusted claims paid out. SNA allocates the service charges of a given type of casualty insurance among various classes of policy holders in proportion to the gross premiums they have paid during the period of account, on the ground that services rendered vary with the premiums paid. Service charges allocated to producers become part of their intermediate consumption.

345. The treatment of casualty insurance recommended in SNA can only be applied to insurance services provided by resident producers. Branches and subsidiaries of foreign insurance companies located in the country are treated as resident producers, but residents may also insure themselves directly with foreign insurance companies. This is particularly important for maritime and aircraft insurance. It is not feasible to apply the treatment of domestic insurance transactions recommended in SNA to these types of insurance, since it is impossible to obtain the data on premiums received and claims paid by all the non-resident insurance companies that may be involved. In this case, the premiums paid minus claims received are treated as imports of services. This treatment is consistent with that recommended for the balance of payments. 10/

346. For life insurance, SNA considers that the total service charge on life insurance for a country as a whole is equivalent to the excess of premiums received over the sum of (a) claims paid, (b) the net addition to actuarial reserves and (c) the interest earned on these reserves. Actuarial reserves include both the reserves set aside to cover payments for risks of insuring and the elements of saving connected with life insurance policies. Sometimes, it may not be feasible to identify the actuarial reserves and the interest on the reserves, but if data are available on the net additions to life funds, excluding the interest that the life insurance companies assign to these funds, the estimates may be based on this information. Life funds are reserves that are earmarked for policy holders, and include contingency reserves, in addition to actuarial reserves.

347. In developing countries, most or all of the insurance firms are branches of foreign companies, and no information is likely to be available on what actuarial reserves or life funds have been set aside against the premiums they receive. Nor is this information likely to be available from the headquarters of the companies. Under these circumstances, the gross output of the branches of foreign insurance companies may be set equal to costs incurred, namely, the sum of intermediate consumption, compensation of employees, consumption of fixed capital, and operating surplus, if known.

348. Pension funds may be organized by private or public employers, or jointly by employers and employees, or by trade unions, professional associations or fraternal and other types of societies. In order to be classified in ISIC category 82, pension schemes must meet two conditions. First, they must maintain an independent fund that the fund managers may invest as they see fit. If there is no fund and the employers pay the pensions out of their general receipts, or if the fund forms part of the employer's reserves or is automatically invested in securities of the employer, the pension scheme should be treated as an integral part of the employer's enterprise. Secondly, the pension scheme must be distinct from the country's social security arrangements. Pension schemes that are part of social security arrangements for the community as a whole or large sections of it and are controlled by public authorities are included with producers of government services.



349. SNA sets the service charges of pension funds equal to the administrative expenses of these funds (defined as the sum of their inputs, that is, intermediate consumption, compensation of employees and consumption of fixed capital).

350. Where domestic life insurance companies and pension funds are operated jointly, the total administrative costs of the joint operation may be taken as the measure of their gross output. The joint output may be divided between life insurance companies and pension funds in proportion to the amounts of premiums and contributions received. This means that the gross output or imputed service charges of the life insurance operations involved will be estimated as the sum of their inputs, or administrative costs.

## 2. Gross output

351. Statistics gathered by government regulatory and supervisory agencies usually furnish the information needed to estimate imputed service charges of casualty and life insurance companies. They also often furnish information on the value of atypical outputs of the companies, for example, the renting of dwellings and other buildings. Where such statistics are not available, or do not include all the details required, special surveys may be needed. Data on branches of foreign companies may be obtained by direct inquiry from them. The information needed to estimate the imputed service charges of pension funds is generally available in the accounts of these funds.

352. The gross output of other insurance activities, such as the services of insurance agents and brokers, is equal to their revenue from the sale of services. Annual information on the revenue of these units may be obtained from special surveys or it may be derived from regular annual surveys of employees and self-employed workers. Many insurance agents are involved in various business ventures, and insurance activities may not even be their main business. It is therefore desirable to obtain information on the division of their total income among the various activities they may undertake, such as shipping, importing and real estate, in order to assign them to the kind of activity which is their major focus.

## 3. Intermediate consumption

353. The intermediate consumption of insurance companies consists mainly of expenditures on rent, office supplies and equipment, communication services, travel and similar services, and minor repairs and maintenance. Information on current expenses is usually provided in the same sources that supply the information needed to estimate gross output. If detailed data on the composition of intermediate consumption are needed (as, for instance, for commodity flow analysis), supplementary information may be obtained through special surveys, which may be limited to a few larger establishments.

## C. Real estate

### 1. Content and special considerations

354. Real estate encompasses the renting, management and operation of non-residential and residential buildings, the subdivision and development of land

into building lots and the operation of residential and industrial estates, and the activities of real estate agents, brokers and managers engaged in renting, buying, selling, managing and appraising real estate on a contract or fee basis. In many countries, a significant amount of the leasing and operation of real estate is carried on as a subsidiary activity of units classified in other kinds of activity. Operators of hotels, rooming houses and other lodging places are not included in the real estate industry but are classified with hotels, though the boundary between an apartment building and a hotel may conceptually be difficult to draw. In practice, it may be based upon the quantity and character of services provided, especially the availability of maid and food services.

355. In SNA, the operation of owner-occupied dwellings is included in the real estate industry. Owner-occupiers are treated as fictitious establishments which produce housing services for their own consumption. Owner-occupied dwellings include houses, parts of buildings and apartments owned by a member of the household occupying the unit. The occupants do not pay any fixed rent for the use of such premises, but are instead responsible for the operating and maintenance costs, interest, taxes etc. The operation of owner-occupied non-residential buildings, however, is not treated as an activity of the real estate industry but is considered to be a subsidiary activity of the industries that occupy the buildings. The services rendered by non-residential owner-occupied buildings are thus reflected in the gross output and intermediate costs of the establishments that own and occupy them.

356. The gross output of operators of real estate consists of the gross rents they receive from letting the real estate they own, including imputed rents of owner-occupied dwellings but not of owner-occupied non-residential buildings. The gross rents should cover all payments received for the use of the real estate and its integral services, such as for gas, electricity and telephone when included in the rents. The gross output of establishments that manage real estate, arrange and negotiate sales and purchases, conduct appraisals etc. on account of others consists of the fees and commissions they receive for these services. Fees and commissions for subdividing and developing real estate on account of others are also included in the gross output of the real estate industry. However, capital gains resulting from the sale of real estate should be excluded.

## 2. Gross output

357. Most countries will find it difficult to estimate the gross output of the real estate industry because of the lack of adequate data. One of the main reasons for this difficulty is that real estate is rented out not only by units that are specialized in this field but also by private non-profit institutions, profit-making establishments that are classed in other kind of activity groups, and households. It is therefore difficult to establish a comprehensive register of all units that are engaged in rental activities. Because of this difficulty, benchmark year estimates of total rents are usually obtained indirectly by using data on the stock of dwellings from population or housing censuses or surveys combined with information on average rents paid, which may be available either from the same surveys or from household expenditure inquiries. Construction statistics and statistics of building permits combined with the rent statistics may be used in extrapolating benchmark year estimates.

358. Censuses or sample surveys of housing, conducted either independently or in connection with population censuses, may furnish information on the number and characteristics of dwelling units and the monthly or annual rentals paid for rented units. The characteristics used in classifying the data may be the type of structure in which the dwelling is located, the number of rooms and the availability of facilities such as toilets and baths, water, cooking facilities and lighting. Classification of the data according to geographical location is also needed.

359. If data on rents paid are not included in housing censuses and surveys, information from household expenditure surveys may be used in the benchmark estimates. In order to make this possible, it is essential to use the same classifications and definitions in the household expenditure and housing surveys so that information on the average rent and the stock of the same kinds of dwelling are gathered in the two surveys.

360. Benchmark year estimates of rents for non-residential buildings may be based on special surveys or on data collected for administrative purposes such as property tax assessments. Where this is done, however, care must be exercised to exclude owner-occupied non-residential buildings. If no other information is available, data from property tax assessments may also be used in estimating the gross output of residential buildings. Sometimes, these sources may not distinguish between residential and non-residential buildings and only combined estimates can then be made. The property tax assessments will yield estimates of the value of the property, and rents can then be estimated by making use of the relationship between property values and rents in the market.

361. Such benchmark estimates of rents cover the total stock of dwellings and non-residential buildings. A considerable portion of these rents will be received by units that are not primarily engaged in the real estate industry. If possible, the renting activity of the units concerned should be treated as a separate establishment and classified in the real estate industry. In order to do this, however, it must be possible to allocate an appropriate part of total intermediate consumption of the unit to the rental activity, and this is usually not possible. The rents included in the gross output of units whose main activity is not real estate therefore must be estimated and deducted in order to arrive at rents received by the real estate industry. Information on the rental income of the units concerned is sometimes available in their accounts. Where no such data are available, the estimates may be based on inquiries from a limited number of establishments in activities or sectors which customarily rent out residential or non-residential space as an adjunct to their main activity, such as insurance companies, non-profit institutions and large trading companies. The proportion of rent in the total gross output of the surveyed establishments may be used in estimating rents received by all units classified in the same activity or sector as those surveyed.

362. Information on imputed rent of owner-occupied dwellings is usually not asked for in housing censuses or surveys, except where some apartments in a structure are rented and others are owner-occupied. Questions are, however, often asked whether a household occupies its premises rent free or pays only part of the rent and also whether a dwelling is owner-occupied or not.

363. The imputed rent of owner-occupied dwellings in benchmark years may sometimes be estimated from data from housing censuses and surveys on average rents paid per month or per year for similar types of dwelling, coupled with information on the number of owner-occupied dwellings of each type.

364. If no data are available on market rents for similar dwellings, imputed rents for owner-occupied dwellings may have to be built up from the various costs that together equal gross rents. These are consumption of fixed capital, interest on the total market value of the dwelling, repair and maintenance costs, service charges for fire and other casualty insurance, and real estate taxes. If data are available on the average building costs of dwellings over a period of years and on the average life of dwellings, the perpetual inventory method (discussed in part four) may be used to estimate consumption of fixed capital. Household expenditure surveys may furnish information on mortgage interest payments, or prevailing rates may be obtained from mortgage banks or building societies. Special surveys may be needed to estimate the average portion of the value of owner-occupied dwellings that is financed by the owner-occupiers themselves. The prevailing rate of mortgage interest can be applied to the equity of the owner-occupiers to compute the imputed interest on their equity. Alternatively, prevailing mortgage interest rates may be applied to the total value of owner-occupied housing instead of estimating interest paid on mortgages and interest on homeowners' equity separately. The repayment of mortgages, as opposed to mortgage interest, is a financial transaction and not an operating expenditure; it should therefore not be included in the imputed rent of owner-occupied buildings. Household expenditure surveys are also the principal source for estimating repair and maintenance costs, though use may also be made of information from real estate agents who manage residential properties. Information is frequently available from insurance companies on the share of insurance on dwellings in total premiums for fire and other casualty insurance. This information may be combined with data on the portion of the total number of dwellings that are owner-occupied from a recent housing census or survey to estimate the part of total service charges for casualty insurance that should be allocated to owner-occupied dwellings. Information on real estate taxes on dwellings is available from government accounts, and can be allocated between owner-occupied and rented dwellings in accordance with their relative numbers or values.

365. In the case of self-constructed houses in rural areas, gross rents would consist only of consumption of fixed capital and repair and maintenance costs.

366. Site rent should, in principle, be excluded from imputed rent of owner-occupied dwellings and treated as a component of property income. In most instances, however, it will be impracticable to make a separate estimate of the site rent.

367. Imputed rent of dwellings located in owner-occupied buildings that are used partly for residential purposes and partly for business purposes should, if feasible, be put equal to the market rent charged for similar dwellings. If this is not practicable, the imputed rent for the building as a whole may be estimated on the basis of costs and apportioned between the premises used for business and for dwelling in proportion to the floor space used.

368. The imputed rent of dwellings that employers own and furnish free of charge or at a reduced rent to their employees should also be included in the gross output of real estate. Estimates of the imputed gross rental may be made in the same ways as the estimates for owner-occupied dwellings.

369. Benchmark estimates of the gross output of other services of the real estate industry such as services of real estate agents and brokers should preferably be estimated from special sample surveys. If such surveys are unavailable, indirect

estimates of this gross output may be made from data on the number of self-employed workers and employers mainly engaged in real estate from employment surveys, population censuses or official registers, coupled with estimates of gross output per establishment derived from income tax or similar statistics.

370. Annual surveys of the real estate industry usually are not available. For urban areas, annual extrapolations of benchmark estimates of the rents of residential buildings (divided into rented and owner-occupied dwellings) and of rented non-residential buildings may be based on the changes in the stocks or floor space of these buildings and in rents. The extrapolated estimates should be divided into rents received by establishments in the real estate industry and rents received by units classified in other kind of activity groups, based on the proportions in the benchmark year. Benchmark year ratios may also be used to divide the rents on residential structures between rented dwellings and owner-occupied units.

371. Construction statistics, permits or similar control records may provide annual information on the number or floor space of new buildings. Estimates of the number or floor space of buildings demolished or otherwise retired may be based on data from insurance companies or from property tax records. Sometimes, the estimates of the retirements from the stock of buildings are based on estimates of the stock of dwellings by type and year of construction and on assumptions about the expected length of life of each type of building.

372. Information on changes in the rent of dwelling units of various types is often available in official statistics, while data on changes in the rent of non-residential buildings usually must be collected separately. The changes observed in the rents of dwellings may be imputed to similar owner-occupied dwellings in the same area. If the benchmark estimates of the imputed rent of owner-occupied dwellings are built up from data on the elements of gross rents, each element should preferably be extrapolated separately. The expenditures on current maintenance and upkeep may be extrapolated by price indexes of labour costs and materials in construction, on the assumption that the quantities of labour and materials used remain constant. Information on changes in property taxes is usually available from official records. The changes in interest may be computed from changes in interest rates combined with changes in the value of the dwellings. An estimate of the changes in real estate values is therefore needed. Percentage changes in imputed service charges for fire and other casualty insurance on owner-occupied dwellings may be assumed to be the same as changes in these service charges for the real estate industry as a whole.

373. Annual estimates of the gross output of other services of the real estate industry should preferably be based on annual sample surveys of these establishments. Where surveys are not available, annual estimates, such as benchmark estimates, may be based on the number of self-employed workers and employers engaged in the activities, derived from current employment surveys or from official licencing agencies or trade association registers, coupled with information on average gross output per enterprise from income tax statistics, trade associations and spot checks.

### 3. Intermediate consumption

374. Housing censuses or surveys generally do not include information that can be used to estimate the intermediate consumption of the owner-occupancy of dwellings.

Benchmark data may be available in household expenditure surveys. Where such surveys do not classify expenditures by sufficiently detailed groups of goods and services, special small sample surveys would be needed to obtain data on the commodity composition of intermediate consumption. These surveys should cover a representative sample of various types of dwellings; a recent housing census or survey might be used as a frame.

375. The intermediate consumption in the other activities of the real estate industry consists of repair and maintenance and operating costs of rented buildings (residential and non-residential); office rent; stationery and office equipment of relatively small value; minor repairs and maintenance of machinery, office buildings and transport equipment; communication and miscellaneous services; and travel expenses. Benchmark year estimates of these expenditures may be based on cost structure or specially conducted surveys of a sample of representative establishments. It would also be preferable to base annual estimates on specially conducted sample surveys. This is particularly so for the intermediate consumption connected with the operation of residential and non-residential buildings, as these expenditures are large and may fluctuate considerably from year to year. If annual sample surveys cannot be conducted, benchmark data may be extrapolated by assuming that the input-output relationships at constant prices remain unchanged. Price indexes that relate as closely as possible to the various elements of intermediate consumption may be used to inflate the constant price estimates to current values. The extrapolations should be made separately for at least rented residential buildings, rented non-residential buildings and other activities, since the commodity composition of their intermediate consumption differs considerably.

#### D. Business services

##### 1. Content and general considerations

376. Business services cover legal services and public notaries; accounting, auditing and bookkeeping services; data processing and computing services; engineering, architectural, development, testing and other technical services; advertising, window-dressing, commercial art work and market research services; security services; and other business services not elsewhere classified. In order to be included here, the services must be furnished on a fee or contract basis. Similar services provided by employees of units engaged in manufacturing, construction, distributive trades etc. are not classified here but under the main activity of the units concerned.

377. Machinery and equipment rental and leasing without operators is also included here. The leasing of agricultural or construction equipment with operators, however, should be classified in agriculture and construction, respectively. The renting and leasing of transport equipment (including automobiles) is classified as transport; the renting of clothing, furniture and most other personal and household goods is classified in retail trade; the renting of pleasure boats, skis and similar recreational goods is classified with amusement and recreational services not elsewhere classified.

378. It may sometimes be difficult to decide whether a repair service shop that is combined with a retail trade outlet should be treated as an independent establishment or an integral part of the retail trade establishment. Examples are automobile repair services that are combined with the sale of gasoline, oil and tyres, or with new car sales, or electrical repair services rendered by retail

shops that sell electrical articles. The criterion for separating out repair services as distinct establishments in such cases should be the feasibility of obtaining separate data on the outputs and inputs of the repair services. The separation is usually impractical, and the entire establishment should be classified in the activity making the largest contribution to its gross output.

## 2. Gross output

379. The activities included in this category are heterogeneous and little data may be available for them. Some useful data may be collected in general censuses or surveys of establishments. The data furnished in such censuses or surveys, however, often refer only to total gross receipts and number of persons engaged, subdivided by employment status. This does not provide a sufficient basis for national accounts estimates of the gross output of establishments that provide more than one type of service, and the data needed to make benchmark estimates can best be obtained by means of special surveys of private service establishments. Supplementary surveys are needed to obtain data on the gross output of atypical products, where they are known to be important.

380. Where establishment censuses or surveys are not available, benchmark estimates of gross output of business service establishments may be based on data on numbers of persons engaged from population censuses or labour force or establishment surveys of broad coverage, coupled with data on gross output per person engaged derived from special surveys of a limited number of establishments. If no other information is available, income tax data on the gross receipts of these industries may be used to estimate their gross output; adjustments should then be made for underreporting of gross receipts and for incomplete coverage. Adjustments for coverage may be made by comparing the number of enterprises filing income tax returns with the number of licenced or registered units of the same kind.

381. Benchmark estimates of the gross output of self-employed workers should, if feasible, be based on special sample surveys of their gross receipts, using a recent population or employment survey as a frame. The average gross receipts per self-employed worker in each kind of service, multiplied by the number of self-employed workers obtained from government registers or from large-scale labour force surveys or censuses of population, may be used to estimate the gross output of each category of self-employed worker.

382. If it is not feasible to undertake such sample surveys, approximate estimates of gross output may be obtained by multiplying the number of self-employed workers within each category derived from population censuses or employment surveys by average gross receipts per self-employed worker from income tax records or from small-scale investigations, spot checks or professional associations of self-employed workers.

383. Extrapolation of benchmark year estimates of gross output may be based on indexes of employment, or preferably man-hours, derived from annual employment surveys. Indexes of income per employee derived from wage statistics, or in the absence of wage statistics the income per establishment derived from income tax statistics or small-scale surveys, may be used to inflate the estimates to current values.

### 3. Intermediate consumption

384. In most instances, special surveys for benchmark years will be required to obtain reliable information on the composition of intermediate consumption of the service industries dealt with in this section, although general cost structure surveys may include data on some of them. The intermediate consumption of business services consists mainly of office supplies, rent and communication and transportation costs. Extrapolation of benchmark year estimates is frequently based on the assumption that input-output relationships have remained constant. Adjustments for changes in the relative prices of the various items of intermediate consumption should, if possible, be made on the basis of separate price indexes for each component.

#### X. COMMUNITY, SOCIAL AND PERSONAL SERVICES

385. This section discusses (a) establishments of private and public enterprises that are classed in ISIC major division 9, and (b) government and private non-profit producers. The National Accounts Questionnaire does not call for any classification of government and non-profit activities by kind of activity, but they do generally engage in the sorts of activities included in ISIC major division 9. As has been noted, in lieu of a further classification of government and non-profit services by activity, SNA provides for a functional breakdown of their expenditures; these classifications are given in annexes II and III below.

##### A. Social and personal services of industries

###### 1. Content and general considerations

386. The services covered here are educational and health services, recreational and cultural services, repair services, laundry services and cleaning and dyeing plants, and miscellaneous personal services. Domestic services rendered by one household to another are also included. Only establishments of private and public enterprises are considered in this section. Schools, hospitals, welfare services, cultural and recreational services, research and scientific institutions operated by government or non-profit organizations are excluded, except where fees are charged that are clearly designed to approximate the full cost of production without subsidy.

387. Educational services cover private profit-making educational institutions of all kinds, as well as self-employed teachers. Music, dancing and art schools and driving schools are included. Public educational institutions, including public primary and secondary schools, universities etc., are classed as producers of government services, unless they make charges that approximate their full costs.

388. Medical, dental and other health and veterinary services include private profit-making establishments and self-employed workers furnishing medical, dental and other health and veterinary services. These establishments are, at present, included here even if households purchasing the services are fully reimbursed by a government health plan. However, this treatment is being reconsidered in the review of SNA.

389. Recreational and cultural services covers private profit-making establishments and self-employed workers in the fields of motion picture production, distribution



and projection; radio and television broadcasting; theatrical production; and other amusement and recreational services, such as the operation of dance halls and studios, race-tracks, circuses, and sporting events. Authors, music composers and other independent artists are included. However, when similar services are provided by social and sporting clubs for their members the clubs are classed as non-profit organizations serving households.

390. Repair services covers establishments that specialize in the repair of motor vehicles; household appliances, equipment and furnishings; and other consumer goods. The repair of footwear and other leather goods is included, but the repair of clothing and other personal and household textiles is classified with laundries etc. Repair services rendered by establishments primarily engaged in retail trade are classified in that industry.

391. Laundries, laundry services and cleaning and dyeing plants covers the operation of mechanical and hand laundries, dry cleaning, and repairs of household and personal textiles.

392. Miscellaneous personal services covers barber and beauty shops, photographic studios, tourist guide services, undertaking, cemetery upkeep, and other personal services such as shoeshining, palmistry, escort bureaux, fortune-telling, and matrimonial agencies.

393. Domestic services covers persons who hire out their services to other households. They have occupations such as housekeeper, house steward, cook, butler, housemaid, valet, personal maid, nursemaid, companion, and chambermaid. Persons who perform similar tasks in commercial establishments, such as hotels and restaurants, and persons who work for establishments that hire out servants for special occasions or on a contract basis are not considered to be domestic servants but rather employees of the establishments concerned. Establishments that provide housecleaning, gardening and similar services on a contract basis are classed as business services.

## 2. Gross output

394. The heterogeneous activities included in this group may be divided into three groups: (a) establishments with employees engaged in these activities, (b) self-employed workers and (c) domestic servants.

395. If accounts are available for the larger establishments engaged in these services, annual estimates of gross output may be calculated by multiplying average gross receipts per worker in establishments for which accounts are available, by the total number of workers according to government registers of licences or other administrative records. If the number of workers is not available, the number of establishments may be used, but in this case some adjustment for the relative size of the non-reporting establishments should be made. It is desirable to make this calculation separately for each kind of establishment, for example, primary, secondary, university and general educational institutions, vocational schools, general hospitals, nursing homes, sanatoriums, mental hospitals and asylums, cinemas and theatres. Where possible, the estimates should also be made separately for urban and rural areas.

396. Where no accounts are available, benchmark estimates of gross output of each type of service may be made by multiplying average gross receipts per unit,

gathered from small-scale sample surveys or from income tax reports, by number of establishments. If income tax data are used, some adjustment for underreporting should be made, for instance, by comparing the income data derived from income tax statistics with direct information from a group of representative establishments.

397. If annual accounts are not available but benchmark year estimates have been made by means of large-scale surveys, the benchmark year estimates may be extrapolated by means of suitable price and quantity indicators. Representative and homogeneous indicators should, if feasible, be used for each main type of service rendered by each kind of establishment. Obtaining homogeneous indicators is particularly difficult for schools and hospitals. Services rendered by schools differ not only from one type of school to another but also from one level and subject to another. Hospitals render a variety of services such as general in- and out-patient treatments of various conditions, operations, laboratory tests, and x-ray examinations and treatment. Admissions to cinemas, theatres and sports, activities also vary in quality according to the event, the location of seats and so on.

398. The only quantity indicators that may be available for educational services are number of pupils or number of teacher-hours for each level or type of school. The available quantity indicators for each kind of hospital may relate to number of in- and out-patients treated or the number of patient-days or bed-days of in-patient service. In the case of recreational services, the number of admissions is often used. The errors resulting from applying these extrapolators will depend on the extent of change since the benchmark year in the composition of the various types of services rendered. The problem of finding appropriate quantity indicators is discussed in much greater detail in the Manual on National Accounts at Constant Prices. 11/

399. The price indexes used to derive value figures from the extrapolated quantity data should preferably be weighted averages of the prices for the various kinds of services rendered by each class of service activity. The weights should be proportional to the gross output during benchmark years of the various kinds of services rendered by each class of activity. Often, however, less reliable price indicators have to be used. These indicators may refer to only one or a few of the various kinds of services rendered, such as average tuition fees in the case of each type of school, average cost per bed-day in the case of each type of hospital, or average ticket prices in the case of cinemas, theatres and other recreational and amusement facilities.

400. For self-employed workers, benchmark estimates of gross output may be based on special sample surveys of gross receipts, using a recent population or employment survey as a frame. The average gross receipts per self-employed worker in each kind of service may be multiplied by the number of self-employed workers in the kind of activity, obtained from government registers or from large-scale labour force surveys or censuses of population. If it is not feasible to take such sample surveys, average gross receipts per self-employed worker may be derived from income tax records, or based on information from small-scale investigations, spot checks or professional associations.

401. For domestic servants, gross output is equal to compensation paid. Population censuses and employment surveys often include data on the total number of persons employed in domestic service, and the benchmark year estimates of the total number of domestic servants may be extrapolated to current years by means of data on total employment in domestic service from current labour force surveys. In some

countries, minimum wages are established for domestic servants, and the households employing them are under legal obligation to provide the domestic servants with social security coverage; this information may be used to estimate wage rates. Alternatively, a question about average compensation of domestic servants may be included in household surveys covering a representative sample of the population. In many developing countries, foreign families such as diplomatic or technical co-operation personnel employ substantial numbers of domestic servants and pay them at higher rates than resident households. Survey results should therefore be tabulated separately for non-resident households.

### 3. Intermediate consumption

402. In most instances, special surveys will be needed for benchmark years to obtain information on the intermediate consumption of the private service establishments and self-employed workers covered in this section. The composition of intermediate consumption will be quite different for different types of services. For schools, building rent, repair and maintenance, equipment, books and stationery will be important components. For authors, fortune-tellers and private tutors, intermediate consumption will be negligible, while for independent doctors and dentists it may be quite large, including drugs, professional materials and office rent and supplies. It is therefore desirable to obtain information on the input structure for representative units of each kind of service industry. Extrapolation of benchmark year estimates is frequently based on the assumption that input-output relationships have remained constant.

#### B. Government and non-profit producers

##### 1. Content and general considerations

403. Producers of government services engage in activities such as public administration, defence, sanitary and similar services, education services, operation of research and scientific institutes, medical and veterinary services, and welfare services. The present manual provides a summary discussion of the problems involved in accounting for these activities, mainly in parts three and four. A much more extended discussion may be found in the forthcoming volume of the Handbook series on public sector accounts.

404. Gross output of producers of government services is defined in SNA as equal to its costs of production, that is, the sum of intermediate consumption of goods and services, compensation of employees, consumption of fixed capital, and indirect taxes paid, if any. This definition of gross output has been adopted because only an insignificant portion of the output of these producers is sold, and that frequently at prices that are arbitrarily determined. The value added of these producers is equal to gross output, less intermediate consumption of goods and services, that is, the sum of compensation of employees, consumption of fixed capital and indirect taxes paid, if any.

405. The gross output of producers of government services consists of three components: (a) own-account fixed capital formation (construction and manufacture of equipment) of government departments, where these activities are not organized as separate establishments, (b) sales of goods and services, and (c) services produced for own use. Services produced for own use is obtained as a residual by deducting the first two items from total gross output. Sales of goods and services

are usually minor; they include items such as sales of food and drink and publishing and selling books and postcards where these activities cannot be segregated into separate establishments. Sometimes, however, there are large sales to foreign Governments. The residual item, services produced for own use, is carried over in its entirety as the final consumption expenditure of Government.

406. Producers of private non-profit services to households are "non-profit" bodies in the sense that they supply services to households either free or at prices that are not intended to cover the full costs of producing the services; they are "private" in the sense that they are mainly financed by contributions from households or other non-governmental sources; and they are services to households as contrasted with services such as trade associations primarily financed by and providing services to businesses. They usually perform activities in ISIC division 93, Social and related community services, or ISIC 94, Recreational and cultural services. For practical reasons, private non-profit institutions that have less than two full-time employees are included with households; this eliminates from the accounts the output of local sporting and social clubs and voluntary associations, which are very numerous in many countries but which have negligible value added.

407. Gross output of private non-profit producers is defined in SNA in the same way as gross output of producers of government services, and for the same reason. Since most of the output of these units is not sold, an alternative to market price must be found. SNA measures the value of their output by the costs of producing it, that is, the sum of intermediate consumption of goods and services, compensation of employees, consumption of fixed capital, and net indirect taxes paid, if any. Like producers of government services, the services produced by private non-profit institutions for their own use are determined residually, after deducting own-account fixed capital formation and sales of goods and services from gross output.

## 2. Methods of estimation

408. Because of the way gross output of government and private non-profit organizations is defined, it follows that the value added of these producers cannot be compiled directly by the production approach. Methods of estimating the cost components of their value added will be discussed in part three, and their intermediate consumption in part four.

## PART THREE. GROSS DOMESTIC PRODUCT: THE COST APPROACH

409. As part one pointed out, the cost approach to the estimation of gross domestic product involves adding up the cost components of value added for all producing establishments in the country. The cost components are net indirect taxes, consumption of fixed capital, compensation of employees, and operating surplus. As was shown in charts 1 and 2 in part one, these cost components may be added up either by type of cost, to produce a table such as table 2 in part one, or by kind of activity, to produce a table such as table 1. Some of the sources of data commonly available tend to yield estimates of one component for all kinds of activity, whereas other sources tend to yield estimates for several (or all) components for one kind of activity. In practice, national accounts estimators will usually want to make use of both kinds of source in combination, in order to take advantage of all available data and to provide cross checks where possible. Part three is therefore organized as follows. Section I presents the cost components of value added, and discusses sources and methods for each cost component that are common to most kinds of activity. Section II then considers sources and methods by kind of activity, focusing on those that apply to each activity.

### I. DEFINITIONS AND COMMON SOURCES FOR THE COST APPROACH

#### A. Indirect taxes

##### 1. Content and general considerations

410. Indirect taxes are those compulsory payments by establishments to Governments or international organizations that the establishments treat as part of their costs of production. They include taxes assessed on the production, sale, purchase or use of goods and services. They also include import duties. But they do not include direct taxes levied on the income or the wealth of enterprises. (Direct taxes do enter value added, but as a part of profits, and thus of operating surplus.) Common examples are import, export and excise duties, sales taxes, entertainment taxes, betting taxes, business licences and stamp duties. Real estate and land taxes are classed as indirect taxes, except in those cases where they are considered to be an administrative device for the assessment and collection of income taxes. Indirect taxes also include levies on value added, the employment of labour and the use of fixed assets, and fees for motor vehicle licences, driving tests and licences, passports, airport duties, and court and similar services, if they are paid for by producers.

411. Table 4 lists common types of indirect taxes. The table generally follows the IMF Government Finance Statistics classification, modified slightly to conform to SNA requirements. 12/

Table 4. Classification of indirect taxes

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1	Employers' payroll or manpower taxes
2	Taxes on property
3	Recurrent taxes on immovable property paid by business
4	Taxes on financial and capital transactions
5	Other recurrent taxes on property paid by business
6	Domestic taxes on goods and services
7	General sales, turnover or value added taxes
8	Excises
9	Profits of fiscal monopolies
10	Taxes on specific services
11	Business and professional licences
12	Motor vehicle taxes paid by business
13	Other taxes on use of, or permission to use, goods or perform activities
14	Other taxes on goods and services paid by business
15	Taxes on international trade or transactions
16	Import duties
17	Export duties
18	Profits of export or import monopolies
19	Exchange profits
20	Exchange taxes
21	Other taxes on international trade and transactions
22	Other indirect taxes
23	Stamp taxes
24	Other taxes n.e.c. paid by business
25	Administrative fees and charges paid by business
26	Total indirect taxes

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412. Some public enterprises are by law given a monopoly of production or sale of certain goods and services and allowed to charge prices above their costs of production. These "fiscal monopolies" usually produce or sell one kind of product only, such as alcoholic beverages, tobacco, matches, or salt. If the operating surpluses of such fiscal monopolies are of a permanent character and persist over long periods, and if they are regularly transferred to Government and become part of government revenue, it may be assumed that they are a means by which the Government raises general revenue and so they should be treated as indirect taxes.

413. Problems may arise in deciding whether certain payments to Government are indirect taxes or payments for goods and services. Most payments by establishments to Government will be classed as taxes. Only where there is clearly a link between an outlay and the acquisition of a good or a service, and the decision to make the payment is voluntary, should the outlay be considered to be a payment for a good or a service. This is likely to be the case, for example, where there is an alternative non-governmental source for the same or a similar product. Thus, purchases of government publications are not taxes, but purchases of business licences are.

414. Indirect taxes should, where possible, be recorded when they are due to be paid. Obligations to pay indirect taxes usually arise at some clearly stated point in the process of production or sale of goods and services. When data on indirect taxes are collected from producers they will often refer to these points of time. However, data on indirect taxes obtained from the tax authorities are usually recorded at the time payments are received. In principle, the data should then be adjusted to refer to a when-due basis. This question is discussed in more detail in the forthcoming volume of the Handbook dealing with public sector statistics. The most important consideration is that the same timing basis should be adopted in the accounts of the paying enterprises and the accounts of Government.

## 2. Common sources

415. Indirect tax data are usually available from the government office responsible for collecting the taxes. They will often be classified in ways that resemble the IMF classification given in table 4, and the national accountant will need to reclassify them into direct and indirect taxes, and to exclude any payments classed as purchases of goods and services. Consideration will also need to be given to the timing problem discussed in the preceding paragraph.

416. Data on the operating surplus of fiscal monopolies can usually be obtained directly from the enterprises concerned, or from the agencies responsible for them. When these surpluses flow directly into government revenue (as is necessary if they are to be classed as fiscal monopolies), data will also generally be available from the tax or revenue authorities.

417. Indirect tax data obtained from government sources generally will not be classified by kind of activity of the establishments paying the tax, so that where a distribution by kind of activity is needed other ways will have to be found to allocate the total tax among payers. General sales taxes may be allocated to the activities from which they are collected in proportion to their sales. Often such taxes are levied only on retailers, but sometimes services are also included. Part of property taxes may sometimes be treated as direct taxes because they are considered to be merely an administrative procedure for the assessment of income taxes. To determine whether this is the case, the advice of the tax authorities should be sought. Property taxes not falling into this category may then be allocated to the real estate industry, to owners of dwellings, to owners of non-residential buildings classed in other industries, and to owners of land by means of data on average tax rates and the taxable value of the various types of real estate. Entertainment taxes may be allocated to types of entertainment in proportion to the gross output of the various types of entertainment services and the tax rates in force. Taxes on wages and salaries may be allocated among kinds of activity on the basis of the wage and salary bill of each kind of activity and the average tax rates. Other types of indirect tax may be allocated among kind of activity groups on the basis of information in production statistics, or special surveys may be conducted from time to time to obtain information on the amount and composition of these taxes paid by each kind of activity group. The estimates obtained from such surveys may be extrapolated to current years on the basis of information on changes in tax rates combined with current production statistics.

418. A particular problem of estimation arises with regard to the allocation of fees for driving licences, passports, court services and airport fees, because SNA recommends that these fees should be treated as indirect taxes when paid by producers. (The same fees when paid by households, however, are considered to be direct; by definition, households can pay no indirect taxes since they are not producers. When households own unincorporated enterprises, therefore, a somewhat arbitrary judgement may be required as to whether the fees are paid in a business or personal capacity.) The nature of these payments does not provide any key to their allocation between households and producers. It may, however, be possible to divide the totals for each type of fee shown in the government accounts between households and producers on the basis of information from the authorities that collect them. The estimated amount paid by producers may then be distributed by kind of activity group on the basis of information from trade associations or representative establishments in each kind of activity group.

## B. Subsidies

### 1. Content and general considerations

419. Subsidies are grants on current account which private enterprises and public corporations receive from Government and which represent additions to the receipts of these producers over and above what they receive from sales of their output. These receipts are not part of the market value of output, but they can nevertheless be used to offset part of the costs of producing that output. Their effect is thus the opposite of that of indirect taxes, and in summary tables subsidies received are often deducted from indirect taxes paid, to yield "net" indirect taxes paid. Subsidies may be based on the value of goods produced, exported or consumed, the labour or land employed in production, or the manner in which production is organized and carried on. Transfers from Government to unincorporated government enterprises to cover operating losses that arise because, as a matter of policy, they sell goods and services below cost are also treated as subsidies. Producers of government and private non-profit services cannot, by definition, receive subsidies. Subsidies do not include transfers by Government to private establishments for investment purposes or to cover damages to or losses of capital and working assets; these are treated as capital transfers.

420. Subsidies should be recorded at the time they are due to be paid, which often differs from the government's cash recording basis. If data on subsidies are collected from producers, they are generally recorded on a when-due basis. However, if, as is more usual, tax authorities provide the information, making the timing adjustments may be difficult. As with indirect taxes, the most important consideration is consistency: subsidies should be recorded at the same time for both payer and recipient.

### 2. Common sources

421. Information on subsidies paid in order to keep down the prices of specific goods and services will generally be available in government accounts, and it is usually sufficient to permit the subsidies to be allocated among kind of activity groups. Account should be taken of the fact that some subsidies may be paid only on specific uses of a particular good. Sometimes, for example, only exports, and not domestic uses, of a particular product are subsidized.



422. A special case of this type of subsidy occurs when marketing boards or similar organizations pay a higher price to the producers from whom they make purchases than the price at which they can sell the products in the market. This will result in an operating loss, and transfers to such organizations to cover these losses should be treated as subsidies. Information on the amounts involved should be available either from the government accounts or the accounts of the recipient board or agency.

423. Subsidies that are granted on the basis of labour employed are also usually shown as separate items in the government accounts, although they may sometimes be classified together with investment grants. Investment grants should be treated as capital transfers, so they have to be separated out in order to isolate the subsidy payment. Information to make this possible will usually be available from the government authorities concerned.

424. Subsidies that take the form of bounties (for meeting production or export targets, for killing certain animals regarded as pests, etc.) can usually be identified in the government accounts. In these cases, the nature of the bounty will normally indicate the kind of activity to which it should be allocated.

### C. Consumption of fixed capital

#### 1. Content and general considerations

425. The estimate of consumption of fixed capital in SNA serves as a measure of the value of fixed capital assets used up in production in the current period. Consumption of fixed capital should not be confused with the scrapping or retirement of fixed assets. The "using up" is not something that can be observed, since most often there is little or no physical change in the assets concerned. The assets are being used up in the sense that they have finite lives and the passage of time brings them nearer to the end of their lives.

426. In order to maintain consistency with the valuation of other transactions in the national accounts, the consumption of fixed capital is measured at replacement cost. This means that consumption of fixed capital recorded each year is the appropriate fraction of the current replacement value of the capital asset, not of its cost or book value.

427. There are many methods in common use for estimating consumption of fixed capital. The simplest is the straight-line method, which spreads capital consumption evenly over the expected economic life of the asset. All methods require both an estimate of the market replacement value of the assets concerned and an estimate of their expected productive life. In the present SNA, the expected life of an asset is calculated taking into account the probability of normal accidental damage (including insurable risks such as fire and theft), but not the possibility of unpredictable catastrophes such as earthquakes, nuclear explosions and wars. When assets are destroyed in catastrophes of this kind, or when they are scrapped before the end of their expected life because of unforeseen obsolescence, the fall in value of the capital stock is treated as a capital loss, and not as consumption of fixed capital. It has been proposed that this latter treatment should be extended to all accidental damage, including that which is "normal" from the point of view of the economy as a whole, and this question is under consideration in the review of SNA. If adopted, this change would alter the choice of expected lives of assets.

428. Consumption of fixed capital should be calculated for most types of fixed assets of producers. It may not be possible in practice, however, to make such estimates for land improvements, timber tracts and vineyards, or for draft animals, breeding stock and dairy cattle.

429. SNA does not propose that consumption of fixed capital should be estimated for some government assets such as roads, bridges, dams, dikes and similar facilities. This is because these assets are considered to have a practically unlimited life if properly maintained. Nevertheless, if it is considered that with the amount of maintenance actually performed such assets will have less-than-infinite lives, calculation of capital consumption is also appropriate for these assets. Furthermore, it has become apparent in recent years that such assets do become obsolete in time, no matter how well they are maintained. Failure to depreciate assets which actually do decline in value will necessitate recording a capital loss when the assets are retired.

430. Consumption of fixed capital in SNA does not include depletion of natural resources. It would be possible to include such depletion, but it would then be necessary to include changes in the total stock of natural resources in gross output. Appropriate treatment of both new finds and depletion is under consideration in the review of SNA.

## 2. Common sources

431. The consumption of fixed capital calculated by enterprises for their assets - commonly termed "depreciation allowances" - is often published in their accounts, but these estimates usually refer to the historic or acquisition costs of the assets (although this practice is beginning to change). In periods of rapid price change, historic costs may be very different from the replacement costs needed for the national accounts, and for national accounts purposes it may be easier to calculate consumption of fixed capital from estimates of the replacement value of the capital stock than to make the necessary adjustments to historical cost depreciation. To do this, it is necessary first to estimate the current replacement cost of the stock of buildings and equipment. Current replacement cost, in this context, means replacement cost in the prices in effect at the end of the accounting period. Estimates of the capital stock may be based either on benchmark surveys of capital goods or, more commonly, on the perpetual inventory method. Where the survey method is used, it should collect information on the types of capital goods in use, their date of purchase and their original cost. Data on price movements of capital goods since their purchase dates are then needed to obtain a benchmark estimate of the value of the capital stock at the cost of replacing it in the survey year. The benchmark estimate can be updated using information on the average lifetimes of the different capital goods, their price changes, and estimates of new gross fixed capital formation. Where the perpetual inventory method is used, data on capital formation must be available for a long period. This method combines estimates of the life of each asset with data on expenditures by year to estimate the total stock still existing in a benchmark year. The same price information as for the survey method is then needed to bring the values of the assets up to current year replacement cost. The perpetual inventory method is described in detail in several recent publications, to which reference should be made. 13/

432. Information about the replacement cost of capital assets which is needed to convert recorded depreciation charges to a replacement cost basis is likely to be difficult to obtain, but the adjustment is an important one and should be attempted. Since the adjustment may be large and subject to a considerable margin of error, information on recorded depreciation charges made by business firms should also be presented, and the adjustment shown explicitly.

#### D. Compensation of employees

##### 1. Content and general considerations

433. Compensation of employees consists of (a) wages and salaries in cash and in kind, (b) employers' contributions to social security schemes and to private employee welfare schemes for the account of their employees and (c) employers' contributions to private pension funds, family allowances, health and other casualty insurance, life insurance and similar schemes for the account of their employees. Employees, for this purpose, are all persons engaged in the activities of productive units (including members of the armed forces), except the proprietors of unincorporated enterprises and their unpaid family members. It may be difficult to decide when those who provide household services such as cleaning, gardening and baby-sitting are independent proprietors of their own establishments and when they are members of the household they serve. The decision must rest upon the institutional setting of the country concerned. Unless such service personnel are effectively treated as household members, they should usually be considered independent entrepreneurs.

434. Compensation of employees as a component of value added may be paid to residents or to non-residents such as border workers, seasonal employees and others who stay in a country for less than one year. It thus differs from the compensation of employees received by resident households; the latter includes the amounts resident households earn by working abroad but excludes compensation of employees paid by resident producers to non-resident employees. In small countries, the difference between the two concepts may be important.

435. Wages and salaries in cash are the main element of compensation of employees. All payments employees receive directly for their work should be included in wages and salaries, including any payments that employees receive for having performed special duties. The amounts should be recorded before deductions for the employees' own contributions to social security, payment of income taxes etc. Wages and salaries include commissions paid to employees of establishments, tips to waiters or taxi drivers, directors' fees, fees to ministers of religion, special or recurrent bonuses, and cost of living allowances. Pay during holidays, sick-leave or other short absences from work is included if it is paid directly by the employer. Severance pay is included when it does not include settlement of pension rights. However, any reimbursements that employees receive for travel, entertainment and other expenditures incurred in connection with the business of their employers should be excluded from their wages and salaries and included in the establishment's intermediate consumption. Wages and salaries should also exclude the expenditures of employees on working tools, equipment and special clothing which they are contractually obligated to make out of their compensation.

436. Wages and salaries in kind should cover the net cost to employers of goods and services furnished to employees free or at reduced prices that are of benefit to the employees only as consumers, usually away from the workplace. These may include food, lodging and ordinary clothing. Wages and salaries in kind are often very important in developing countries. For example, farmers frequently pay their employees part of their compensation in the form of agricultural products, and plantations, mines etc., provide free housing, subsidized eating facilities and outlets for the purchase of goods below cost by their employees. Where food is provided to employees at reduced prices in establishment canteens, the price reduction should be included in their wages and salaries in kind. Where employers provide their employees with dwellings either free or at a reduced rent, the amount of the reduction in the rent below market value should be included unless the living quarters are provided primarily for the employer's convenience. Housing in barracks furnished to military personnel is considered to be for the employer's rather than the employees' convenience, but family-type housing on military bases is included in wages in kind. Outlays by employers that are of benefit to themselves as well as to their employees, however, should not be included in wages and salaries in kind. Examples of the latter include expenditure by employers on amenities at places of work; medical examinations; sport and other recreational facilities; and reimbursement of the expenses of travel, entertainment, and work clothing, tools and equipment incurred by employees. Military uniforms are included in wages in kind, but civilian uniforms and other work clothing are not; this convention is based on the view that military uniforms may be worn off duty, while civilian uniforms usually are not.

437. Goods and services supplied to employees in emergency situations such as after a fire or flood should not be included in compensation of employees, but rather treated as gifts.

438. Employers' contributions for social security are contributions for the account of employees to social security schemes imposed by public authorities to provide social security benefits for all or most residents. Contributions for social security do not include payments by the Government in its capacity as an employer to pension schemes benefiting only its own employees and their dependants. These are classed as contributions to pension funds.

439. Employers' contributions to other welfare schemes include contributions by employers to private funds, reserves or other special schemes for the provision of family allowances, lay-off and severance pay, casualty and maternity leave, pensions and the like. Also included are payments by the Government as an employer into funds established for the benefit of its employees, independent of whether the funds are effectively controlled by the employees or by trustees, boards or commissions acting for them, or whether the fund is established by the Government or any other employer and remains fully under the control of the employer, to the extent of determining the level of contributions and benefits and managing the fund.

440. In some cases, payments for family allowances, lay-off and severance pay, casualty and maternity leave, pensions and the like are made directly by employers without setting up a special fund or reserve. SNA does not include these payments in wages and salaries at the time the payment is made; rather, an imputed contribution to meet these obligations is included in employers' contributions to private pension and insurance schemes, along with other actual contributions.

441. Both the definitions and the appropriate treatment in the accounts of the elements of compensation of employees other than cash wages are now under study, and it is possible that their treatment may be altered in the next revision of SNA.

## 2. Common sources

442. Information on wages and salaries paid in cash is often available from labour force or employment surveys, which may be taken at quite frequent intervals (often monthly). Where such data are collected on the basis of a sample of households, they will cover establishments of all sizes and in all kinds of activity. Frequently, however, they may be limited to urban areas. In some cases, such surveys may be collected from a sample of establishments or enterprises. Where this is true, coverage of small-scale and informal activities is likely to be quite limited. Occasionally, labour force or employment surveys include information only on employment status or hours worked, and not on wages paid.

443. Where coverage of some regions or kinds of activity or of smaller establishments is inadequate, benchmark information on wages and salaries by kind of activity can often be obtained from surveys of household income and expenditure. For rural areas, this information may be included in multi-purpose rural sample surveys. Population censuses often include information on wages and salaries received in the census year; as a minimum they will provide figures on numbers of persons employed, usually by kind of activity, which can then be combined with wage and salary data from smaller-scale surveys.

444. In countries where social security systems cover large segments of the population, social security records often provide the best current information on wages and salaries paid, since contributions are usually proportional to wages.

445. Information on wages and salaries in kind is seldom included in current labour force or employment surveys. For benchmark years, it may be obtained from household income and expenditure surveys establishment cost structure surveys, and similar very detailed inquiries. Annual extrapolations may have to be based on numbers employed in activities where payments in kind are common, combined with information on prices.

446. Information on employers' social security contributions should be available from the administrators of the social security system. Occasionally, there may be difficulty in separating employers' from employees' contributions. If the government records do not make the separation, it can be done on the basis of relative contribution rates.

447. Employers' contributions to private pension and welfare schemes can usually best be obtained from the pension funds and insurance companies involved. Detailed cost structure surveys of establishments may be an alternative source for benchmark years. In most cases, the most practical method of estimating imputed unfunded employer welfare contributions is on the basis of amounts actually paid out in benefits in the current year. (This may, however, be an understatement in circumstances where the obligations may be expected to grow over the years, as, for example, when there is a growing or aging work force.) Benchmark estimates of amounts paid out may be obtained in household income and expenditure surveys or establishment cost structure surveys, and extrapolations to current years may be based on numbers employed, if necessary.

## E. Operating surplus

### 1. Content and general considerations

448. The operating surplus of an individual establishment is defined residually as gross output less intermediate consumption, indirect taxes net of subsidies, consumption of fixed capital, and compensation of employees. By definition, only establishments whose output is valued at market prices can have operating surplus; where output is valued at cost, as for producers of government services, operating surplus is necessarily zero.

449. National accountants may themselves carry out the various stages in the calculation of operating surplus, and make the necessary deductions from gross output to arrive at the operating surplus for the economy as a whole or for each kind of activity group, or they may, when appropriate information is available, make use of the estimates of operating surplus or profits which have been made by individual enterprises and which are published in company accounts or are obtainable from tax records. Where the calculation is done by the national accountant, the residual nature of operating surplus is clearly apparent: there must be an estimate of gross value added from some other source, so that adding up cost components is not really an independent way to obtain GDP. When the calculation of operating surplus comes from establishment or enterprise records, however, the source may, from the national accountant's point of view, be an independent one (even though, on the establishment level, operating surplus is still a residual).

### 2. Common sources

450. Information on operating surplus (or profits) is often available in published company accounts, reports under uniform accounting acts, reports to regulatory bodies, and income tax returns. In general, however, such information differs from what is wanted for the national accounts in two ways. First, the coverage of "profits", in such sources, often differs from that of SNA operating surplus, and secondly, reported profit often relates to enterprises as a whole, and operating surplus is not reported separately for the constituent establishments.

451. On the first point, profit is calculated by business accountants in broadly the same way as operating surplus is calculated by national accountants - that is, as a residual after deducting all expenses of production from the value of gross output - but there are some important differences of detail. In using sources based on business accounts, therefore, care must be taken to adjust the data to the national accounts definition. For example, it is often necessary to remove net property incomes received (interest, dividends, rent on land, royalties, etc.), investment subsidies and other government capital grants, capital gains and losses, allowances for bad debt and insurance premiums and claims. Adjustments will also be needed for the differences between the enterprise accounts and the national accounts in the valuation of consumption of fixed capital. It is also necessary to convert the data from a sales to a production basis, by taking the change in stocks into account. 14/

452. On the second point, data on profits often refer to enterprises that consist of a number of establishments. Where operating surplus by kind of activity is needed, it is necessary to allocate the operating surplus to the constituent establishments. An exact allocation is often not possible, either statistically or conceptually, and an approximation will be needed. Estimates may be made by, for example, allocating the operating surplus of enterprises among their establishments in proportion to the sum of the other elements of value added of the establishments.

453. There is a difference between the operating surplus earned by resident producers and the operating surplus accruing to residents, just as there is a difference between compensation of employees paid by resident producers and compensation of employees received by resident households. It is the operating surplus of resident producers that is needed for calculating GDP.

## II. SOURCES AND METHODS BY KIND OF ACTIVITY

### A. Agriculture, hunting, forestry and fisheries

#### 1. Agriculture and agricultural services

##### (a) Benchmark estimates

454. Sample surveys of farm income and expenditure or farm management surveys furnish the most adequate basis for benchmark estimates of the components of value added in agriculture. Agricultural or rural surveys of broader but less detailed coverage may also be useful. Sometimes, information on wages and salaries in agriculture are collected in sample surveys of employment and wages, but agriculture is often not included in such surveys.

455. Sample surveys of farm income and expenditure are usually conducted only in benchmark years and cover larger well-organized farms only. Ideally, they may be planned in such a way that for the years and establishments covered they yield most of the information needed to estimate the components of value added, but some items will still need attention. Payments in kind may not be covered. Employers' contributions to social security and to private pension, family allowance and similar welfare schemes are usually not applicable to agricultural workers in developing countries, but where they are they would have to be estimated from other sources, such as social security records and the accounts of insurance companies.

456. Also, it is not likely that the respondents to survey questionnaires will be able to make estimates of the consumption of fixed capital for farm buildings and equipment that are usable for national accounts purposes. At best they may be able to provide estimates of original cost and estimated length of life. For purposes of the national accounts, it is necessary to transform these estimates to a replacement cost basis by means of indexes of the change in prices of the major items of agricultural capital equipment between the average year of acquisition of the items and the current year.

457. It is also necessary to examine the data on taxes to make sure that indirect taxes have been distinguished from direct taxes, and that subsidies (payments to farmers as producers) have been distinguished from transfers (payments of income supplements to farm households), as defined in the national accounts.

458. If stocks of crops and feeds, seeds and fertilizers held on farms are significant, the reported operating surplus will probably reflect capital gains or losses on these stocks, and it should be adjusted to eliminate them. In order to do so, it is necessary to adjust the change in the value of stocks between the beginning and end of a period to reflect the physical change between the two points of time valued at average prices during the period. This result may be approximated if suitable price indexes are available for the period in question.

459. Finally, payments of land rent may need adjustment. Net land rent in SNA is considered to be property income. The tenant's operating surplus thus includes the net rent paid to the owner of the land. Any maintenance cost and indirect taxes paid on the ownership of the land (for example, property taxes) are included in the costs of the tenant, however, even if the payments are actually made by the landowner. Gross land rent paid by tenants may thus have to be divided for SNA purposes into three components, to be included in the tenant's intermediate consumption (maintenance costs), his indirect taxes paid and his operating surplus.

460. Since farm management surveys generally cover only large farms, it will be necessary to use information from agricultural sample surveys or rural household income and expenditure surveys of broader coverage to obtain benchmark data on the components of value added for smaller farms. If farm management surveys are not available but the latter types of surveys are, all information on the components of value added may have to be derived from them. These sources are not likely to yield as suitable data as farm management inquiries. The data may combine all of the activities of the households, so that it is difficult to identify different outputs and their associated costs. The classification of outlays may not be precise enough to separate current from capital outlays or intermediate from final consumption. Operating surplus is likely to be estimated gross of consumption of fixed capital. It may therefore be necessary to conduct small-scale surveys or spot checks to make approximate subdivisions and adjustments of the data.

461. Alternatively, if data on at least some of the components of value added can be obtained from farm management or other surveys, the survey averages for these components may be applied to all farms by means of data on the total number of farms from taxation or other registers, or from population census information.

(b) Annual estimates

462. Less comprehensive and systematic sources will have to be used to extrapolate the estimates of the components of value added to non-benchmark years. If no benchmark surveys of agriculture are available at all, such sources have to be used in estimating the components of value added for all years.

463. Employment and wage and salary surveys sometimes cover the rural population. The number of hired farm employees and average wage rates of agricultural workers may be derived from these surveys. However, they generally do not provide any information on wages in kind. If employment and earnings surveys of the rural population are not available, average wages and salaries may be obtained from a special small-scale sample survey, spot checks, agricultural extension agents or other government agricultural experts, and numbers of farm employees may be assumed to be unchanged from a benchmark obtained in a census of agriculture or population.



464. The best sources of information on subsidies received by and indirect taxes paid by agriculture are government records. It will usually be necessary to analyse the unpublished records in order to extract the required information, because published data are usually not presented in sufficient detail.

465. The only practicable way of obtaining an estimate of gross operating surplus may be as a residual, by deducting the sum of wages and salaries and net indirect taxes from value added estimated by the production approach.

466. For agricultural services, annual data on wages and salaries may be estimated on the basis of surveys of employment and earnings. Estimates of indirect taxes may be obtained from government sources. Capital consumption will be important for some types of agricultural services (for example, letting of agricultural machinery with operators), and should be based upon estimates of the total quantity of machinery devoted to this use, at current replacement values. Figures for operating surplus will often have to be obtained residually. If information that can be used to estimate the components of value added of agricultural services is not available, it will seldom be worthwhile to undertake special surveys to obtain it. It may be assumed, in such cases, that the distribution of costs is similar to that found in other similar service activities.

## 2. Hunting

467. Commercial hunting and trapping is, for the most part, carried on by own-account workers with hunting weapons, reusable traps and vehicles as their only capital equipment. The main component of value added is therefore operating surplus, which for practical reasons has to be calculated gross of consumption of fixed capital with respect to the weapons and traps used. It may, however, be possible to estimate consumption of fixed capital for vehicles used, if information on the total stock of vehicles in such uses can be obtained. In addition, the value added of the own-account hunters and trappers may include fees for hunting licences, which are classed as indirect taxes. Subsidies in the form of government bounties may be received, and should be deducted from indirect taxes paid. (Where bounties are important, this may mean that operating surplus is larger than value added.)

### (a) Benchmark estimates

468. The most practical source of benchmark data on the average operating surplus of hunters and trappers is probably the household income and expenditure survey. The survey should be designed so that earnings from hunting and trapping are distinguished from other earnings. In most cases, there is little hired labour. Information on hunting licences and bounties can be obtained from the government authorities concerned. Estimates of average annual gross operating surplus and net indirect taxes per hunter, coupled with data on the number of commercial hunters and trappers from government licencing and registration records, will yield estimates of totals for the components of value added.

### (b) Annual estimates

469. As household income and expenditure inquiries may be undertaken only infrequently, it will be necessary to resort to indicators in extrapolating benchmark estimates. Trends in the value of gross output compiled from a

combination of indexes of the volume of the annual catch and of prices of animal meat and skins might be used. Government licencing and regulatory authorities or enterprises purchasing the catch should be able to furnish the data needed to compile indexes of the volume of the catch and perhaps also appropriate price indexes. Government should also be able to supply data on indirect taxes and subsidies. If no benchmark household income and expenditure surveys are available, it will be necessary to depend entirely on these sources.

470. The information needed for estimating the components of value added of game propagation should be available from the records of the enterprises or of the Government. If there are no indirect taxes but subsidies are received, net indirect taxes may be negative. To separate gross operating surplus into consumption of fixed capital and net operating surplus, an estimate of the current replacement value of the stock of fixed capital will be needed, as discussed in section I.

### 3. Forestry and logging

#### (a) Benchmark estimates

471. Special surveys of the cost structure of large-scale enterprises engaged in logging and forestry activities and household income and expenditure surveys which furnish similar data for small-scale enterprises and own-account workers are the best sources for benchmark estimates of the components of the value added in these activities.

#### (b) Annual estimates

472. For extrapolation of wages and salaries and other elements of compensation of employees, trends in numbers of employees from labour force or employment surveys or social security records may be used, coupled with indicators of average wages and salaries from special small-scale inquiries, spot checks and information from lumbermen and labour associations or government forestry authorities. Labour force surveys may yield data on the total number of employees in forestry, but employment surveys or social security records may only cover the employment of larger lumbering and forestry units. Social security records may also furnish data on employers' social security contributions. Where they cover forestry activities, they would probably also be a better source for indicators of trends in average wages and salaries than the other sources mentioned.

473. Government records and reports are the best source of data on indirect taxes paid and subsidies received by the forestry industry, both for benchmark years and on an annual basis.

474. In order to extrapolate benchmark estimates of operating surplus and consumption of fixed capital, use can sometimes be made of government reports and records on income taxes and royalty payments or the records of the enterprises themselves. The available and usable income tax records will generally relate only to large-scale enterprises and the reported figures will need the usual adjustments in order to arrive at figures that can be used for the national accounts. Once the adjustments are made, ratios of consumption of fixed capital and operating surplus to value added may be computed and applied to annual estimates of total value added in forestry obtained by the production approach. This will yield annual estimates of consumption of fixed capital and operating surplus for the major part of

forestry, except that part which produces minor forestry products mainly for own consumption or own-account construction. An alternative but less satisfactory method of arriving at current estimates for these items is to extrapolate the benchmark year data by indexes of trends derived from income tax statistics. Both of these approaches assume that the ratios for the larger logging and forestry enterprises approximate those for the smaller units or that the latter account for a small portion of the activities of the industry. If these assumptions are believed to be far off the mark, it would be desirable to carry out small-scale inquiries or spot checks of the smaller enterprises or at least to obtain information from government forestry authorities to adjust the ratios or indexes for the larger units to include the smaller ones.

475. It may be assumed that the value added by minor forestry activities undertaken mainly for own consumption or own-account construction consists of operating surplus only, because little or no hired help or capital equipment are used in these activities. The value added of most of these activities, in turn, may be equated to gross output, since intermediate consumption is insignificant. The major exception to this is charcoal burning, where intermediate consumption of wood must be allowed for.

#### 4. Fishing

##### (a) Benchmark estimates

476. Surveys on the input structure of the fishery industry should provide benchmark information on wages and salaries paid in medium- and large-scale fishing. Sometimes, wages and salaries paid in the fishery industry are supplemented by, or even replaced by, the payment of "lots" or percentage shares in the value of the catch. The lots often vary according to the value of the equipment the fishermen themselves provide. Since the fixed wages and salaries are usually kept quite low when lots are paid, the lots are often classed as wages and salaries even though they contain an element of profit. A decision on this point should be based on an examination of individual circumstances.

477. Small-scale fishing is usually undertaken either by individual fishermen or by a small group of fishermen who jointly own the boats and gear. Their income should be treated as operating surplus.

478. Indirect taxes are rarely levied on the fishery industry and it is not often subsidized. Where such payments exist, it may be possible to identify the amounts involved by analysing government records.

479. If data are available on the composition by type and age of the fishing fleet it should in principle be feasible to make a benchmark estimate of the consumption of fixed capital in the industry. It is not likely, however, that it will be possible to make these estimates comprehensive and it may therefore be preferable not to separate consumption of fixed capital from operating surplus. Gross operating surplus may then be derived as a residual by deducting wages and salaries plus indirect taxes net of subsidies from value added estimated by the production approach.

(b) Annual estimates

480. Data for extrapolating benchmark estimates of the cost components of value added in fishing may be difficult to obtain. It may be necessary to assume that the percentage distribution has remained unchanged, and to derive the total by the production approach.

B. Mining

481. Accounts and administrative records filed by large-scale public or private mining enterprises usually contain annual figures on compensation of employees and royalties paid. Royalties are part of the operating surplus of mining establishments. The accounts may also provide information on consumption of fixed capital and sometimes profits net of royalties, but these items will often not conform to national accounts definitions and will therefore need adjustment. If the reports do not show operating surplus as such, it may be possible to derive it residually from the figures on receipts from and outlays on production, together with information on changes in stocks.

482. There may be a significant number of small-scale mining and quarrying establishments for which no accounts are available. Benchmark data on the average values of the components of their value added, preferably by size class, can be obtained from small-scale sample surveys or household income and expenditure surveys. Totals may be obtained by multiplying these averages by the total number of establishments. The number of establishments may be compiled from lists provided by government licencing and registration authorities and by trade associations. It will rarely prove feasible to obtain separate estimates for consumption of fixed capital for these small establishments, and estimates may be limited to gross operating surplus. Annual extrapolations may be based on changes in the number of establishments or the number of workers.

C. Manufacturing

1. Benchmark estimates

483. If resources permit, both benchmark censuses and annual surveys of manufacturing should include information on cost structure, at least for the larger establishments. It is desirable for these surveys to cover all components of value added and to include data on supplements to cash wages and salaries, such as employers' contributions for social security and private pensions and insurance, and wages and salaries in kind. Owing to the importance of manufacturing as a factor in the economic development of most countries, surveys or censuses of manufacturing on at least a benchmark basis should have very high priority.

484. It may be possible to obtain benchmark year estimates of the cost structure of small traditional manufacturing establishments and handicrafts in special sample surveys or in multi-purpose household surveys. These establishments have few employees, apart from family workers, and their value added therefore consists mainly of gross operating surplus. Where there are paid employees, information on their number may be available in population censuses, and may be combined with estimates of average wages and salaries obtained from special small-scale surveys, spot checks etc. to make benchmark estimates of wages and salaries paid by these

establishments. Estimates of gross profits are sometimes based on information in household income and expenditure or similar benchmark surveys. Ratios of gross profits to gross output for the sample establishments may then be used to estimate benchmark gross profits of all small manufacturing establishments. In many countries, however, all that is possible for small manufacturing establishments is to estimate gross operating surplus as a residual by deducting estimates of compensation of employees and net indirect taxes from value added.

## 2. Annual estimates

485. Annual surveys for at least large establishments are highly desirable. Where such surveys are not available, each component of value added will have to be extrapolated independently.

486. Possible sources of data for making annual extrapolations of compensation of employees of private establishments are discussed in section I above. For small traditional manufacturing establishments, compensation of employees for non-benchmark years may be assumed to have behaved like that of the smallest establishments covered by annual surveys. Annual data on wages and salaries paid by public manufacturing establishments may be obtained by analysing their accounts or directly from the government authorities in charge of them. If publicly owned establishments dominate particular kinds of manufacturing, total wages and salaries for those categories may be estimated by assuming that the relationship between wages and salaries paid and gross output that prevails for public establishments is valid for all establishments in the group.

487. Annual surveys seldom include information on wages and salaries in kind. The benchmark year figures may be extrapolated to current years by means of data on the change in the number of employees in activity groups which customarily pay their employees part of their compensation in kind, combined with information on the approximate change in the producers' prices of the goods and services furnished as wages and salaries in kind.

488. Data on employers' contributions to social security on behalf of their employees may be available directly from the social security system in a form that yields estimates by kind of activity group. Usually, records are kept in such a way that it is possible to distinguish between contributions from employers and those from the employees themselves. Information on employers' contributions as a percentage of cash wages and salaries for benchmark years may also be obtained from censuses of manufacturing. These percentages, together with known rate or coverage changes, may then be applied in making approximate estimates of employers' contributions in current years, if the information is not available directly from the social security system.

489. The indirect taxes levied on manufacturing establishments consist of value added and turnover taxes, excise taxes on the output of cigarettes, tobacco, liquor, salt etc., property taxes, fees for business licences etc. The profits of government monopolies should also be treated as indirect taxes. Subsidies may be granted to private manufacturing establishments for a variety of purposes, for instance, because the Government wishes to promote certain activities, make them competitive with imports or make their products cheaper for consumers; such subsidies will often be tied to the output of specific commodities. Government records are the best source of information on indirect taxes and subsidies. The nature of the indirect taxes and subsidies will often indicate the activity group

to which they should be allocated. In order to allocate those for which this is not true, special small-scale surveys for benchmark years may be needed. Other methods of allocation are discussed in section I above. Where necessary, they can be distributed in proportion to the gross output of the various commodity groups.

490. Annual information on profits and depreciation may be available in the accounts of larger manufacturing establishments. These accounts may either be published or be filed by law with government authorities for tax, regulatory or other purposes. In general, the figures for profits and depreciation shown in company accounts will need considerable adjustment before they can be used for national accounts purposes. Methods of doing this are discussed in section I above; they will usually involve making new estimates of consumption of fixed capital at replacement cost. Alternatively, it may sometimes be possible to arrive at direct adjusted estimates of consumption of fixed capital for a small sample of large manufacturing establishments, by enlisting the aid of the establishments in providing additional data. Ratios obtained by relating these estimates to the value added originating in the sample establishments may then be used to estimate the profits and consumption of fixed capital for all large manufacturing establishments.

491. For small manufacturing establishments, annual extrapolations may be based on the movement of gross output of these small establishments.

#### D. Electricity, gas, and water

492. Information on compensation of employees (including supplements), indirect taxes paid and subsidies received of large public or private establishments in this area can almost always be obtained either from their published accounts or from reports they are required to file with responsible regulatory agencies. The usual adjustments, outlined in section I, will be needed for consumption of fixed capital and operating surplus, but the information required to make the adjustments should be available.

493. Information on the components of value added to be associated with electricity generated by establishments primarily engaged in other activities may be available in the published accounts of those enterprises, since they will usually be large undertakings. Where a breakdown of costs is not available, it is usually not feasible to set up a separate establishment for the electricity generation activities and they will be included with the main activity of the establishment.

494. Considerable difficulty is likely to be encountered in making estimates of the cost components of water carrying in rural areas. It may be assumed that the entire gross output of water carrying is operating surplus, since there are unlikely to be any costs, except the labour of the women involved, and they are usually not paid wages. It may be possible to make an estimate of the amount of time spent in this activity, either on the basis of rural surveys or by specific inquiries or spot checks. The number of hours spent may then be multiplied by average rural wage rates to obtain an estimate of gross output, value added and operating surplus.

## E. Construction

### 1. Benchmark estimates

495. For the various kinds of large-scale construction enterprises, it should be feasible to conduct benchmark small-scale sample cost structure surveys to obtain information on the components of value added. Ratios estimated from the sample surveys, multiplied by the total value added of construction, will yield benchmark estimates of the elements of value added for each kind of large construction enterprise in the survey years.

496. For small unincorporated construction units, including craftsmen working in construction, it may be feasible to include questions on cost structure in benchmark household income and expenditure surveys. These may then be used to compute average ratios of each component of value added to total value added for the enterprises included in the surveys. These ratios may be multiplied by the value added of all unincorporated construction units to arrive at totals for the components of value added for these units.

497. In the absence of suitable basic benchmark information from other sources on small construction enterprises, it will be necessary to resort to data from scattered inquiries. Data on the number of employees and wages and salaries of small construction enterprises may be gathered in establishment or employment surveys. Or, if data are available on the number of employees in large construction enterprises, the number of employees in small enterprises may be derived by deducting these figures from the total number of employees in construction according to population censuses or labour force surveys. The necessary information on average wages and salaries per employee may be obtained from trade associations, trade unions, government ministries, or by visiting representative firms.

498. For small-scale own-account construction, especially in rural areas, the whole value of gross output should be classed as operating surplus, attributable to the owner's own labour. Since, however, it is usually necessary to arrive at a valuation for such rural own-account construction on the basis of cost (because of the absence of a market value), a value for the owner's labour is needed. Where it is possible to estimate the number of hours involved, the prevailing wage rate for agricultural labour may be used in making the imputation.

### 2. Annual estimates

499. Data on indirect taxes paid and subsidies received for the construction industry as a whole may be obtained from government records.

500. The basic data needed to estimate totals for compensation of employees in construction enterprises may be extracted from social security files or reports or may be available in annual establishment surveys.

501. It should be feasible to abstract data on compensation of employees connected with the own-account construction activities of public enterprises mainly engaged in other activities from the accounts of the units concerned. For large private enterprises, data on compensation of employees engaged in construction activities may also be available from their accounts. If not, but if the output of construction activities is itself valued, compensation of employees (and

consumption of fixed capital) for the establishment as a whole may be allocated between own-account construction and other activities in proportion to gross output.

502. Annual reports filed with government authorities in connection with the administration of income taxes, company and accounting acts and similar acts and regulations may furnish useful basic data for larger construction enterprises on profits and depreciation. After making the adjustments needed to match the definitions of the national accounts as closely as possible, the data may be used to compute ratios of consumption of fixed capital and operating surplus to total value added for all enterprises submitting reports. When coupled with estimates of total value added arrived at by the production approach, these ratios will yield approximate totals for all large construction enterprises.

503. It is likely that only very limited government administrative data will be available or useful for small construction enterprises. These enterprises frequently are not required to file reports under company acts and if they file income tax reports, they may not be reliable enough to be useful for statistical purposes. If accounting acts do require that the small companies file reports, these may be used as a source in the same way as for large construction enterprises, although more care should be taken to make allowance for underreporting or faulty reporting. Estimates based on this source may be incomplete, however, because independent craftsmen may not be subject to the accounting requirements, or if they are, may not file usable reports.

504. If it is not possible to make a separate estimate of the gross operating surplus of small construction enterprises, the gross operating surplus of the industry as a whole may be obtained by deducting direct estimates of the other components of value added in construction from the total value added arrived at by the production approach.

## F. Wholesale and retail trade, restaurants and hotels

### 1. Wholesale and retail trade

#### (a) Benchmark estimates

505. Relatively few countries undertake surveys specifically designed to yield basic data for estimating the components of value added for the distributive trades. In the absence of such surveys, data from administrative records of Government and the scattered results of surveys taken for other purposes may have to be used. As such data are generally inadequate, special cost structure surveys of the larger establishments in the industry, at least for benchmark years, would be desirable. Similar data for smaller establishments may be collected in household income and expenditure surveys.

506. The basic data needed for making benchmark year estimates of wages and salaries paid and supplements to them are sometimes collected in censuses of distribution for establishments above a certain size. If smaller units are left out, benchmark estimates for them may be based on the number of employees derived from a recent census of population, coupled with data on average wages and salaries collected in special small-scale surveys or by spot checks, or estimated by trade associations, labour unions or ministries of labour.



(b) Annual estimates

507. For extrapolating the benchmark year estimates for employee compensation to current years, data on wages and salaries and employment may be available from employment surveys. If such surveys are not available or do not cover the smaller units, the extrapolation may be based on information about changes in the number of employees and changes in wages and salaries estimated from miscellaneous sources. If all, or at least the larger, retail and wholesale establishments are included in obligatory social security schemes, data on wages and salaries, employers' contributions and numbers of employees obtained from the social security authorities may be used.

508. Information on indirect taxes paid and subsidies received may be obtained from government records.

509. Information on the average ratio of operating surplus and depreciation to gross margins for the larger units may be compiled from reports filed under income tax or accounting acts. The data will need the usual adjustments, outlined in section I. Reports filed under accounting acts may sometimes also yield usable data for smaller units. Information from household income and expenditure surveys, small-scale surveys or spot checks may be used to estimate ratios of gross operating surplus to gross output for the smaller units. When there are many small units that do not keep accounting records, it may be necessary to derive gross operating surplus as a residual for the industry as a whole by deducting the other components of costs from value added obtained by the production method.

2. Restaurants and hotels

510. The components of value added of restaurants and hotels are seldom covered in survey data, with the exception of surveys of tourism in countries where this is an important source of income. In the absence of specifically designed benchmark surveys, use can be made of administrative records of Government, and of scattered information from other surveys. Compensation of employees and its components may be obtained from social security records, or from trade associations, labour unions or ministries of labour or tourism. Employment surveys may offer a basis for extrapolation. Information on indirect taxes and subsidies may be obtained from government records. Administrative records may also offer some information on operating surplus of the larger, tourism-oriented hotels and restaurants, but they are unlikely to cover small establishments. For these establishments, a direct estimate of operating surplus may be impractical.

G. Transport, storage and communication

511. In countries where all or most railroads, airlines, shipping lines and communication enterprises are government-owned, the annual reports of these enterprises usually contain the information needed for estimating the main components of value added, or information on these items may be obtained directly from the government units that control them. Large-scale private enterprises engaged in transport and communication are usually required to file accounting statements with tax offices and government regulatory authorities that supply information similar to that required of public enterprises. The figures for consumption of fixed capital and operating surplus shown in the accounts may need substantial adjustment in order to make them conform to national accounts standards, as outlined in section I.

512. Serious problems are likely to arise in finding appropriate sources for the components of value added of small- and medium-scale private establishments engaged in road and water transport. Cost structure surveys may be used if available, but such surveys do not usually cover smaller establishments.

513. Estimates of total wages and salaries in benchmark years may be based on sample surveys of employment and earnings. Alternatively, data on average wages and salaries per transport and communication employee from benchmark year surveys may be multiplied by the number of such employees according to a recent population census.

514. In order to extrapolate benchmark year estimates of compensation of employees to current years, use may be made of indexes of the number of employees computed from annual labour force surveys and of trends in wages and salaries from a sample of transport establishments. In the absence of labour force surveys, the indexes of the number of employees might be based on an index of the number of establishments. Where social security data are available, these data will provide an alternative estimate, although coverage may be low for smaller establishments.

515. If indirect taxes are levied on transport and communication services, government records are likely to be the best source of data. Alternatively, the amount of such taxes paid by all establishments in the industry may be estimated on the basis of total income subjected to indirect tax and the rate of taxation. Where the tax is based on quantities instead of values, the tax rate should be applied to the number of units on which the tax is based, such as number of journeys, passenger-kilometres, ton-kilometres, or message units. Subsidies paid to transport and communication establishments may be extracted from government records. All government grants on current account to public corporations such as railways, bus lines, airlines and telegraph, telephone and postal services should be treated as subsidies. Transfers by Government to public enterprises that are not corporations should also be treated as subsidies if their aim is to permit a lower price. The indirect taxes and subsidies estimated in this way, which refer to all establishments, should be compared to the figures for public and large private enterprises derived from their accounts in order to check the reasonableness of the two estimates.

516. It will probably be necessary to conduct small-scale surveys or to make spot checks to estimate the average gross operating surplus of small- and medium-scale enterprises, or to derive this estimate residually.

## H. Finance, insurance, real estate and business services

### 1. Financial institutions

517. The accounts of financial institutions that are published or filed with tax authorities or other government regulatory bodies may be expected to furnish adequate data on wages and salaries (perhaps including supplements in the form of employers' contributions to social security and similar private schemes), any indirect taxes paid and subsidies received. As usual, the data on depreciation are likely to be in terms of historical or original purchase cost. However, as the stocks of fixed assets of financial institutions (apart from real estate owned and rented out) are likely to be small, it may not be worth while to make any adjustment except in periods of rapid inflation. Care should be taken that the operating surplus reported in the accounts does not include capital gains or losses

on the sale of securities and similar transactions, and that it does not include any interest, dividends or other property income.

518. Subsidiary real estate activities or other non-financial operations of financial institutions may not be covered, or may be recorded in very summary fashion, in the reports filed with government regulatory and supervisory authorities. If these activities are significant, it will be necessary to cover them in a special benchmark inquiry. Such an inquiry may also be needed to estimate the components of value added in financial services not subject to government regulation and supervision. This is especially true in developing countries where small units using mainly the proprietor's own labour engage in money lending and similar activities. For annual extrapolations of these small-scale activities, it may be assumed that the benchmark relationships of the components of value added to gross output remain unchanged.

## 2. Insurance

519. Insurance companies are usually required to file reports with regulatory agencies that will yield most of the information required on compensation of employees, indirect taxes and subsidies. Care must be taken to adjust operating surplus as reported by the companies to exclude receipts of property income and capital gains. Consumption of fixed capital is not likely to be important, except when it is not possible to separate out activities of these companies in real estate. In the latter case, it is very important to adjust reported depreciation to a replacement cost basis, as outlined in section I above. For insurance agents and similar small-scale operators, information on wages and salaries may be available from employment or labour force surveys or social security records, and censuses or surveys of service industries may be helpful. Indirect taxes and subsidies, if any, should be available from government records.

## 3. Real estate

520. Income tax returns, social security records, and registers of licenced real estate enterprises may provide the basic data for estimating the elements of the value added of large real estate establishments. Income tax returns can often be used to compute average depreciation and average operating surplus of the enterprises, classified, if possible, by size. It will then be necessary to adjust depreciation to reflect the current replacement cost of the fixed assets concerned and to make the consequent changes (usually reductions) in operating surplus. Income tax returns should also contain information on average compensation of employees, average indirect taxes and average subsidies of large real estate enterprises. These averages may then be multiplied by the number of licenced units recorded in government registers. This method will ensure a more complete coverage, if income tax returns are not available for all enterprises.

521. Benchmark year averages for each component of the value added of small real estate firms may be estimated on the basis of small-scale sample surveys. Registers of licenced real estate units or data on the number of employers and own-account workers in the real estate industry from censuses of population may provide the necessary information on the number of small enterprises. Household income and expenditure surveys may supply some useful information. The benchmark year estimates may be extrapolated by data from a number of different sources. For example, data on number of employees from labour force surveys, adjusted to omit

the large enterprises, may be combined with information on average wages and salaries obtained from spot checks. Available wage and salary indexes or establishment employment surveys may also be used to estimate changes in compensation of employees. Social security records may be used, if the system covers these small units. Changes in the rates of property taxes may be used to extrapolate these taxes. Small-scale investigations, spot checks, information from trade associations, and income tax returns, coupled with registers of licenced real estate firms, may be used to assess changes in operating surplus gross of depreciation.

522. The components of the value added of owner-occupied dwellings are net indirect taxes, consumption of fixed capital and operating surplus. It should be feasible to obtain information on the indirect taxes paid by owner-occupiers from property tax records, and on any subsidies they may receive from other government accounts. Some data on the average age and original cost of the more substantial owner-occupied dwellings may be available from income tax records. The original cost figures may be adjusted to current replacement values using government records of real estate assessments for tax purposes, in order to estimate consumption of fixed capital. The operating surplus of owner-occupied dwellings is equal to the interest (actually paid on mortgages and imputed on owners' equity) on their current market values. Current replacement values and the going rate of mortgage interest may be used in estimating the interest on owners' equity. For traditional housing units made from local materials, consumption of fixed capital may be estimated on the basis of estimated values and average lives, and the number of such units may be estimated from censuses and other surveys of housing or from household surveys. No operating surplus should be attributed to the services of traditional owner-constructed dwellings made from local materials.

#### 4. Business services

##### (a) Benchmark estimates

523. Cost structure surveys, in the form of special inquiries for large establishments and as part of household income and expenditure surveys for small establishments and self-employed workers, would furnish the best source of information for benchmark estimates of the components of the value added of business services. However, few countries carry out cost structure surveys of service industries, so that it is usually necessary to depend on other scattered sources.

524. Benchmark year estimates of compensation of employees are often based on data on number of employees from censuses of population, coupled with information on average wages and salaries and supplements from such sources as household income and expenditure surveys, special small-scale investigations, spot checks, ministries of labour or professional associations. Benchmark data on wages and salaries paid by larger business and repair services may be available from censuses of the distributive trades and related services. Censuses of establishments may yield information on the number of employees of both large and small service establishments, which may be used to supplement figures from censuses of population.

525. Estimates of the average depreciation and operating surplus of a sample of large enterprises may be obtained from income tax returns, and adjusted to conform to national accounts concepts. To estimate totals from these averages, the number of large enterprises may be derived from sources such as censuses of

establishments, social security records or licencing registers. Household income and expenditure surveys, if available, may furnish benchmark data on the average gross operating profit of small enterprises and self-employed workers in the service industries. These may be converted to totals for all small service establishments on the basis of numbers of establishments derived from household surveys, social security records, licencing registers etc.

(b) Annual estimates

526. Sources of data for extrapolating the benchmark year estimates of business service establishments are likely to be quite limited. For larger units, current year data on wages and salaries may be available in employment surveys or from social security records. It may be necessary to use index numbers of average wages and salaries paid by large units in extrapolating the benchmark averages for small enterprises. If figures on employment are not available for small units it may be assumed that the number of employees of these units remains the same as in benchmark years.

527. Basic data on indirect taxes paid and subsidies received by service enterprises may be obtained from government records.

528. Annual extrapolations may, if necessary, assume that gross operating surplus moves with gross output. Alternatively, gross operating surplus may be obtained as a residual, by deducting compensation of employees and net indirect taxes from value added estimated by the production approach.

I. Community, social and personal services

1. Social and personal services of industries

529. Accounts filed with government regulatory and licencing agencies or obtained from the enterprises themselves may yield information on large profit-making educational and medical establishments. Cost structure surveys of the service industries are rare, so that for other service establishments it is usually necessary to rely on scattered sources for information on the components of value added.

(a) Benchmark estimates

530. Benchmark year estimates of compensation of employees may be based on data on number of employees from censuses of population or censuses of establishments, coupled with information on average wages and salaries and supplements from such sources as household income and expenditure surveys, special small-scale investigations, spot checks and professional associations. Benchmark data for larger service establishments such as cinemas may be available from censuses of the distributive trades and related services. Household income and expenditure surveys may furnish benchmark data on average gross operating profit of small service units. If household surveys are not available, it may be necessary to carry out a small-scale sample survey to obtain these data. Information on the number of units required to obtain totals from the averages may be obtained from censuses of establishments, censuses of population or registers of licences.

(b) Annual estimates

531. Data for extrapolating benchmark year estimates of compensation of employees for larger establishments may be available in annual employment surveys. For smaller units, labour force surveys may supply some information. Social security records are often a good source.

532. Data on indirect taxes paid and subsidies received can be obtained from government records.

533. Estimates of consumption of fixed capital and operating surplus of large establishments may be based on income tax returns, adjusted to conform to national accounts concepts. Averages per large establishment derived from this source may be multiplied by total numbers of large establishments derived from sources such as censuses of establishments, social security records or licencing registers. Income tax returns, coupled with registers of licences, may be an adequate source of basic data for estimating the gross operating profit of self-employed medical practitioners, if properly adjusted for underreporting. For small service establishments, extrapolations of gross operating surplus may be based on registers of licences or an index of gross output. It may be preferable, where there are not adequate data, to derive gross operating surplus residually for the service industry as a whole.

2. Government and private non-profit services

534. The best source of data on the components of value added for producers of government services would be a complete set of accounts for each level of Government, in which the statistical units used and the transactions shown both conformed to national accounts requirements. As has been noted, government accounts are also the best source of data for several components of value added, including indirect taxes and subsidies and often compensation of employees and operating surplus, for non-governmental establishments. For this reason, the government accounts play a very important role in national accounts estimation, and adjusting them to conform to national accounts concepts deserves very high priority. This topic is discussed in detail in the forthcoming volume of the Handbook series on public sector statistics. In the present volume, it is only possible to summarize a few of the more important considerations.

535. The traditional accounts of most Governments still require extensive reclassification to arrive at groupings of transactions that correspond to the economic categories of SNA. In some countries, revisions of central government accounting in recent years have to some extent taken the requirements of national accounting into account, and finance ministries sometimes now follow the practice of supplementing the traditional accounts with accounts for central government budgetary and extrabudgetary funds arranged according to economic classifications. Even in these cases, however, additional reclassification is usually required.

536. In addition to the closed government accounts, payments authorizations and other supplementary information obtained from government fiscal authorities may be useful for reclassification. Where only total figures are available in the accounts, such supplementary sources may be used to obtain an economic breakdown of expenditures. Projects financed through foreign aid are not always included in either the government accounts or the budget, and where they are omitted, supplementary information, often obtainable from donor agencies, is needed. The

pay of technical assistance personnel working in a country for at least one year (except those paid by private enterprises) should be included in the compensation of employees paid by Government. Any supplements such personnel may receive in the form of free housing, transportation etc. should be treated as wages and salaries in kind.

537. Government budgets often have to be used instead of closed government accounts as the basis for national accounts estimates in current years, because sometimes even preliminary accounts for Government become available only after a considerable time lag. Preliminary figures for the actual expenditures of the previous year may be included in current budgets, but these figures may not be classified in sufficient detail, and they may be subject to considerable revision. Where preliminary government accounts contain less detail than the budget, the budget figures and underlying documents may be used to subdivide the data in the preliminary accounts. Audited accounts are usually available only after even greater delay, and may be even less detailed than preliminary accounts. They are useful, however, in providing control totals for final revised national accounts estimates, even though detailed breakdowns have to be based on the proportions shown in the preliminary accounts or budget. If budget data are used, the first step should be adjusting for probable differences between budget and accounting figures for the same period, based on an analysis of previous experience. Comparison for a number of past years may reveal persistent over- or under-valuation of certain items.

538. In many countries, states, provinces, municipalities and townships prepare their own separate accounts. There is usually no standard pattern for presenting these accounts, and they may be large in number and heterogeneous in structure. Comprehensive reclassified accounts are therefore not often available for all levels of Government. In some countries with a limited number of state or provincial Governments, however, timely accounts for these bodies reclassified in the same way as the accounts of the central Government are prepared.

539. Some countries collect annual data on total expenditures of local governments and estimate reclassified figures for all levels of Government by assuming that local government expenditures are distributed according to economic and functional categories in the same proportion as central government expenditures. This is a very tenuous assumption, since the functions of central and local Governments are seldom similar. It is preferable to survey a sample of local governments at intervals of 5 to 10 years to obtain benchmark data on the structure of local government expenditures. The same percentage distribution can then be used for subsequent years. The data collected in these surveys should be classified according to the same categories as are used in the central government accounts, so that it will be possible to compile comparable data for Government as a whole and for its various levels.

540. There is considerable diversity among countries in "fiscal years" - that is, the period of account used for budget purposes. It is clear that international comparability requires the use of a standardized accounting period. Because it has been adopted by more countries than any other, the Gregorian calendar year, running from 1 January through 31 December, is used by the United Nations for international statistical reporting, and, in practice, more than four fifths of countries use this calendar year for compiling their national accounts. When countries use non-calendar fiscal years for government accounts, therefore, adjustments are necessary.

541. The simplest method of making the adjustment is by simple interpolation. If, for instance, the fiscal year ends on 31 March, figures for the calendar year 1985 can be obtained by taking three quarters of the figure for the fiscal year ending 31 March 1986 and adding to it one quarter of the figure for the fiscal year ending 31 March 1985. There are a number of drawbacks to this procedure. The calendar year figures cannot be estimated until after those for the later of the two accounting years are available, so that completion of the national accounts is delayed. In addition, the method rests on the assumption that flows of receipts and expenditures during the two accounting years concerned are changing on a linear trend. Obviously, this will not be true if there is a new tax, a change in tax rates or a change in expenditure patterns. Thus, if a change in government wage rates became effective from 1 January 1986, three fourths of the additional expenditure between 1 January and 31 March 1986 would be wrongly attributed to 1985. Where the effective date of such a change is known and its financial effect can be estimated, it may be possible to adjust for this in the interpolation process.

542. A better approach is to use the detailed "intermediate" accounting records that in most countries are compiled on a monthly or even weekly basis. These are generally designed for financial control of individual spending units, and so record outlays and receipts at a very detailed level. In many countries these records are now computerized, so that obtaining the required aggregates is not difficult. Even where this is not the case, some aggregates are often compiled periodically for purposes of financial management. It may be possible to arrange for these aggregates to be compiled in greater detail at the end of the calendar year in order to provide a basis for a first estimate of the main items needed for national accounts. Such aggregates can also be used later, when the full detail for the fiscal year becomes available, to make a more accurate adjustment to a calendar year basis.

543. The best solution, adopted in a number of countries, is to arrange for the data to be aggregated at the end of each calendar quarter, and to rearrange them in the form of quarterly accounts suitable for incorporation in the national accounts. Seasonal adjustment techniques can be used once the quarterly figures are available for a sufficiently long period.

544. The basis of recording found in the government accounts may also need adjustment. Government accounts are often on what is known as a "cash" basis, recording money actually paid out or received, at the time it is paid or received. Government budgets, on the other hand, often reflect authorizations or appropriations - amounts approved, but not necessarily yet spent. The national accounts require recording on an "accrual" basis, reflecting the time services are rendered or the legal title to goods changes, and this seldom coincides with either authorizations or cash expenditures. For cost components of value added, however, the cash and accrual bases will usually not differ greatly.

545. Data on the consumption of fixed capital for government buildings and equipment are often not available in government accounts, or if they are, the principles used do not correspond to those needed for the national accounts, and the national accountant will usually have to make entirely new estimates. Methods of doing so for government fixed capital are the same as the general methods outlined in section I above. It may, however, be easier to survey the Government's holdings of fixed capital assets than those of the private economy.



546. SNA recommends the calculation of consumption of fixed capital for general government buildings, plant, machinery, and vehicles. Roads, dams and bridges, on the other hand, are assumed to last forever, if properly maintained, and no estimates of consumption of fixed capital for these kinds of asset are called for. Where it is apparent that the necessary maintenance is not being done, however, a more prudent approach would include capital consumption for these assets as well. Recent experience suggests, furthermore, that however well they may be maintained such assets do become obsolete.

547. Accounts, filed with tax or regulatory authorities or published, are also the best source for private non-profit services, but they will usually be obtainable for only a sample of such units. Registers of private non-profit services often are available, however, and the sample results can be inflated to cover all units on the basis of numbers of employees.

## PART FOUR. GROSS DOMESTIC PRODUCT: THE EXPENDITURE APPROACH

548. The third way that GDP can be derived is by adding up the final uses to which output is devoted: final consumption expenditure of Government, households and private non-profit institutions; gross capital formation; and net exports.

549. As was noted in part one, the components of final expenditures on GDP may be estimated within the context of the supply of goods and services by producers and the uses to which that supply is put, in a framework such as that shown in chart 3. That is the approach usually taken first in developing countries, and that is the primary focus of the discussion in part four. This approach, however, does not really lead to an independent measure of GDP, since it is the result of tracing supply from producers to final uses. What the worksheet shown in chart 3 does is to distribute a total arrived at by other means over final uses; it does not make an independent estimate of the total.

550. In order to obtain such an independent estimate, one has to proceed by directly estimating final expenditures of households, Government, private non-profit institutions, gross capital formation of these institutions and of other financial and non-financial enterprises in the economy, and net exports. This approach and the one described in the previous paragraph are not usually taken independently from one another; instead, they are usually combined to a greater or lesser extent in arriving at estimates of final expenditures.

### I. COMMODITY FLOW ANALYSIS

551. The methodology lying behind chart 3 is known as commodity flow analysis. It starts by estimating the total domestic supply of each kind of good and service. Whereas the production approach to the estimation of GDP provides estimates of the gross output, intermediate consumption and value added of establishments classed in various ISIC categories by tracing flows along each column in chart 1, the commodity flow analysis requires the output of establishments to be broken down by particular kinds of goods and services. When establishments produce goods and services that are not typical of the industries in which they are classified, the output has to be reclassified by kind of goods and services. Such atypical outputs must be shifted to the category of which they are typical, in order to obtain the total supply of each kind of good and service. Furthermore, much more detail is needed in the classification of goods and services than was suggested for the classification of establishments. As a minimum, it will usually be necessary to identify the gross output of 200 to 300 individual items.

552. Estimates of total gross output of each kind of good and service derived by surveying producers as described in paragraph 551 are always valued at producers' prices. For the final use breakdown, however, what is wanted is gross outputs at purchasers' prices. The difference between producers' and purchasers' values is what is paid to establishments in wholesale and retail trade and the transport industry to move the goods from the producer to the purchaser, so that the next step is the addition of these trade and transport margins to each category of goods and services. In order to do this, the routes taken by each type of good and service from the producer to the final user need to be considered carefully. Some products are sold to wholesalers, who sell to retailers, who in turn sell to final users. But other products - most services and many exports, for example - skip one

or both of these stages. Similarly, some products are transported for long distances, and others not at all.

553. The next step involves the addition of imported supplies. These, after addition of import duties and any applicable trade and transport margins, are added to domestic supplies of the same items to yield total supplies of each item. Where there is no similar domestic production of imported items, new categories of goods and services must be set up.

554. Each type of good and service must next be examined to determine what uses are made of it. It is at this stage in the process that information from many different sources may be brought to bear. The estimates of value added by the production approach will have yielded considerable information on the absorption of various goods and services in the intermediate consumption of producers. Government budgets and accounts will contain information on government purchases. Foreign trade statistics will give exports. Much of gross capital formation can be identified by the nature of the items, and often sources such as establishment surveys or surveys of fixed investment are available. Sources of data for identifying private final consumption are less readily available, and that is why this category is sometimes determined residually in the beginning stages of national accounts estimation. But that is an outcome to be avoided, if possible, and sources can be developed to provide these data. These sources are discussed in the sections that follow.

555. The methodology by which a total obtained by other approaches is distributed to final uses will, as the sources of data on which the distribution is based improve, gradually be transformed into a truly independent methodology for making direct estimates of final uses, without reference to sources of supply. A true statistical discrepancy will then emerge, and commodity flow analysis will no longer play an important role. Few countries, however, even among those with the most highly developed statistical systems, have yet reached the stage where reliance on commodity flow can be completely relinquished.

556. The sections that follow discuss final consumption expenditure, gross capital formation and exports and imports. Within each section, consideration is given first to problems of definition and classification, and secondly to sources of data and methods of estimation.

## II. FINAL CONSUMPTION EXPENDITURE

557. As was indicated in table 3 in part one, the end users of consumption goods may be Government, households and private non-profit institutions.

### A. Government final consumption expenditure

#### 1. Content and general considerations

558. Government final consumption expenditure <sup>15/</sup> is defined in SNA as the value of the gross output of producers of government services, less the value of government sales and less the value of any own-account capital formation that is included in gross output. Government final consumption expenditure is thus equal to the value of goods and services produced by the Government for its own current use.

559. Since government output is mainly not sold, SNA measures its value by the cost of producing it, namely, the sum of intermediate consumption, compensation of employees, consumption of fixed capital, and indirect taxes paid. The definitions of these cost components for Government are for the most part the same as the general definitions of these components already presented in parts two and three. In most cases, units classified as governmental will not pay indirect taxes nor receive subsidies, so that only the first three components need be considered. Government intermediate consumption is defined to include all military expenditures, regardless of expected life. In addition to weaponry, this includes all kinds of military aircraft and vehicles, as well as construction undertaken for military purposes. As is pointed out in the discussion of household final consumption expenditures in the next section, boundary problems may arise in distinguishing government expenditures on intermediate consumption from transfer payments. These problems are discussed in that section.

560. In order to obtain an estimate of government final consumption expenditure, it is necessary to deduct from the estimate of government gross output all of the elements entering into it that are not final consumption. These are, first, any expenditures that are classed as gross capital formation rather than consumption, and secondly, amounts received for any part of government gross output that in fact is sold on the market.

561. Definitions of the components of gross fixed capital formation are given in section III below. For Government, the largest component is likely to be own-account construction and major repair of buildings, roads, dams etc., often by a separate ministry of works. Other examples may include forest roads constructed by a forestry department, storage buildings constructed by the staff of a department of agriculture, or cattle dip tanks built by employees of a veterinary department. An exception is made, however, for works intended for defence purposes. These are all classified as current expenditures, regardless of their expected length of life.

562. Government gross capital formation also includes the change in government stocks. In SNA, only strategic stocks (of, for example, food, petroleum or raw materials) held by Government for policy purposes are inventoried, although countries may find it useful for their own purposes to keep more complete inventory data for Government, such as that compiled for enterprises.

563. Government sales include such items as receipts from sales of postcards and reproductions by museums, sales of handicrafts made in institutions for the handicapped, sales of goods and services made by prison inmates, firewood sold by government forestry departments, publications sold by statistical offices, fees (including nominal fees) for medical and hospital treatment and for drugs provided directly by Government, school fees, fees for dipping cattle and other veterinary services, sales of maps and charts, and charges made for the use of government computer services. Sales may also include substantial transactions with foreign Governments. Sales do not, however, include fees that are levied for regulatory purposes, such as for passports and driving licences.

564. The estimate of total government final consumption expenditure is largely unaffected by the boundary problems that arise in distinguishing producers of government services from industries of Government. Shifting individual statistical units from one category to another will change the relative shares of intermediate consumption and compensation of employees but not their sum, and it is their sum that enters into government final consumption expenditure.

565. The National Accounts Questionnaire, in its table 2.1, calls for classification of government consumption expenditure by function. This classification is given in table 5; it is discussed in detail in Classification of the Functions of Government, 16/ as well as in the forthcoming volume of the Handbook series on public sector accounts.

Table 5. Major groups of the classification of the functions of Government

- 
- |    |   |
|----|---|
| 01 | General public services   |
| 02 | Defence affairs and services  |
| 03 | Public order and safety affairs   |
| 04 | Education affairs and services  |
| 05 | Health affairs and services   |
| 06 | Social security and welfare affairs and services  |
| 07 | Housing and community amenity affairs and services  |
| 08 | Recreational, cultural and religious affairs and services   |
| 09 | Fuel and energy affairs and services  |
| 10 | Agriculture, forestry, fishing and hunting affairs and services   |
| 11 | Mining and mineral resource affairs and services, other than fuels; manufacturing affairs and services; and construction affairs and services |
| 12 | Transportation and communication affairs and services   |
| 13 | Other economic affairs and services   |
| 14 | Expenditures not classified by major group  |
- 

566. Ideally, the classification of the functions of Government (COFOG) should be applied to transactions; that is, each wage payment, each purchase of goods for intermediate consumption, each imputation for consumption of fixed capital etc. should be assigned a COFOG code. In practice, it will usually be necessary instead to assign the total final consumption expenditure of each unit of Government - department, office, bureau, programme unit etc. - to the COFOG function applicable to the largest share of its expenditures.

## 2. Sources and methods of estimation

567. Sources and methods for estimating the gross output of Government and government final consumption expenditures will be discussed in more detail in the forthcoming volume of the Handbook series on public sector statistics. Reference may also be made to the IMF Draft Manual on Government Finance Statistics.

568. General principles of using the government accounts for national accounts estimation were discussed in part three, which dealt with the cost components of value added. Government gross capital formation is discussed in section III below. What remains to be considered here, therefore, is the derivation of government intermediate consumption and government sales.

(a) Intermediate consumption

3:

4:

569. Government financial accounts generally do not classify expenditures on intermediate consumption in much detail by type of good or service. Many items in the accounts refer to miscellaneous expenditures, or are totals for particular projects that are made up of a mix of compensation of employees and various outlays on goods and services. To obtain data on intermediate consumption classified by type of good or service, it is necessary to go through the payment vouchers of each administrative unit authorized to make outlays. Such vouchers are generally available; in some countries daily statements are prepared of government payments authorizations in full detail. Detailed analysis of payment vouchers can provide a basis for splitting the composite items. This may involve a substantial amount of work, and for relatively small items it may be sufficient to examine only a small sample of vouchers, or to seek the expert opinion of the appropriate government authorities. For large items, however, detailed examination of vouchers is worthwhile, at least for benchmark years. Where the payment system is computerized, the task is relatively simple; what is required is to persuade the competent administrative authority to insert the proper codes on the payment records. Where the system is still manual, however, it will be possible to examine only a sample of vouchers.

570. Government outlays on intermediate consumption are often recorded on a cash basis, which may differ significantly from the accrual basis needed for national accounts. It is usually possible to adjust at least some of the data recorded on a cash basis to approximate an accrual basis. In many countries the accounts relating to a particular year show delayed payments relating to purchases made in the previous year separately, and these amounts can be transferred to the year in which the purchases were made. Information on prepayments, however, is more difficult to obtain. If the expenditures relating to other years are not shown explicitly in the accounts (or in other government records such as those of funds authorized or funds committed), special investigations should be undertaken, with the assistance of the government departments concerned. This should be done annually, as the extent of accounts receivable and payable may fluctuate considerably from year to year. In cases where it is necessary to rely on budget authorizations, special investigations of the relationship of authorizations to amounts actually spent are particularly necessary, since there is often a wide divergence.

571. Special problems arise in allocating expenditures on overhead services such as maintenance and repairs, cleaning, rent and telephone services among administrative units. The allocation may have to be made on the basis of number of employees, floor space occupied etc.

572. A final problem relates to the separation of current and capital expenditures. A number of countries do not make such a distinction in their budgets and financial accounts, and the detail required to reclassify expenditures on this basis may not be available. The only really satisfactory solution in this situation is an accounting reform that will introduce a clear distinction between current and capital expenditures in the government financial accounts. Failing this, however, the payment vouchers should be examined to make as accurate a distinction as possible.

(b) Government sales

573. The task of estimating government sales may be divided into two components. Intergovernmental sales are usually relatively large individual transactions, readily identifiable in the accounts of the responsible agency or department. Care must be taken to ensure that such sales do not include components of gross capital formation; sales of fixed capital goods are deducted directly from purchases of such goods, and sales of strategic goods for which government stock accounts are kept enter into the calculation of the change in these stocks. The only problems likely to be encountered are those of confidentiality. Where the items involved are important for foreign policy reasons, Governments may not wish to reveal the data.

574. Government sales to the general public are usually composed of very many small transactions. To obtain data on these transactions, it is necessary to identify the governmental units that make such sales, and examine their accounts. Again, care must be exercised to ensure that sales of capital goods are excluded. Amounts received from the sale or scrapping of government buildings or equipment, for example, should be deducted directly from government purchases of similar items, as should amounts received for the sale of leases or concessions to exploit government-owned petroleum reserves, forests, grazing land etc.

B. Household final consumption expenditure

1. Content and general considerations

575. The components of household final consumption expenditure are shown in table 6. Final consumption expenditure of households in the domestic market is the largest component, and may often be the only one about which any reliable information is available. However, final consumption expenditure of resident households, shown on line 4, is not the same as final consumption expenditure of households in the domestic market, and attempts should be made to estimate the adjustment items.

Table 6. Household final consumption expenditure

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1.	Final consumption expenditure of households in the domestic market
2. Plus:	Direct purchases abroad by resident households
3. Less:	Direct purchases in the domestic market by non-resident households
4. Equals:	Final consumption expenditure of households

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576. Final consumption expenditure of households in the domestic market consists of outlays of households on new goods and services less their net sales of second-hand goods and scraps. It includes purchases of non-reproducible tangible assets (except land) such as works of art, collectors' items and antiques. It also

includes purchases of consumer durables such as furniture, automobiles and television sets. Purchases of dwellings are treated as gross fixed capital formation by an imputed unincorporated enterprise and are not included in household final consumption expenditure, but the imputed rent of owner-occupied dwellings is included. Household final consumption expenditure also includes the value of other goods and services produced for own consumption, such as crops, livestock products, firewood and other non-market or subsistence outputs, and goods and services received as wages in kind. Payments for domestic services that one household renders to another, such as maid services, cooking, child nursing, and gardening, are included in household final consumption expenditure. However, when activities such as cooking meals, scrubbing floors or taking care of children are undertaken by the household's own members, they fall outside the production boundary and therefore outside the scope of final consumption expenditure of households.

577. Problems may arise in distinguishing final consumption expenditure of households from outlays on intermediate consumption by producers because of the way certain items are treated in business accounts. Employers sometimes provide goods and services such as housing, food or clothing free or at markedly reduced prices to their employees. Where these goods and services are of clear benefit to the employees and are not provided for the convenience of the employer, their value should be recorded as wages and salaries in kind and included in household final consumption expenditure, even though the employers who provide these goods and services to their employees may record these amounts as intermediate consumption expenditure in their books. Outlays on goods and services which, in addition to being of some benefit to the employees, mainly serve to promote efficiency, improve the public image of the employer or maintain employee morale should, however, remain in the intermediate consumption expenditure of the employers. Examples of such outlays are expenditures on educational programmes, sports tournaments and medical examinations. When the decision as to the proper treatment is unclear the expenditure should be left where the business puts it, usually in intermediate consumption.

578. On the other hand, employees may be required to provide certain tools and other equipment or uniforms at their own expense. Examples of such outlays are expenditures on miners' lamps and explosives, on agricultural labourers' shovels and on waitresses' uniforms. For national accounts purposes, the estimated amount of such outlays should be deducted from compensation of employees and included in the intermediate consumption of the employer. It will thus be excluded from final consumption of households.

579. Proprietors of unincorporated enterprises may sometimes deliberately confuse their business and household expenditures, as a means of tax evasion. The findings of tax inspectors can be used as a basis for adjusting for this.

580. Problems in apportioning items of expenditure between the final consumption expenditure of households and the intermediate consumption or gross fixed capital formation of producers will occur when the same goods are used by professional practitioners and other individual proprietors both for personal and business purposes. Such problems arise, for example, in the case of the purchase and use of automobiles, fuels and quarters used for both business and household purposes. The degree of utilization, measured in terms of number of kilometres run, number of hours utilized etc., might serve as the basis for dividing the expenditures in question among the multiple uses.



581. Owner-occupied housing presents a special problem of classification. SNA treats the occupation of housing by its owner differently from other household consumption activities. The owner-occupier, in his role as owner, is considered to be operating an establishment engaged in renting the dwelling to himself as occupier (see para. 355). This requires setting up an imputed establishment for this activity. The gross output of this notional establishment is equal to the imputed gross rental of the dwelling, and it is this imputed gross rental that enters into household final consumption expenditure. It follows that actual expenditures made by households on the maintenance and operation of their dwellings are not included in household consumption expenditure, but rather appear as intermediate consumption of the fictitious establishment that is considered to own and operate the dwelling. In principle, the imputed gross rental should equal the rent received for similar facilities that are rented in the market and not owner-occupied. However, in many cases, particularly in suburban and rural areas, there may be no comparable rented property. In such cases, costs are substituted; the costs taken into account should include operating costs, maintenance and repair, insurance service charges, property taxes, imputed depreciation, and an imputed net return. The imputed gross rental estimated in this way differs from the actual expenditures of households by the amount of the last two items, imputed depreciation and the imputed net return. The SNA treatment of owner-occupied housing is one of the questions that is under consideration in the present review of SNA. The proposed alternative would record as a household expenditure the actual outlays made, rather than an imputed rental. This would shift the locus of the output involved from the fictitious real estate establishment to the suppliers of the goods and services purchased, and the expenditures involved would become final rather than intermediate consumption. They would, however, be smaller than the present imputed rental expenditure by the amount of the imputed depreciation and net return, and this would correspondingly reduce GDP.

582. For subsistence output, problems may arise in distinguishing output that should be included in current consumption expenditure from that which should be classified as own-account capital formation. The distinction should, as in the general case, be based upon the expected length of life of the items produced. In many cases this may be impossible to determine for items of small value. Efforts should be made, however, to exclude from final consumption not only construction of dwellings, farm buildings, fences and the like, but also major items of equipment such as tools, containers and similar items with an expected life of one year or more that producers make for themselves.

583. Finally, problems may arise in distinguishing household final consumption expenditures from some flows of the government accounts. The first question relates to the treatment of fees. If a fee is paid in exchange for the provision of a non-regulatory service such as radio and television broadcasting, SNA classifies the payment as a final consumption expenditure on a service; but if the fee is levied for regulatory purposes, as in the case of passport fees, airport duties and dog licences, the payment is classified as a transfer and excluded from final consumption expenditure.

584. The second question relates to the purchase of goods and services by the Government on behalf of households, such as the free distribution of food in the context of welfare programmes, or the reimbursement of households for certain expenses such as medical care. When the household is free to choose the provider of the goods or services and the conditions under which they are to be supplied, SNA considers the payment to be household consumption expenditure, and treats the payment by the Government as a transfer to households. But when the Government

specifies the conditions under which the product is supplied and designates the supplier, the payment is considered to be government consumption, and it does not enter the household account. Establishing these boundaries has proved difficult, however, and various proposals for alternative treatments are under consideration in the review of SNA.

585. Acquisitions of new goods and services for final consumption by households should be valued at purchasers' prices, including transport, installation and similar charges, but excluding interest on delayed payments and other financial outlays by consumers that are connected with the acquisition of goods and services. The value of net sales of second-hand goods and scraps, which is deducted from acquisitions of new goods to arrive at final consumption, is equal to the proceeds of households from such sales, less the purchasers' value of second-hand goods purchased by households. In many countries, a large item in this category will be used cars. Dealers' margins and other transfer costs, as well as any service charges which the households may pay when they conduct transactions in second-hand goods, are classified as purchases of services.

586. Goods and services obtained as wages and salaries in kind should be valued at the prices paid by the employers if the goods in question are bought on the market, or at producers' prices if the goods are produced by the employers themselves. If producers' prices are unobtainable, explicit costs (materials and wages) may be used. Goods and services produced for own consumption should be valued in the same way both for the estimates of value added by kind of activity and in the estimates of final consumption by households. As noted in part two, producers' prices should be used, although these may not always be "farm-gate" or ex-factory prices.

587. In general, expenditures on final consumption by households should be recorded when the purchases are made, irrespective of delays in the delivery of goods. For hire-purchase arrangements or instalment purchases, the purchase should be considered to occur at the time the contract is signed, or, if there is no formal agreement, at the time the goods are delivered. Household sales and purchases of second-hand goods should be recorded at the time ownership passes. Goods produced on own account for consumption in the producer's household should be recorded as consumption at the time of production.

588. Direct purchases abroad by resident households and in the domestic market by non-resident households cover expenditures by diplomats and military personnel, and tourists, students and seasonal or border workers who remain in a foreign country for periods of less than a year. Outlays abroad of individuals whose expenses are reimbursed by their employers should not be included; they are part of the intermediate consumption of the employers. Direct purchases by residents abroad should be added to final consumption of households in the domestic market, and purchases by non-residents in the domestic market deducted, in order to arrive at total final consumption expenditures of resident households.

589. Final consumption expenditure of households in the domestic market (line 1 of table 6) is classified in table 2.5 of the National Accounts Questionnaire according to object (purpose or objective) and according to type (durable, non-durable, service) of expenditure. No breakdown is called for of direct purchases abroad by residents or direct purchases in the domestic market by non-residents, on the ground that data on these breakdowns are unlikely to be obtainable. The classification called for in the National Accounts Questionnaire is reproduced in table 7. A more detailed classification, with an explanation of the content of the categories, is given in annex IV. It may be noted that, unlike

the classification of the functions of Government, this classification of household consumption expenditures has not been updated since the mid-1960s, and there are many new products that are not specifically mentioned. It is usually reasonably apparent where such new products should be classified, however. Thus, video recorders should be included with television sets in class 7.1.1, and electronic calculators and personal computers with typewriters in class 7.1.2. In some cases, however, these new products may raise difficult price index problems. For example, it is not acceptable, as was done in a number of countries for some time, to measure the change in price of computers by that of typewriters, when the most casual observation will reveal that these prices are moving in radically different ways.

Table 7. Classification of final consumption expenditure in the domestic market by households

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1	Food, beverages and tobacco
2	Food
3	Non-alcoholic beverages
4	Alcoholic beverages
5	Tobacco
6	Clothing and footwear
7	Gross rent, fuel and power
8	Fuel and power
9	Other
10	Furniture, furnishings and household equipment and operation
11	Household operation
12	Other
13	Medical care and health expenses
14	Transport and communication
15	Personal transport equipment
16	Other
17	Recreational, entertainment, education and cultural services
18	Education
19	Other
20	Miscellaneous goods and services
21	Personal care
22	Expenditure in restaurants, cafes and hotels
23	Other
24	Total consumption expenditure in the domestic market by households

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590. The "objects" identified in the classification are mostly individual goods and services, but in a few cases they consist of collections of items that people buy in a package to serve a single purpose. For example, "hospital care and the like" (item 5.4) may include food, drink and lodging provided by hospitals, drugs, nursing care, surgery, and even burial services. These various goods and services can be bought individually and they are often separately itemized on the bills people pay for hospital care. In some cases, however, only a single figure is provided. Similarly, expenditures on hotel and restaurant services may not be subdivided into components such as food, lodging, travel etc. As will be noted

below, some methods of estimation yield these composite categories, whereas others will yield the individual components. Where commodity flow analysis is used, estimates of the individual goods and services are a more likely result.

591. The classification by type, based on the durability of the goods and services, has been found helpful for analysing and predicting trends in consumer expenditures. Expenditures to replace durable goods can usually be postponed for months or even years, with the result that such expenditures are very sensitive to business conditions. Outlays on non-durable goods, on the other hand, tend to remain relatively stable in real terms regardless of short-term changes in income levels. The classification also serves to identify durable goods, which countries may wish to include in balance sheet statistics. 17/

592. Consumption of items produced by the household that is consuming them should be distinguished from consumption of market purchases in all categories. In countries at early stages of economic development many households produce for themselves a significant part of what they consume. These may be products of agriculture, mining, forestry and fishing, or small manufactures. Households may also produce services, such as transporting water and fuel. In more highly developed economies, such output produced for own use generally takes on a different character, but it may still be quantitatively significant. Home and automobile maintenance are two important components, and output of garden plots often remains an important source of food. Whatever method of estimation is used, the likelihood is that estimates of home-produced consumption will be much less reliable than those of market consumption expenditures.

593. Furthermore, the distinction between what is considered to be subsistence output (and therefore consumption) and what is merely internal household activity is essentially an arbitrary one, based on the traditional limits of marketed output in developed countries. But these limits are changing rapidly, as more activities such as household and automobile repair that once passed through the market are becoming internalized within the household. And conversely, as female labour force participation rises and activities such as food preparation move increasingly into the market-place, the traditional limits may move in the opposite direction. All of these changes in what passes through the market-place and what does not raise pressing questions of comparability over time and space. No consensus has yet been reached on appropriate limits to the extension of the production boundary in this area, but this is one of the topics now under study. Whatever decisions are reached, a first requirement for preserving comparability is the separate identification of the marketed and non-marketed segments of final consumption.

594. This distinction is also highly important for analytical reasons. The economic forces and policy instruments impinging upon market transactions are very different from those affecting subsistence consumption, and combining the two into one undifferentiated figure is likely to lead to quite erroneous conclusions.

## 2. Sources and methods of estimation

595. At early stages in the development of national accounts statistics, it is common to estimate total private final consumption expenditure as a residual by deducting independent estimates of the other final uses (final consumption expenditure of Government, gross capital formation and exports) from total supply estimated as the sum of gross domestic product and imports. Since private final

consumption expenditure is often the largest category of demand, this procedure should be avoided where any alternative is available. Residual estimation is unsatisfactory for two main reasons: only totals can be estimated, and the residual reflects all of the errors in all of the estimates from which it is derived. Expressed in another way, a residual estimate incorporates the statistical discrepancy that would have arisen if independent estimates of gross domestic product from the product and expenditure sides had been made.

596. Initial estimates of household consumption expenditure are often based on commodity flow analysis. These results, based on domestic production and foreign trade statistics, are then compared with information on demand from sources such as household surveys, censuses of distribution or services, statistics of retail trade, transportation and financial institutions and data from administrative sources. The sources of estimates of direct purchases by residents abroad and by non-residents in the domestic market are balance of payments statistics and statistics on tourism.

(a) Commodity flow

597. Commodity flow analysis uses information about the supplies of goods and services from domestic production and from imports, combined with information about the uses of these supplies for household consumption expenditure and other types of final expenditure. The commodity flow method leads to an estimate of final consumption expenditure of households in the domestic market (line 1 of table 6), since it considers the disposition of supplies in the domestic market.

598. The steps in making commodity flow estimates of final consumption expenditures of households are as follows:

(a) Identification, in the supply of goods and services from domestic production and imports, of those items that are entirely or partly used for final consumption of households;

(b) Estimation of the part of the total supply of these groups of goods and services that is in fact used for household consumption in those cases where there are alternative uses;

(c) If the domestic supply of goods and services is valued in producers' prices and imports at c.i.f. prices, estimation of the trade and transport margins and import duties to arrive at purchasers' values;

(d) Estimation of the supply at purchasers' values of goods and services consumed by households that are not covered by domestic production and foreign trade statistics.

599. By its very nature, commodity flow analysis takes advantage of information available from any source. For example, the results of household expenditure surveys may be used in allocating supplies of particular goods between household consumption and other uses. Surveys of retail trade establishments serve the same function, and additionally may help to identify that part of the supply of goods that enters into changes in dealers' stocks rather than household consumption. Examples of goods and services that enter both household consumption and other uses are spare parts for automobiles, cloth, fuels, electricity, and transport and communication services; food and beverages not only enter the direct expenditures

of households but also the intermediate expenditures of, for example, hotels and restaurants, hospitals and boarding schools.

(b) Household expenditure surveys

600. Data on household consumption expenditures collected in sample surveys of households are useful for making benchmark estimates of the distribution of household consumption expenditure. Such surveys are generally taken at infrequent intervals, and so they do not provide a basis for current annual estimates. These data measure the flow of household goods and services at the time of purchase at purchasers' prices. They are, in principle, comprehensive in coverage of goods and services and can furnish classifications of household consumption expenditure by type of goods and services and object of expenditure. They also permit classification by household characteristics, such as level of income or socio-economic status. The data obtained in household surveys usually refer to final consumption expenditure of resident households (line 4 of table 6). Direct purchases abroad by resident households will be included and direct purchases in the domestic market by non-resident households will be excluded, since non-resident households are generally excluded from the samples used in household expenditure surveys. More detailed information on objectives, design, implementation and evaluation of the results of household surveys can be found in the Handbook of Household Surveys, 18/ prepared by the Statistical Office of the United Nations Secretariat in the context of the National Household Survey Capability Programme (NHSCP).

601. Despite these advantages, the use of household expenditure surveys as an independent source for estimating the level of total household consumption expenditure is subject to certain limitations. The surveys are usually based on small samples of households, and may not cover the whole population. The population of hospitals, prisons and other institutions is usually excluded. Biases may occur because of non-response and the difficulties of obtaining reliable information on items that are purchased infrequently or are socially disapproved. For example, respondents may understate their expenditures on items such as alcoholic drinks, drugs and tobacco. In order to ensure that outlays on expensive and infrequently purchased items are properly reported in the sample, it is necessary to make repeated visits to respondents, or to ask the respondents to recall their outlays on such items over an extended period of time, as, for instance, three to five years.

602. Furthermore, some components of final consumption expenditure as defined in SNA cannot be obtained from households. Items such as the imputed rent of owner-occupied dwellings and imputed service charges for casualty and life insurance cannot be properly estimated by respondents in household expenditure surveys; they must be estimated by the compilers of national accounts, using data from other sources. Generally, household expenditure surveys ask for total premiums for life and casualty insurance, and sometimes also for insurance claims received. The national accountant will have to calculate the service charge, using information from insurance carriers to supplement that collected from households. Similarly, household surveys normally ask for information on the actual cost of operation of owner-occupied dwellings, not the imputed gross rental, and the latter must be estimated on the basis of data from other sources.

603. For these reasons, data obtained from household income and expenditure surveys often prove to be most effectively used in conjunction with commodity flow analysis, to identify the types of goods and services that enter household final consumption expenditure and establish their relative shares in a benchmark year.

(c) Retail sales

604. Statistics on sales collected from retailers and other outlets selling goods and services directly to consumers provide valuable information on household final consumption expenditure. Censuses of wholesale and retail trade and service industries may provide the basis for benchmark estimates; less comprehensive annual or more frequent inquiries may be used to extrapolate the benchmark estimates. Where the supplier is a government agency or a large enterprise, annual data on sales may be available.

605. Most retail purchases are made from retail outlets. In estimating household consumption expenditures from surveys of retail trade, the general procedure is to adjust the figures to eliminate retail purchases by Government or enterprises, and to exclude sales of second-hand goods. Types of goods that may be purchased by others than households can sometimes be identified by the nature of the goods concerned, for example, building and construction materials, office equipment, automobiles, and gasoline. Household surveys may be helpful in allocating purchases of such commodities among households and other users. Additional estimates must be made of purchases by households directly from wholesalers, manufacturers or farmers. Excise and sales taxes must be added to the value of retail sales unless they are already included.

606. Retail sales, like household expenditure surveys, measure household consumption expenditures at the time of purchase and at prices actually paid by purchasers. However, retail stores and other outlets cannot be expected to provide frequent information on sales classified by kind of good or service. Annual estimates classified by kind of commodity must therefore be derived by extrapolating benchmark year estimates. The indicators used in the extrapolation may be constructed from annual surveys of sales by retail and service outlets classified by their main kind of business. Indicators of this type are only approximate measures of trends in sales of given kinds of goods and services, however, and the tendency for retail outlets to become less specialized and to sell a wide range of goods without maintaining separate records for each sales department decreases their usefulness.

607. Additional sources may be needed for estimating the consumption of services, as many services are not sold through retail outlets. Purchases not made through retailers can often be estimated by methods involving sales information obtained from whoever does sell the service. For instance, household payments of sewage fees, radio and television licences, school and hospital fees may be estimated from government records or may be obtained directly from the government body concerned. Household expenditure on electricity, gas, water, telegraph, telephone, and postal charges may similarly be obtained from the accounts of the producers. In these cases, the main difficulty may be allocation of the totals between households and other users; household survey data may be helpful for this purpose.

608. A number of sources, such as surveys of financial institutions, banking statistics, annual reports of insurance commissioners, and censuses of services may be used in making benchmark year estimates of household consumption of financial services. The estimates for benchmark years may be extrapolated by means of information on wages and salaries in the establishments concerned, obtained from surveys of employment or wages and salaries, or by means of volume and price indicators appropriate to each component of these expenditures.

609. Household expenditures on restaurants, hotels and cafes in benchmark years may be estimated from surveys of services and extrapolated to current years by data on sales taxes or by employment statistics combined with a price index appropriate for this expenditure group. Benchmark year estimates for packaged tours may be based on data for gross receipts of travel agencies and tour operators collected in surveys of transport or of establishments in general. The estimates may be extrapolated by means of employment data and the most appropriate price indexes available. Some data on repair services may be available in censuses of services, but the estimates for these services may have to be based on data on persons engaged and on assumed annual gross earnings. Expenditure on betting may be estimated from actual gross receipts of betting establishments, less prize money paid out.

610. Estimates of household consumption of some goods for which the primary information is available in terms of quantities may sometimes be derived by multiplying the quantities consumed by the retail prices paid by consumers. This method is sometimes used for some foods and beverages, fuel and certain durable goods such as automobiles, radios and television sets. It may also be used for newspapers and magazines. Information on the quantity of these items purchased by households may often be obtained from the government authorities in charge of taxation or registration. For example, sales of goods subject to special excise duties, such as alcoholic beverages and tobacco, may be obtained from the government tax authorities. However, the compilation of appropriate average retail prices to value the quantities of commodities households acquire may be difficult. Very few categories of consumption expenditure are completely homogeneous, and statistics expressed in terms of quantities often mask a considerable change in composition. In order to choose an appropriate average price, therefore, it is necessary to know what the change in composition has been. One cannot, for example, apply an average price for automobiles to numbers of cars sold, without knowing the composition of sales in terms of large and small, expensive and cheap automobiles. In practice, the only feasible way to obtain an average price is to divide total retail sales by number sold - and if total retail sales is known, there is no need for the rest of the calculation.

611. Methods based on retail sales data, supplemented where needed with data from household surveys and other sources, offer the potential for truly independent estimates of final consumption, both for benchmark years and on an annual basis. Countries will therefore generally find it well worthwhile to begin to collect these data at an early point, and to devote continuing resources to their development and improvement.

### C. Private non-profit institutions serving households

#### 1. Content and general considerations

612. SNA includes as non-profit institutions those that are privately financed or controlled and are primarily directed towards serving households. Excluded from this group are non-profit organizations primarily serving business and financed and controlled by business. These are considered business enterprises. Also excluded and considered as business enterprises, are enterprises which are organized as co-operatives or mutuels but which operate like business enterprises and usually cover their cost through sales receipts. Non-profit organizations mainly financed and controlled by Government are also excluded and included in general Government. The treatment of non-profit institutions is currently under consideration in the review of SNA, and there are various proposals for altering it.



613. Private non-profit institutions serving households may be societies, trade unions, religious institutions, schools, hospitals, foundations, fraternal organizations, clubs, or political parties, which have been established by associations of individuals without the aim of making a profit, and which in fact do not cover their expenses by the sale of their services. Thus, schools and hospitals that generally cover their expenses by the fees they charge would be classed as profit-making, not as non-profit.

614. The final consumption expenditure of private non-profit institutions serving households is defined, like that of Government, as equal to their gross output less the value of their receipts from sales of goods and services, and less any own-account capital formation they may engage in. As in the case of Government, gross output is measured by the cost of producing it, as the total of intermediate consumption (including the value of transfers received in kind), compensation of employees, consumption of fixed capital and indirect taxes. These components are defined in the same way for non-profit producers as for other establishments, and the definitions are discussed in parts two and three above.

615. Receipts from sales of goods and services may include sale of food and drinks, sale of museum postcards and art reproductions, fees for medical and educational services, receipts from operating lotteries, and sales of handicrafts made by residents of homes for the handicapped. On the other hand, membership dues payments to trade unions, political associations, fraternal organizations or social clubs are treated as current transfers from households to non-profit institutions rather than sales and therefore are not deducted from gross output in arriving at final consumption expenditures.

616. Unlike households, private non-profit producers are considered to be engaging in capital formation when they purchase durable goods. What is included in final consumption should only include non-durable goods and services; durable goods, whether purchased from other producers or made on own account, should be excluded.

617. The National Accounts Questionnaire calls for the classification of the final consumption expenditure of private non-profit institutions serving households by purpose, in its table 2.5. The main headings are reproduced in table 8, and the classification is given in full in annex III.

Table 8. Classification of final consumption expenditures of private non-profit institutions serving households

- 
- 1 Research and science
  - 2 Education
  - 3 Medical and other health services
  - 4 Welfare services
  - 5 Recreational and related cultural services
  - 6 Religious organizations
  - 7 Professional and labour organizations and civic associations
  - 8 Miscellaneous
  
  - 9 Total final consumption expenditures of private non-profit bodies serving households
-

## 2. Sources and methods of estimation

618. The best source of information on private non-profit institutions serving households is likely to be the annual reports of the institutions, either as published or as submitted to tax and regulatory authorities. When such reports do not cover the smaller organizations, there usually will be available a register or listing of these organizations, which may be used as the basis for a small-scale sample survey. Alternatively, averages extracted from the available reports, classified by type and size of organization, may be applied to numbers of organizations derived from the registers. Where the reported detail on expenditures by type is inadequate, direct inquiries may be made of the larger organizations.

### III. GROSS CAPITAL FORMATION

619. Gross capital formation contains two major components, gross fixed capital formation and the increase in stocks.

#### A. Gross fixed capital formation

##### 1. Content and general considerations

620. Gross fixed capital formation consists of the outlays of producing units on additions to their reproducible fixed assets, less their sales of similar scrapped or second-hand goods. The assets in question may be purchased from others or may be produced by the unit itself; it is useful to keep the two categories separate, at least in the worksheets underlying the accounts. In more detail, gross fixed capital formation includes:

(a) Net acquisitions (new or second-hand) by producers, of tangible reproducible assets that have an expected life of one year or more and are intended for non-military use;

(b) Outlays by producers on improvements and alterations of capital goods that significantly extend their expected life or substantially increase their productivity;

(c) Outlays on the reclamation and improvement of land, on the development and extension of timber tracts, mines, plantations, orchards and similar agricultural holdings and on the preparation of fish-ponds;

(d) Net purchases and breeding of draught animals, breeding stock, dairy cattle and sheep and other animals raised for wool and hair clips;

(e) Dealers' margins, solicitors' fees, stamp duties on documents, legal fees and other transfer costs of transactions in land, mineral deposits, timber tracts and similar non-reproducible tangible assets, intangible non-financial assets, and second-hand assets.

621. Gross fixed capital formation excludes:

(a) Outlays on non-reproducible tangible assets such as land, mineral deposits or timber tracts, although the transfer costs that arise when these goods change hands are included;

(b) Outlays by Government on construction and durable equipment primarily intended for military use, which are considered to be current purchases and are included in intermediate consumption;

(c) Costs of research and prospecting for minerals, which are also treated as current and included in intermediate consumption;

(d) Revaluations of tangible assets owing to new finds of subsoil assets and natural growth of other natural resources, or to losses of tangible assets.

622. For an individual producer, gross fixed capital formation is calculated by deducting from outlays on tangible reproducible assets the producer's receipts from sales of second-hand and scrapped assets. For each sector, gross fixed capital formation thus includes net purchases of second-hand assets from other sectors. For the economy as a whole, gross fixed capital formation includes only net purchases of second-hand assets from abroad.

623. Government fixed capital formation produced on own account may include equipment and all forms of construction - not only buildings, but also roads, dams, bridges, harbours, and airports. As was noted in the discussion of government final consumption expenditures, however, works intended for defence purposes are all classified as current expenditure and not as capital formation. "Defence purposes", in this context, is defined somewhat narrowly: it includes the military airport, but not the bulldozer used in constructing it. Furthermore, it also excludes certain items of a clearly non-military character, even if financed out of military budgets. These are family-type housing, schools, hospitals caring for civilians, as well as military personnel, and highways, port facilities and airports, if they are not limited to military use.

624. Fixed capital assets acquired from others should be valued at purchasers' prices, including outlays directly connected with acquiring the assets, such as transport and installation charges, fees to architects and other technical consultants, outlays on site clearance and other preparations, legal costs, customs duties and other indirect taxes. However, outlays for financing the acquisition of the fixed assets, such as underwriters' commissions and registration charges for issuing securities and service charges for loans, are not included. For construction, the purchasers' price should in principle exclude the value of the land, though this may in practice not be feasible. Improvements to land and other non-reproducible assets are counted in gross fixed capital formation in the accounting period in which they are made, but they are subsequently embodied in the value of the land itself, and should be counted as part of the value of the land in any later transactions. However, transfer costs, including dealers' margins, are always treated as gross capital formation.

625. Fixed assets produced on own account should in principle also be valued at market prices, but it may be impracticable to do so because appropriate market prices may be unavailable. This may be so, for instance, for the construction of buildings, the development and extension of agricultural and forestry holdings, and major alterations to other fixed assets. It may then be necessary to value the

own-account gross fixed capital formation at cost, including the value of own-account labour used in producing it and an appropriate share of overhead costs, but excluding any imputation for operating surplus.

626. Purchases should, in principle, be recorded in the capital accounts of the purchasers at the moment they take legal possession of the assets. The legal title to goods purchased in completed form usually passes to the purchaser when the purchase contract is signed. Items acquired under a financial leasing arrangement constitute a special case of increasing importance, which is under consideration in the revision of SNA. It has been proposed that, where control of the choice of item rests with the lessee and the lessee retains its use over its whole useful life, such transactions should be considered sales at the time the lessee takes control (accompanied by a loan to cover the financial aspects of the transaction). For goods produced to order, construction is treated differently from other elements of gross capital formation. Except for construction, the buyer should be considered to take legal possession when the goods are completed; progress payments made on such orders should be recorded as trade advances. For construction, however, buyers are considered to take possession of any work put in place on the project, so that in this case progress payments may be considered to be a measure of the value of the work put in place and included in gross capital formation. Construction on own account should be treated in the same way, that is, the value of work put in place during a period of account should be classified as gross capital formation during that period. However, because of the importance of construction activities and the length of time required to complete large projects, the National Accounts Questionnaire asks for separate reporting of work put in place on uncompleted projects.

627. Another problem concerning the time of recording may arise because the data in the basic sources refer to periods other than the calendar year. While this is most common for government accounts and agriculture, it may also happen in other cases. The conventions adopted to convert such data to calendar years are often arbitrary; they may, for instance, consist of allocating the gross fixed capital formation of two adjoining fiscal years to a calendar year in proportion to the number of months included. A more accurate allocation of at least the major items of gross fixed capital formation can sometimes be obtained on the basis of monthly or quarterly data on the acquisition or supply of the items.

628. Gross fixed capital formation includes outlays by resident establishments on ships, aircraft, floating oil rigs and platforms that are mainly intended for use in international waters or for leasing to non-residents for periods shorter than one year. Some enterprises operate railways, road transport and pipelines, and engage in electricity and gas production and transmission, in several countries. Their outlays on non-transportable assets (buildings, pipelines, railway trackage) should be attributed to the country where the assets are situated, but outlays on vehicles and other transportable assets that are used in several countries should be attributed to the country of residence of the parent enterprise. Where the gross output of jointly owned enterprises is allocated between two countries, the same may be done with transportable assets.

629. Gross fixed capital formation of embassies, consulates and other diplomatic bodies should be attributed to their home country and not to the country in which they are physically located. The gross fixed capital formation of international agencies such as the United Nations and the international development banks are similarly excluded from the capital formation of the country in which they are located. (The capital formation of such organizations would be included in the

accounts of extraterritorial bodies, if any such accounts were ever compiled, and they should be included in estimates of "world" accounts.) Gross fixed capital formation in construction undertaken on behalf of extraterritorial bodies is to be recorded as an export of the country in which it is located. Purchases of equipment and machinery by such bodies should be treated as an export of the country in which the purchase is actually made; when these purchases are made by embassies in the home country, they are transactions between residents of that country. Gross fixed capital formation financed by foreign aid and fixed assets received as grants from foreign countries should be treated as gross fixed capital formation of the receiving countries and as exports of the donor countries, financed by loans or capital transfers to the receiving countries.

630. Boundary problems may arise in distinguishing gross capital formation from intermediate consumption. Outlays on tools, instruments, containers and similar items with an average life of one year or more should, according to the general rule, be included in gross fixed capital formation. Producers may, however, record the cost of these items, especially when it is small, as intermediate consumption. Minor office appliances and similar goods are also often treated as intermediate consumption even though they may have an expected life of several years. It is generally not worthwhile to make the estimates needed to treat these items as gross fixed capital formation in the national accounts.

631. Sometimes all expenditures on repairs and maintenance of fixed capital are treated as intermediate consumption in business accounts. It is then necessary to identify the part of the repair work that lengthens the expected life of the fixed assets or increases their productivity, and to transfer the expenditures on these major repairs to gross fixed capital formation. The expenditures on repairs and maintenance left in intermediate consumption should be outlays required to make good breakage or to keep fixed assets in proper working condition, such as the replacement of tyres on trucks, the painting of houses and the replacement of parts of machinery and equipment that are worn out and usually replaced several times during the life of the asset. The distinction, ultimately, comes down to what is normally expected and what is not. That, in turn, often depends on the tax law and its application.

632. Significant outlays on the extension and development of plantations, vineyards, farms, timber tracts and mines should be classified as gross fixed capital formation. This covers expenditures on land clearance and reclamation, irrigation works, planting and cultivating new timber tracts and new fruit and sap-bearing trees, vines etc., which yield products after a number of years, and extensions of mining sites and shafts. When the forest and fruit and sap-bearing trees, vines etc. become productive, however, further outlays on cultivation should be classed as intermediate consumption.

633. Expenditures on activities such as prospecting for minerals, developing new commodities or technologies, extending scientific knowledge, market research, advertising and activities designed to improve the goodwill of business units are not treated as gross fixed capital formation but rather as intermediate consumption in the present SNA. This treatment is, however, under discussion in the revision of SNA.

634. Gross fixed capital formation in the National Accounts Questionnaire is classified by kind of activity and institutional sector of the owner and by type of good. ISIC is used in the classification by kind of activity, and in the National Accounts Questionnaire this classification appears in tables 2.9 and 2.11. The

institutional sectoring employed in the tables on capital formation is primarily intended to differentiate publicly controlled entities from private ones, in order to show the impact of public policy in this area. It therefore shows Government separately, and divides the corporate and quasi-corporate sector into public and private enterprises. Private corporate and quasi-corporate enterprises are combined with private unincorporated enterprises and private non-profit institutions, into a single "private" category. The classification by type of good appears in the Questionnaire in table 2.7; it is reproduced in table 9. The classification includes a separation of construction into completed and uncompleted parts, so that those wishing to analyse uncompleted construction separately may do so. An explanation of the main categories is given in annex V.

Table 9. Gross fixed capital formation by type of good

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1	Construction
2	Residential buildings
3	Completed
4	Uncompleted
5	Non-residential buildings
6	Completed
7	Uncompleted
8	Other construction
9	Completed
10	Uncompleted
11	Land improvement and plantation and orchard development
12	Producers' durable goods
13	Transport equipment
14	Passenger cars
15	Other
16	Other machinery and equipment
17	Breeding stock, dairy cattle etc.
18	Gross fixed capital formation, total

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635. Estimates of gross fixed capital formation are often built up by commodity flow analysis, and it is then relatively easy to classify capital formation by type of good. Classification by kind of activity requires that the estimates be based on information collected from the purchasers of the assets; it cannot be derived by the commodity flow method without resorting to quite arbitrary allocations. The nature of some capital goods, such as agricultural equipment, railway rolling stock and residential construction, indicates the purchasing industry, but most equipment and construction cannot be classified in sufficient detail to determine the activity group to which the purchasers belong.

636. For some analytical purposes, such as the estimation of capital-output ratios, it would be very useful to have figures on gross fixed capital formation classified by the kind of activity of the user rather than the owner. However, such a classification is difficult to construct. For instance, the same non-residential building is often occupied by establishments engaged in several different kinds of activity, such as trade, transport, health services etc. In addition, owners of buildings frequently do not know who the occupants will be until the buildings are

completed. In some cases - telephone equipment, railway rolling stock - "users" are conceptually difficult to define.

## 2. Main sources and methods of estimation

637. The main approaches used in estimating gross fixed capital formation are the direct or expenditure approach and various indirect approaches relying on commodity flow analysis or other data on supply. For estimates of residential construction, and sometimes all construction, building permits are often the basic source. Commodity flow analysis is often used for machinery and equipment, and sometimes for total gross fixed capital formation in the private sector or even in the economy as a whole.

638. The expenditure approach can almost always be used in estimating the gross fixed capital formation of central Government and public corporations. Annual accounts that furnish the data needed are usually available for these units with relatively short delay. The expenditure approach may also be used for other producers when information on fixed assets acquired is included in annual production statistics or in annual surveys of capital formation.

639. Where a combination of approaches is used in estimating gross fixed capital formation, some double counting is likely because the areas covered by the different methods overlap to some extent. Appropriate adjustments should be made for known double counting. For instance, in combining estimates of total gross fixed capital formation in machinery and equipment obtained by commodity flow analysis, with estimates of total gross fixed capital formation of Government obtained from government accounts, gross fixed capital formation by Government in machinery and equipment will be included twice, unless it is deducted from the commodity flow estimate.

640. As was mentioned in part two, at least part of construction gross output may be estimated from the expenditure side, that is, on the basis of data collected from purchasers. Where this happens, the figures for gross fixed capital formation in construction will automatically be available. It should be noted, however, that gross output of the construction industry exceeds gross fixed capital formation in construction by the value of minor repairs and maintenance performed by the construction industry. These items of gross output of the construction industry should in principle be treated as consumption and not as fixed capital formation, but it may be very difficult in practice to isolate them.

641. Separate estimates of the gross output of the construction industry and gross fixed capital formation in construction are desirable if data permit. It is, however, not practical to make two estimates of some items of construction that are included in both, because of the difficulty of obtaining basic data for two separate estimates. This is true, for instance, for own-account construction, which is included in the gross output of the construction industry to the extent that it is possible to treat such activities in separate establishments. Estimates of this part of own-account construction activity should be available in the worksheets for the estimates of value added by kind of activity groups. In principle, the value of that part of own-account construction that cannot be treated as though it were undertaken by a separate establishment should also be included in gross fixed capital formation in construction, even though it cannot be included in the gross output of the construction industry. If the sources of these estimates of gross fixed capital formation are surveys of production or capital

formation, the questionnaires may be so arranged that this part of own-account construction will be identified. Estimates of own-account construction of fences, barns etc. by farmers may also be available. This may also be true for estimates of the cost of developing plantations.

642. A mixed approach is almost always used in estimating gross fixed capital formation. The remainder of this section considers when the expenditure and commodity flow approaches may be used with advantage.

(a) The expenditure approach

643. In order to use the expenditure approach to estimating gross fixed capital formation, it is necessary to gather information on the acquisition of fixed assets in establishment surveys, in annual production surveys or in special surveys of actual and planned capital expenditures, or to base the estimates on information in business and government accounts and data on investment in income tax returns.

644. The figures on gross fixed capital formation gathered in establishment and production surveys and in special surveys of capital formation often correspond quite well to the definitions of the national accounts. Data on gross fixed capital formation obtained from business or government statements and accounts, however, may be underestimated because a number of items that are considered capital formation in the national accounts are treated as current expenditures in these accounts. Such items include expenditures on the alteration and extension of buildings and other construction, major repairs, extension of mining sites, land improvements and charges and fees paid in connection with construction projects and purchases of land. Also, progress payments on construction projects may not be shown as capital outlays in company accounts. Care must therefore be taken in using business and government accounts as sources, and attempts should be made to adjust the figures derived from such sources so that they correspond as closely as possible to the national accounts definitions.

645. The main sources of information about the gross fixed capital formation of Government are government accounts supplemented by information from the government agencies engaged in the various projects. For benchmark years, the accounts of all levels of Government, that is central, state and local governments, as well as extrabudgetary funds, should be analysed to produce as comprehensive estimates as is possible. Annual data may be estimated by extrapolating the benchmark estimates by means of representative indicators of the gross fixed capital formation of central Government and a sample of other levels of Government.

646. The distinction between capital and current expenditure in government accounts may not be in accord with national accounting concepts. The accounts for some countries make no distinction at all between current and capital expenditure. Even where a distinction is made, many items consist of a mixture of current and capital expenditure, and these items must be split. Sometimes items in government accounts are not described clearly enough to make it possible to decide whether they contain any capital components. The total expenditure on a given project may be shown as one sum covering a mixture of current and capital outlays on goods, elements of value added and even transfer payments. Items of this nature must be decomposed on the basis of information from the budget or project authorities before each component can be classified appropriately.



647. Government accounts are usually kept on a cash basis, that is, they reflect amounts actually paid out, while national accounting estimates of gross fixed capital formation should be on an accrual basis, showing the value of work put in place on construction projects and the value of other capital assets acquired during the year of account. Adjustments are therefore needed for progress payments on construction projects and deferred payments that may be important, particularly for construction. Such adjustments might be made on the basis of information obtained directly from the government units responsible.

648. The accounts of Government and large public and private companies usually furnish detailed information on gross fixed capital formation classified by type, for example, buildings, other construction work, transport equipment, and machinery. Additional information might be obtained from a sample of purchasers of capital goods to further subdivide each type of asset. The kind of activity of the purchaser may sometimes suggest types of fixed assets acquired. For example, practically all the gross fixed capital formation of the shipping industry consists of ships, and that of many service industries consists of office furniture and furnishings, barber's chairs etc.

649. Estimates of gross fixed capital formation in construction may also be based on statistics on building permits or, preferably, on completions. There are, however, serious limitations to this method. For instance, (a) the realized cost of construction may differ considerably from that shown in the permits, (b) there is usually a considerable time lag between the issue of the permit and actual construction, (c) some permits are not used, (d) a considerable part of construction is not covered by permits. These drawbacks are often ignored, but in order to arrive at reasonable estimates allowance has to be made for them. If permits are needed for only a small part of construction activity, such as building in some residential areas, the permit statistics may be of very limited use even as indicators for extrapolating estimates of benchmark years.

650. Community project construction activities in the rural areas of some countries are increasing in importance. Separate estimates are needed for such projects, and they can be adequately covered only by sample surveys. Data on the number of people occupied and man-hours worked in community construction and on the type and quantity of the materials used could be collected by introducing additional questions in rural or agricultural sample surveys. The man-hours worked may be valued at the average wages of agricultural workers in the area. It is usually only possible to value that part of the materials used that are traded on the market and thus have a market price.

(b) Commodity flow analysis

651. Where direct information on the expenditures on gross fixed capital formation is not available, an indirect approach has to be adopted. A classification of gross fixed capital formation by groups of goods is automatically compiled when commodity flow analysis is used. As noted above, however, this method does not readily yield a classification by kind of activity of owner. Usually, commodity flow analysis can be used more easily for estimates of machinery and equipment than construction, although it is sometimes necessary to use it for construction because of the lack of other sources.

652. Estimates of gross fixed capital formation by commodity flow require (a) comprehensive data on the total supply of all the kinds of goods that are used partially or entirely for gross fixed capital formation, (b) information on the

allocation to various uses of goods with alternative uses, including any data that may be available on purchases of such capital goods, (c) information on trade and transport margins, and (d) for construction, supplementary information on cost structure showing the share of materials in total costs.

653. Estimates of gross fixed capital formation in construction by means of commodity flow analysis require the following steps:

- (a) Identification and extraction from imports and domestic production statistics of goods that may be used as building and construction materials;
- (b) Allocation of the materials to construction and other uses;
- (c) Adjustment for materials used for normal repairs and maintenance;
- (d) Estimation of the percentage share of the cost of materials in the total cost of construction;
- (e) Adjustment for undercoverage, because construction of traditional huts and farm structures may require only or mostly locally gathered materials such as sticks and bamboo that will not appear in production and import data.

654. Where commodity flow analysis, or, as is more frequently the case, a combination of commodity flow and the expenditure approach, is used for estimating gross output of construction and gross capital formation in construction, statistics of domestic production and imports of the main building materials are the main sources of the estimates. Using this method, the total supply of as many as possible of the materials used in construction, such as cement, bricks, timber, roofing materials and piping, is first estimated and distributed among its various possible uses - household consumption, government consumption, capital formation, and exports. Information on the supply of imported construction materials is found in foreign trade statistics. Import duties and trade and transport margins including sales taxes must be added to the c.i.f. values of the imported materials to arrive at their purchasers' values. The purchasers' value of the supply of domestically produced construction materials may be based on annual surveys of the output of planks, bricks, cement, corrugated iron etc. at producers' values, plus trade and transport margins. For both imports and domestic supply, the trade and transport margins can be obtained from special surveys. If annual surveys of the industries that produce construction materials are not available, less complete data on the quantities produced combined with price indicators for building materials may be used in extrapolating benchmark year data. Gross output of construction may then be estimated by adding a percentage which covers compensation of employees, net indirect taxes and profits to the total value of building materials used in the industry. This ratio may be based on detailed cost estimates for various types of construction obtained from contractors, government authorities or engineering studies, or on surveys of representative units of various construction projects. The ratios should be reviewed annually and revised at relatively frequent intervals in order to take account of changes in the relative prices of the inputs into construction and of changes in profit margins.

655. Estimates of construction based on commodity flow can be greatly improved if data are available on compensation of employees in construction activities, as well as on materials for intermediate consumption. Data on wages and salaries in construction are sometimes gathered in sample surveys of employment and earnings.

656. Commodity flow estimates will cover most own-account construction. However, own-account construction undertaken with own labour and collected materials must be estimated separately. The estimates of the value of the gross output of dwellings constructed by their prospective occupants may be based on the number needed to replace old dwellings, the additional number required to accommodate the increase in the population and its movement, and the average value of new dwellings, minus the number of new dwellings covered by other sources. The number of new dwellings constructed in order to replace old ones depends on the estimated average life of the dwellings and the age distribution of the existing stock. Estimates of the age distribution in benchmark years may be based on information in censuses of housing or population. The number of new dwellings that must be constructed in order to accommodate the increase in the population may be assessed on the basis of annual population estimates, including estimates of rural/urban migration, and the average number of persons per dwelling according to the most recent census of housing or population. Small-scale surveys may be needed in order to obtain information on the average value of new dwellings.

657. Commodity flow analysis is often used in estimating gross fixed capital formation in machinery and equipment, based on statistics on foreign trade and domestic production. In some developing countries the estimates can be based entirely on import statistics because there is no domestic production. The main problem is then to establish lists of imported goods that should be included, and to develop methods of allocating items with alternative uses. The full detail of the classification of imports should be taken as the starting point, and all available information should be used in splitting all the items that may have multiple uses. The advice of technical experts or dealers may be sought.

658. In countries where machinery and equipment are domestically produced, the estimates of gross fixed capital formation should be based on data on domestic production, plus imports, less exports of each type of equipment. The same classifications of items should be used for domestic production and exports and imports. The acquisition of equipment for military purposes and of automobiles for personal use should be excluded from gross fixed capital formation. The estimates of the part of the total supply intended for military purposes may be based on information from government authorities. The share of automobiles for personal use may be estimated from annual registers of motor vehicles, which usually indicate the uses to which the vehicles are meant to be put. Where the same automobiles are used for both business and personal use, a small-scale survey may be needed to establish the average proportion of each use. The proportions may be based on time used or distance travelled.

659. Certain machinery, tools, furniture and fixtures and similar equipment may be used for several other purposes in addition to gross fixed capital formation. It may be assumed that heavy machinery is used for capital formation (and possibly export) only. Other machinery and tools are usually allocated on the basis of the nature of the items and any direct information available on their use. The allocation of furniture and fixtures among uses may be based on direct estimates, adjusted on the basis of information on the total supply of such items. These items are treated as gross fixed capital formation when acquired by producers and as household durable consumption expenditures when acquired by households.

660. Parts used for major repairs should be included in capital formation. Imported parts are frequently classified in import statistics, together with imports of final products. This does not present any problem if both final products and parts are entirely allocated to gross fixed capital formation, but if this is not so the

problem of allocating the combined items is doubly difficult, since it is first necessary to separate the parts from the finished product, and then to determine the share of each to be allocated to capital formation. The same imported parts are frequently used both for major repairs and as input into domestic production of finished capital goods. Those used as inputs should be excluded if separate statistics are available on the domestic output of the finished product concerned. However, if domestic production statistics are lacking it may be necessary to make crude estimates of domestic output on the basis of imports of parts.

661. Another very difficult problem is estimation of the value of parts that are used for normal repairs and maintenance, which should be treated as intermediate consumption of producers or final consumption of households. Such parts are often of the same type as those used for major repairs and as input into domestic production, and it may not be possible to make usable estimates of their distribution among these different uses. Where that is true, the total may be assigned to that use judged to be most important.

## B. Changes in stocks

### 1. Content and general considerations

662. Stocks, or inventories, consist mainly of goods owned by producers that have been purchased for intermediate consumption but not yet used, goods produced for sale but not yet sold, work in progress, and livestock being raised for slaughter. Government stocks of strategic materials, grains and other goods of special importance to a country in time of crisis are also included. Work in progress on heavy machinery, ships and similar items is included in stocks, but work in progress on construction is treated as gross fixed capital formation. The natural increase in standing crops and timber is not included in stocks, nor are new discoveries (or additions to proved reserves) of mineral resources such as oil.

663. In practice, problems may arise in drawing the line between the increase in stocks and gross fixed capital formation for heavy machinery and ships that take a considerable time to complete. It often happens that the basic data supplied by producers make no distinction between finished and unfinished work. Problems may also arise with respect to livestock. Breeding stock, draught animals, dairy cattle and animals raised primarily for wool and hair clips should be treated as fixed assets, while livestock raised for slaughter should be included in stocks. Since most animals are eventually slaughtered, the distinction should be based on the primary purpose for which the animals are raised.

664. What enters into gross capital formation is not total inventories, but the addition to inventories in the period of account. Since prices are likely to change over the course of the period, it is necessary to distinguish between the change in the value of inventories and the value of the physical change in them. It is the latter that is wanted, valued at purchasers' prices when acquired from other units and at producers' prices when produced by the unit owning the stocks. The valuation should in principle be at the prices current at the time the additions to stocks are made, and withdrawals from stocks for internal processing or for sale should similarly in principle be valued at the prices current at the time the withdrawal takes place. Work in progress, for which there is normally no market price, should be valued at explicit cost. In practice, however, it is almost never possible to follow these principles strictly. In devising alternative methods, the objective should be to ensure that what is being measured is the

change in the physical quantity of stocks, measured at a suitable fixed price over the whole accounting period. Ways of accomplishing this are discussed below.

665. The change in stocks is classified in the National Accounts Questionnaire both by kind of activity and by type of good. The classification by type of good appears in table 10. "Goods producing industries" include ISIC major divisions 1 through 5.

Table 10. Classification of change in stocks

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1	Increase in stocks, total
2	Goods producing industries
3	Materials and supplies
4	Work in progress
5	Livestock, except breeding stocks, dairy cattle etc.
6	Finished goods
7	Wholesale and retail trade
8	Other, except government stocks
9	Government stocks

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## 2. Sources and method of estimation

666. Data on the value of stocks are collected in production censuses and surveys, and in special quarterly or annual surveys of stocks. Information on stocks is also contained in income tax returns, reports of marketing boards and balance sheets of enterprises filed under company acts. Annual surveys of stocks of important export products, such as cocoa, coffee, tin, copper and timber, are often undertaken in developing countries, and many countries - developed and developing - compile regular statistics on stocks of fuels, notably petroleum. Annual surveys of other stocks are usually based on samples of establishments or commodities. Data on stocks of selected commodities are sometimes presented in quantity as well as value terms, but for the most part statistics on stocks are available only in value terms.

667. The principles of stock valuation used in business accounts generally differ from those desired for the national accounts, although newer methods of inventory accounting sometimes approximate the desired figures. Traditional methods often do not reflect the market prices current at the time of additions to or withdrawals from stocks. In order to arrive at estimates of the increase in stocks corresponding as closely as possible to the requirements for the national accounts, the reported figures of stocks at the beginning and end of a period of account should be revalued to reflect a constant price level, preferably average market prices during the period. The difference between the revalued figures for stocks at the end and the beginning of a period will then measure the physical change in stocks valued at average prices of the accounting period, generally a good approximation to the SNA concept.

668. Unless information is specifically available on changes in physical quantities of stocks, the revaluation to average market prices during the period of account will require information about (a) the accounting conventions adopted by the firms

reporting data on stocks, (b) the period over which the stocks have been built up, and (c) the commodity composition of the stocks. In addition, price indexes are needed to convert the figures to average prices during the period.

669. As rapidly rising prices have become more widespread, business firms have increasingly begun to adopt the last-in, first-out (LIFO) method of inventory accounting. This method assumes that the stocks withdrawn are always those most recently purchased or produced, and therefore those closest in price to current prices. Where this method of accounting is used, it may not be necessary to make any adjustment in the recorded figures for stock change, except in periods of very rapid price movement.

670. However, the first-in, first-out (FIFO) method of inventory accounting is still the most prevalent one, particularly in developing countries. This method assumes that stocks withdrawn at any time will consist of the goods which were added first to those stocks, and so withdrawals are valued at what was paid for the oldest goods in stock. To revalue the stocks to the average market prices during the period of account, it is necessary to estimate the period of time the stocks are on average held, and to obtain data on the price change during that period. Average stock turnover time can be estimated from the ratio of stocks to flows of the various types of goods in stock. For example, if a producer uses 1,000 units each year of a particular raw material and if the average level of stocks is 250 units, then stocks are on average turning over every  $250/1,000 \times 12 = 3$  months. The book values of stocks at the beginning of the period of account should thus be adjusted by the change in prices over the last three months of the preceding accounting period, and the book value of stocks at the end of the period by the change in prices over the last three months of the current period. Both the beginning and ending stocks should then be adjusted to average prices prevailing during the period by comparing the beginning and ending price indexes with the average for the period as a whole.

671. Ideally, these adjustments should be applied to each type of good stocked, but this will seldom be possible. It will usually be necessary to construct price indexes applicable to groups of commodities. Such indexes should be weighted by the current commodity composition of stocks, if it is known. As a substitute, the commodity composition of purchases of materials and fuels and of the gross output of finished goods in the latest year for which information is available may be used.

672. Work in progress is usually valued as the sum of the cost of materials, fuels and direct labour used, plus some share of overhead. In some industries the amount of work in progress is small and the period during which it is accumulated is short. Little error will therefore occur if no adjustment for price change over the period during which it is held is made. In other industries, however, such as machinery and aircraft manufacturing, work in progress is large and accumulated over a considerable period. For these industries, revaluation should be based on indexes of material, labour and overhead costs weighted to reflect price change over the period involved.

673. In many countries sufficient data are not available to permit the use of the methods described above in estimating the change in stocks. However, data on the stocks of large oil and mining companies, of public corporations and of marketing boards can usually be obtained either directly from these units or by analysing their accounts. In addition, it may be possible to construct price indexes that can be used for an approximate revaluation of the increase in stocks to average prices of the current year. If sample surveys are also available that make it

possible to estimate the change in stocks of animals intended for slaughter and some data is available on changes in stocks of large manufacturing and transport companies, it may be fair to assume that the stocks not covered constitute quite a small proportion of the total, so that the changes in known stocks can be taken as representing total changes in stocks. When it appears that known stock changes are only a small part of the total change, however, it is recommended that they should be shown as "recorded increases in stocks" in line 6 of table 1.1 of the National Accounts Questionnaire, and in similar tables. The unrecorded changes in stocks will, in such a case, be included in final consumption expenditure, if that is derived residually, or in the statistical discrepancy, if all other uses are estimated independently. In either case, a footnote indicating where unknown stock changes are thought to be included would be helpful.

#### IV. EXPORTS AND IMPORTS OF GOODS AND SERVICES

##### A. Content and general considerations

674. Exports of goods and services constitute a component of final demand. <sup>19/</sup> Imports are a source of the supply of goods and services. Since imports do not originate in domestic production, however, they must be deducted from total uses to arrive at GDP. This is the way they are shown in table 3 in part one, and in table 1.1 of the National Accounts Questionnaire.

675. Exports and imports of goods and services are defined in SNA to include merchandise, transport and communication, insurance services, and miscellaneous goods and services such as the gross margins realized by resident merchants on goods purchased in another country and sold in a third country, and reimbursements of the cost of home office services of parent companies by foreign branches and subsidiaries.

676. Direct purchases in the domestic market by non-resident households are included in exports of goods and services, and direct purchases abroad by resident households are included in imports of goods and services. SNA treats outlays for travel expenses that are reimbursed by employers as exports and imports of merchandise and not as direct purchases. In practice, however, it may not be possible to distinguish such reimbursable outlays from those of other travellers. Direct purchases may be substantial. The amounts spent by foreign tourists constitute an important source of foreign exchange earnings in a number of countries, and direct expenditure abroad, which includes the outlays of foreign service personnel, may also be relatively large for smaller countries.

677. SNA includes all purchases by extraterritorial bodies, such as foreign embassies, international organizations or foreign armed forces, as exports of the country in which the purchases are made. Outlays abroad by embassies and other extraterritorial bodies of a country are included in that country's merchandise imports only if they are for purchases of capital assets. SNA recommends that outlays abroad on current account by such bodies should be treated as direct purchases abroad of Government on current account, because it is not usually possible to classify these outlays by groups of goods and services, whereas figures for expenditures on capital account (mainly construction expenditures) are generally available from central government accounts or may be obtained from the government departments concerned.

678. The definitions of merchandise trade used in SNA and in foreign trade statistics are similar in most respects. 20/ For purposes of the national accounts, merchandise trade should preferably refer to general trade. This means that all goods crossing the geographical boundaries of a country, including those entering customs bonded warehouses and free trade areas, should be included. Foreign trade statistics, on the other hand, sometimes cover only special trade, which consists only of goods crossing the customs boundaries of a country and so excludes goods entering bonded warehouses and free trade areas.

679. Goods in direct transit through a country, goods not owned by residents that are imported for purposes of storage and transshipment only, and items such as tourists' and travellers' effects are also excluded from exports and imports in both SNA and foreign trade statistics.

680. The national accounts include a number of items as merchandise transactions that are excluded from foreign trade statistics. These are fuel and stores sold or purchased abroad by ships and aircraft operated primarily in international waters by resident enterprises, fish and salvage sold abroad by national fishing vessels and purchased from foreign vessels, and imports and exports of gold ore, unrefined gold and refined gold for industrial use. SNA also includes in merchandise exports the sales within a country of newly refined gold ingots and bars to resident monetary authorities and to resident individuals for non-industrial use. Transfer of migrants' household goods and gifts between households should also be taken into account.

681. Foreign trade statistics generally include goods temporarily imported or exported for servicing or repair in exports and imports of merchandise. SNA, on the other hand, includes only the value of the repair work done, as exports or imports of services. The transfer of leased machinery, equipment and other goods across customs boundaries is also included in exports and imports in foreign trade statistics but in SNA, only if the period of the lease is one year or more. If the period is less than one year, SNA includes only the rentals paid on the leased items.

682. All transactions in goods between residents and non-residents should in principle be recorded in the national accounts at the moment at which ownership of the goods in question passes between buyer and seller. This principle, which is also adopted by IMF for balance-of-payments statistics, corresponds to the way that all other transactions are recorded in SNA. However, exports and imports of merchandise are recorded in foreign trade statistics when they cross the domestic boundaries of a country. To avoid the necessity for adjusting the figures for each group of merchandise, an overall adjustment item is included in the classification of exports and imports, defined as the difference between the value of goods that still remain in the country of the exporter after the change in ownership has occurred and the value of goods that have crossed the customs boundaries of a country without change in ownership. In practice, however, it is likely that many countries will not have the data to estimate this item.

683. Transactions in services between residents and non-residents should be recorded at the time the services are actually performed, in the same manner as transactions in services between resident units.

684. Actual transaction values should be used in valuing exports and imports for the national accounts. This is in line with the principle of valuation adopted for balance-of-payments and foreign trade statistics. Some countries may use



stipulated prices in valuing exports of raw materials such as rubber, tin and palm oil. This practice should be avoided if at all possible, and actual prices prevailing at the time of sale should be used instead. Where exports involve transactions between branches of transnational enterprises, determination of appropriate market prices may require special research.

685. Merchandise exports are expressed in f.o.b. transactions values. In addition to the producers' value of commodities at the establishment of the exporter, f.o.b. values include all costs of transporting the goods to the customs frontier of the exporting country, export duties and the cost of loading the goods onto the international carrier, whether these costs are borne by the exporter or by the importer. If the goods are transported by land and the same carrier is used from the establishment of the exporter to the establishment of the importer, only that portion of the total freight charges that relate to the distance the goods are transported within the country of the exporter should, in principle, be included in the f.o.b. value of exports.

686. Merchandise imports should be valued c.i.f., that is, freight and insurance charges incurred after the merchandise has left the establishment of the exporter and until it reaches the customs frontier of the importer should be added to its f.o.b. value. Import duties and the cost of unloading the goods from the carrier are not included in the c.i.f. value.

687. The c.i.f. value of imports includes freight and insurance on imported merchandise regardless of whether the payments are made to resident or non-resident carriers or insurers. To avoid inflating the figures for net imports, it is therefore necessary to add an amount equal to the freight and insurance paid to domestic carriers on imports to the exports of the importing country. SNA shows the information needed to make this adjustment separately, decomposing the c.i.f. value of imports into three parts: (a) their f.o.b. value, (b) charges for transport and insurance services paid to non-residents and (c) charges for similar services paid to residents.

688. The classification of exports and imports of goods and services used in table 2.17 of the National Accounts Questionnaire is shown in table 11. Annex VI below contains the detailed definitions.

Table 11. Classification of exports and imports of goods and services

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Exports of goods and services

- 1 Exports of merchandise, f.o.b.
- 2 Transport and communication
- 3 In respect of merchandise imports
- 4 Other
- 5 Insurance service charges
- 6 In respect of merchandise imports
- 7 Other
- 8 Other commodities
- 9 Adjustment of merchandise exports to change-of-ownership basis
- 10 Direct purchases in the domestic market of non-resident households
- 11 Direct purchases in the domestic market of extraterritorial bodies
  
- 12 Total exports of goods and services

Table 11 (continued)

Imports of goods and services

13	Imports of merchandise, c.i.f.
14	Imports of merchandise, f.o.b.
15	Transport services on merchandise imports
16	By residents
17	By non-residents
18	Insurance service charges on merchandise imports
19	By residents
20	By non-residents
21	Adjustment of merchandise imports to change-of-ownership basis
22	Other transport and communication
23	Other insurance service charges
24	Other commodities
25	Direct purchases abroad by Government
26	Direct purchases abroad by resident households
27	Total imports of goods and services
28	Balance of goods and services

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B. Sources and methods of estimation

1. Merchandise

689. Data on merchandise exports and imports for national accounting in most countries are obtained from the foreign trade statistics. The figures recorded in foreign trade statistics are sometimes deficient in certain respects and, when possible, such deficiencies should be identified and adjustments made for them.

690. Foreign trade statistics should in principle cover all transactions in merchandise between residents and non-residents, but this is not always true in practice. Direct imports by Government, particularly of military goods, may not be recorded. In some countries, smuggling is a serious problem. When land-locked countries depend on ports in neighbouring countries for their exports and imports of merchandise, it is difficult to ensure that some of the exports or imports are not sold illegally during transit from or to the boundaries of the land-locked country. Also, it may be impossible to record sales of cattle or crops across land frontiers.

691. It may not be possible to make direct adjustments for these types of undercoverage. The Government may not wish to supply any information on military goods imported, though data on direct imports of other goods may be supplied by the government departments concerned. For certain commodities, it may be possible to make indirect estimates of illegal exports or imports based on the difference between independent estimates of expenditures and domestic output. An approximate adjustment for the smuggling of valuable commodities such as gems may be arrived at by comparing export figures with independent estimates of the value of domestic production. Also, in the case of merchandise exported to or imported from a limited number of countries, approximate adjustments may be made on the basis of data in the foreign trade statistics of trading partners. When no direct data are

available on illegal exports or imports but they are thought to be substantial, the figures for exports or imports may be raised by an assumed percentage.

692. Problems of coverage may also arise in the case of purchases and sales of fish from fishing vessels on the high seas and in foreign ports, purchases and sales of fuel and stores by ships and aircraft, and exports and imports of industrial gold, as these are included in exports and imports of merchandise in the national accounts but may not be included in foreign trade statistics. <sup>21/</sup> Estimates for most of these items are also needed for the balance of payments, and may, therefore, be obtained from the responsible agency if balance-of-payments estimates are made. If this source is not available, the items may have to be estimated on the basis of special benchmark surveys. In the absence of current information, the value of these exports and imports may be assumed to have changed in the same way as exports and imports of merchandise for years between benchmark years. All sales of newly refined gold for non-industrial uses are included in exports as defined in SNA but not in the balance of payments. This item, therefore, always has to be estimated separately, if it is believed to be significant enough to justify the effort.

## 2. Transport and communication

693. The freight component of transport and communication exports includes earnings by resident establishments from transporting either exports or imports for foreigners, and from transporting imports for residents. Although this last transaction is between residents, it must be included as a credit entry here to cancel out the debit entry that is included in merchandise imports because they are valued c.i.f.

694. When a country prepares a balance-of-payments statement, data should be available to make it possible to estimate the items relating to freight needed for the external transactions account of SNA. The balance of payments generally shows separate figures for transport of passengers and transport of goods.

695. When balance-of-payments data are not available or contain inadequate detail, data on exports of transport services might be obtained either from rail, water and air traffic statistics or from special surveys of owners of resident carriers engaged in foreign transportation. It may sometimes be necessary to make approximate estimates of the freight revenues earned in foreign commerce on the basis of data on freight and passenger rates and the volume of services rendered. In the absence of balance-of-payments data, figures on payments to resident carriers for the transport of exports of merchandise and non-resident passengers and to non-resident carriers for the transport of imports of merchandise and passengers may be collected in surveys of a representative sample of exporters and importers and travel agencies. However, it may not be possible to make estimates of freight charges and passenger fares paid to non-resident carriers for the transport of merchandise and resident passengers between third countries if information is not available in the balance of payments.

696. Company accounts will generally furnish data on income from oil, gas and other pipelines in international commerce and on receipts and expenditures on the charter of ships and airplanes. Harbour and airport fees are often available in government accounts, or they might be calculated on the basis of estimated number of visits by ships and aircraft and average fee per visit. International settlements on accounts of post, telephone and telegraph are recorded by government authorities and may be obtained from the authority concerned.

### 3. Insurance charges

697. SNA measures the value of insurance services by imputed insurance service charges. However, insurance services supplied by non-resident enterprises to residents are underwritten by insurance companies located in many different countries, and it is therefore not possible to estimate imputed insurance service charges for this type of insurance in the same way as for domestic suppliers. In the IMF balance-of-payments statistics, insurance premiums net of claims are included in imports of services. The same practice may be followed in the national accounts. In the absence of balance-of-payments data, special surveys of resident insurance carriers, major exporters of merchandise, and households are needed to obtain information on insurance transactions with the rest of the world.

### 4. Other items

698. Other transactions on the external transactions account that may be important are direct expenditures in the domestic market by non-resident households and non-resident government bodies, which are included in exports, and direct expenditures abroad by resident households and government bodies, which are included in imports. The data needed to estimate direct expenditures in the domestic market by tourists may be obtained by means of special surveys or from regular tourism statistics. Expenditures in the domestic market by foreign workers who are expected to stay in the country for a period of less than one year may be assumed to be a certain percentage of their estimated income. Estimates of the outlays in the domestic market of foreign embassies, aid missions, military forces etc. may be obtained directly from the bodies concerned.

699. Government records or the balance of payments should provide information on direct expenditure abroad by Government. Direct expenditures abroad by tourists, visiting officials etc. may be obtained by means of tourism surveys or from the balance of payments. Direct expenditure abroad by migrant and other temporary workers in foreign countries may be estimated as a certain percentage of the earnings they transfer home. Students staying abroad for more than one year should be treated as non-residents. The outlays of persons going abroad on study tours or for study programmes that last less than a year, and persons going abroad for medical treatment, should, however, be included in direct expenditures by households abroad. The only practicable means of obtaining information on this part of direct expenditures abroad is probably a tourist survey that includes questions to returning residents on the length and purpose of their stay abroad and on their total outlays.

700. SNA treats reimbursable business travel expenditures abroad as merchandise imports and not as direct expenditure by households abroad, but it may not be possible in practice to carry through this distinction. An approximation may be obtained if residents are asked to fill in a card on their return from visits abroad stating the purpose and length of their visit abroad and the amounts spent, or if such questions are included in a sample survey of households.

701. Problems may also arise in estimating the value of repairs to be included in exports and imports, as it is the gross value of goods sent for repair and returned after repair that is entered in foreign trade statistics. It is not possible to identify the same items when they leave the country and when they return. Special surveys are therefore needed to estimate exports and imports of repair services. Such surveys are also needed to estimate items such as the gross margins realized

by merchants of a country on goods which they obtain abroad and ship and sell in a third country, direct subscriptions to newspapers and magazines abroad, and gifts in kind between resident and non-resident households.

#### Notes

- 1/ A System of National Accounts (United Nations publication, Sales No. E.69.XVII.3); National Accounts Questionnaire (issued annually by the Statistical Office of the United Nations Secretariat and the Organisation for Economic Co-operation and Development).
- 2/ United Nations publication, Sales No. E.79.XVII.5.
- 3/ United Nations publication, Sales No. E.68.XVII.8.
- 4/ Indexes to the International Standard Industrial Classification of All Economic Activities (United Nations publication, Sales No. E.71.XVII.8). This classification is currently being revised, but it is unlikely that the revisions will affect the classification at the level of aggregation used here.
- 5/ United Nations publication, Sales No. E.80.XVII.17.
- 6/ United Nations publication, Sales No. E.83.XVII.8.
- 7/ Statistical Office of the European Communities, European System of Integrated Economic Accounts (ESA), second edition (Luxembourg, 1979).
- 8/ This definition was used, for example, in the 1970 World Census of Agriculture (Rome, Food and Agriculture Organization of the United Nations, 1981).
- 9/ See Comparisons of the System of National Accounts and the System of Balances of the National Economy (United Nations publication, Sales No. E.77.XVII.6).
- 10/ International Monetary Fund, Balance of Payments Manual, fourth edition (Washington, D.C., 1977).
- 11/ United Nations publication, Sales No. E.79.XVII.5.
- 12/ International Monetary Fund, Draft Manual on Government Finance Statistics (Washington, D.C., 1974).
- 13/ See, for example, Provisional International Guidelines on the National and Sectoral Balance Sheet and Reconciliation Accounts of the System of National Accounts (United Nations publication, Sales No. E.77.XVII.10), and Guidelines on Statistics of Tangible Assets (United Nations publication, Sales No. E.80.XVII.2).
- 14/ For a discussion of the valuation of change in stocks, see part four below.
- 15/ In SNA, "government final consumption expenditure" is also termed "final consumption expenditure of government services". To avoid confusion, only the first term is used here.

Notes (continued)

16/ United Nations publication, Sales No. E.80.XVII.17.

17/ The Provisional International Guidelines on the National and Sectoral Balance Sheet and Reconciliation Accounts of the System of National Accounts (United Nations publication, Sales No. E.77.XVII.10) does not recommend that consumer durables should be included in the national balance sheet, but suggests that data on the stock of consumer durable goods should be shown as a memorandum item.

18/ United Nations publication, Sales No. E.83.XVII.13.

19/ Chapter IV contains a summary discussion of this topic. A more extended treatment of external transactions in SNA and their relation to the balance of payments may be found in the forthcoming volume of the Handbook series on external transactions in the national accounts and in the Balance of Payments Manual of the International Monetary Fund. The Handbook volume will also include guidelines for deriving external transactions from the IMF balance-of-payments data and a reconciliation table which shows the relationship between the external transactions classification and the balance-of-payments classification.

20/ For foreign trade statistics, see International Trade Statistics: Concepts and Definitions (United Nations publication, Sales No. E.82.XVII.14).

21/ The recently revised United Nations guidelines on international trade statistics now include these items (International Trade Statistics: Concepts and Definitions (United Nations publication, Sales No. E.82.XVII.14)).

Annex I

INTERNATIONAL STANDARD INDUSTRIAL CLASSIFICATION OF  
ALL ECONOMIC ACTIVITIES

Division	Major group	Title of category
<u>Major division 1. Agriculture, hunting, forestry and fishing</u>		
11 .....		Agriculture and hunting
	111	Agricultural and livestock industries
	112	Agricultural services
	113	Hunting, trapping and game propagation
12 .....		Forestry and logging
	121	Forestry
	122	Logging
13 .....	130	Fishing
<u>Major division 2. Mining and quarrying</u>		
21 .....	210	Coal mining
22 .....	220	Crude petroleum and natural gas production
23 .....	230	Metal ore mining
29 .....	290	Other mining
<u>Major division 3. Manufacturing</u>		
31 .....		Manufacture of food, beverages and tobacco
	311	Food manufacturing
	312	
	313	Beverage industries
	314	Tobacco manufactures
32 .....		Textile, wearing apparel and leather industries
	321	Manufacture of textiles
	322	Manufacture of wearing apparel, except footwear
	323	Manufacture of leather and products of leather, leather substitutes and fur, except footwear and wearing apparel
	324	Manufacture of footwear, except vulcanized or molded rubber or plastic footwear
33 .....		Manufacture of wood and wood products, including furniture
	331	Manufacture of wood and wood and cork products, except furniture
	332	Manufacture of furniture and fixtures, except primarily of metal
34 .....		Manufacture of paper and paper products, printing and publishing
	341	Manufacture of paper and paper products
	342	Printing, publishing and allied industries

Division	Major group	Title of category
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Major division 3. Manufacturing (continued)

35 .....		Manufacture of chemicals and chemical, petroleum, coal, rubber and plastic products
	351	Manufacture of industrial chemicals
	352	Manufacture of other chemical products
	353	Petroleum refineries
	354	Manufacture of miscellaneous products of petroleum and coal
	355	Manufacture of rubber products
	356	Manufacture of plastic products not elsewhere classified
36 .....		Manufacture of non-metallic mineral products, except products of petroleum and coal
	361	Manufacture of pottery, china and earthenware
	362	Manufacture of glass and glass products
	369	Manufacture of other non-metallic mineral products
37 .....		Basic metal industries
	371	Iron and steel basic industries
	372	Non-ferrous metal basic industries
38 .....		Manufacture of fabricated metal products, machinery and equipment
	381	Manufacture of fabricated metal products, except machinery and equipment
	382	Manufacture of machinery, except electrical
	383	Manufacture of electrical machinery, apparatus, appliances and supplies
	384	Manufacture of transport equipment
	385	Manufacture of professional and scientific and measuring and controlling equipment not elsewhere classified, and of photographic and optical goods
39 .....	390	Other manufacturing industries

Major division 4. Electricity, gas and water

41 .....	410	Electricity, gas and steam
42 .....	420	Water works and supply

Major division 5. Construction

50 .....	500	Construction
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Division	Major group	Title of category
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Major division 6. Wholesale and retail trade and restaurants and hotels

61 .....	610	Wholesale trade
62 .....	620	Retail trade
63 .....		Restaurants and hotels
	631	Restaurants, cafes and other eating and drinking places
	632	Hotels, rooming houses, camps and other lodging places

Major division 7. Transport, storage and communication

71 .....		Transport and storage
	711	Land transport
	712	Water transport
	713	Air transport
	719	Services allied to transport
72 .....	720	Communication

Major division 8. Financing, insurance, real estate and business services

81 .....	810	Financial institutions
82 .....	820	Insurance
83 .....		Real estate and business services
	831	Real estate
	831	Owner-occupied dwellings a/
	832	Business services, except machinery and equipment rental and leasing
	833	Machinery and equipment rental and leasing

Major division 9. Community, social and personal services

91 .....	910	Public administration and defence b/
	1	General public services
	2	Defence
	3	General administration, economic policies and services
	4	General administration, health policies and services
	5	Administration, social security and assistance
	6	Administration, housing and community development policies and services
92 .....	920	Sanitary and similar services

Division	Major group	Title of category
<b>Major division 9. Community, social and personal services (continued)</b>		
93 .....		Social and related community services
	931	Education services
	932	Research and scientific institutes
	933	Medical, dental, other health and veterinary services
	934	Welfare institutions
	935	Business, professional and labour associations
	939	Other social and related community services
94 .....		Recreational and cultural services
	941	Motion picture and other entertainment services
	942	Libraries, museums, botanical and zoological gardens, and other cultural services not elsewhere classified
	949	Amusement and recreational services not elsewhere classified
95 .....		Personal and household services
	951	Repair services not elsewhere classified
	952	Laundries, laundry services, and cleaning and dyeing plants
	953	Domestic services
	959	Miscellaneous personal services
96 .....	960	International and other extraterritorial bodies

**Note:** The major divisions, divisions and major groups, and the code number and title of each category, excepting the categories listed in the other footnotes to this table, are from the International Standard Industrial Classification of All Economic Activities (United Nations publication, Sales No. E.68.XVII.8). The composition of each of the categories is defined in that publication.

**a/** The category for the activity of owner-occupied dwellings does not exist in ISIC.

**b/** The categories shown as subdivisions of public administration and defence do not occur in ISIC. These categories are defined in annex II, Classification of the functions of government.

2  
Annex II

CLASSIFICATION OF THE FUNCTIONS OF GOVERNMENT

For definitions of categories and more detailed levels of the classification, see Classification of the Functions of Government a/

01 General public services

- 01.1 Executive and legal organs, financial and fiscal affairs, external affairs other than foreign aid
- 01.2 Foreign economic aid
- 01.3 Fundamental research affairs and services
- 01.4 General services
- 01.5 General public services n.e.c.

02 Defence affairs and services

- 02.1 Military and civil defence administration and operation
- 02.2 Foreign military aid
- 02.3 Defence-related applied research and experimental development
- 02.4 Defence affairs n.e.c.

03 Public order and safety

- 03.1 Police and fire protection affairs and services
- 03.2 Law courts
- 03.3 Prison administration and operation
- 03.4 Public order and safety affairs n.e.c.

04 Education affairs and services

- 04.1 Pre-primary and primary education affairs and services
- 04.2 Secondary education affairs and services
- 04.3 Tertiary education affairs and services
- 04.4 Education services not defined by level
- 04.5 Subsidiary services to education
- 04.6 Education affairs and services n.e.c.

05 Health affairs and services

- 05.1 Hospital affairs and services
- 05.2 Clinics, and medical, dental and para-medical practitioners
- 05.3 Public health affairs and services
- 05.4 Medicaments, prostheses, medical equipment and appliances or other prescribed health-related products
- 05.5 Applied research and experimental development related to the health and medical delivery system
- 05.6 Health affairs and services n.e.c.

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a/ United Nations publication, Sales No. E.80.XVII.17.

- 06 Social security and welfare affairs and services
  - 06.1 Social security affairs and services
  - 06.2 Welfare affairs and services
  - 06.3 Social security and welfare affairs n.e.c.
- 07 Housing and community amenity affairs and services
  - 07.1 Housing and community development
  - 07.2 Water supply affairs and services
  - 07.3 Sanitary affairs and services, including pollution abatement and control
  - 07.4 Street lighting affairs and services
  - 07.5 Housing and community amenity affairs and services n.e.c.
- 08 Recreational, cultural and religious affairs and services
- 09 Fuel and energy affairs and services
  - 09.1 Fuel affairs and services
  - 09.2 Electricity and other energy sources
  - 09.3 Fuel and energy affairs and services n.e.c.
- 10 Agriculture, forestry, fishing and hunting affairs and services
  - 10.1 Agriculture affairs and services
  - 10.2 Forestry affairs and services
  - 10.3 Fishing and hunting affairs and services
  - 10.4 Agricultural research and experimental development n.e.c.
  - 10.5 Agriculture, forestry, fishing and hunting affairs and services n.e.c.
- 11 Mining and mineral resource affairs and services, other than fuels, and manufacturing and construction affairs and services
  - 11.1 Mining and mineral resource affairs and services, other than fuels
  - 11.2 Manufacturing affairs and services
  - 11.3 Construction affairs and services
  - 11.4 Mining and mineral resource affairs and services n.e.c.; manufacturing and construction affairs and services n.e.c.
- 12 Transportation and communication affairs and services
  - 12.1 Transportation system construction affairs and services
  - 12.2 Transportation system operation affairs and services other than construction
  - 12.3 Communication affairs and services
- 13 Other economic affairs and services
  - 13.1 Distributive trade affairs and services, including storage and warehousing; hotel and restaurant affairs and services
  - 13.2 Tourism affairs and services
  - 13.3 Multi-purpose development project affairs and services
  - 13.4 General economic and commercial affairs other than general labour affairs
  - 13.5 General labour affairs and services
  - 13.6 Other economic affairs and services n.e.c.

14 Other functions

1

14.01 Public debt transactions

14.02 Other functions n.e.c.

Annex III

CLASSIFICATION OF PURPOSES OF PRIVATE NON-PROFIT  
INSTITUTIONS SERVING HOUSEHOLDS

1. Research and scientific institutes

Institutions and organizations engaged in basic and general research in the biological, medical, psychological and the related physical sciences; and in the social sciences, history and the humanities. Included also are organizations engaged in promoting, financing and otherwise assisting such research.

2. Education a/

Universities and colleges; primary and secondary schools; technical, vocational, arts and crafts schools; dramatic, music, dancing and other art schools; blind and deaf schools. Included in addition are institutions and organizations engaged in research into the objectives, organization, administration and methodology of all kinds of education; providing scholarships, fellowships and other stipends for educational and training purposes; and making grants in support of educational research, activities and facilities.

3. Medical and other health services b/

Medical, surgical, dental and other health services and individual care; immunization, vaccination and similar public health programmes; research into medical and dental techniques and technology; promoting and assisting the development and provision of medical, dental and other health facilities, services and research. Included in the health services and care are hospitals, sanatoriums and nursing homes; institutions for the care of the mentally ill or defective; medical, mental health, maternity and dental clinics; individual medical, nursing, mid-wifery and dental care.

4. Welfare services b/

Child welfare services and institutions; home for, and care of, aged, disabled, blind etc.; family welfare agencies and services; shelters; travellers' aid and legal aid societies; Red Cross and similar organizations; agencies for the collection and allocation of contributions for charity and other welfare services.

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a/ Where educational institutions provide board and lodging, social and sports clubs have restaurants, bars and lodging facilities, or museums having eating facilities etc., which it is not desirable to cover in separate statistical units, supplementary data should be compiled on the outlays and receipts for food and beverages and shelter included in the total outlays and receipts of the institutions.

b/ It is desirable to compile supplementary data on the expenditure and receipts of these bodies in respect of food, beverages and tobacco, clothing, and medicines and pharmaceuticals for individual use.

5. Recreational and related cultural services a/

Dramatic, opera, concert and similar companies and organizations; libraries, museums and like institutions; botanical and zoological gardens; parks, playgrounds, swimming pools, gymnasiums, sports clubs, camps and hostels which are not operated on a commercial basis.

6. Religious organizations

Churches and other religious organizations and associations.

7. Professional and labour organizations and civic associations a/

Trade unions, professional societies and similar organizations; social clubs and fraternal societies; civic associations; political organizations and associations.

8. Miscellaneous purposes

Non-profit organizations and institutions serving households, the activities and purposes of which are so diverse and scattered that they do not fall into one of the above categories.

## Annex IV

### CLASSIFICATION OF FINAL CONSUMPTION EXPENDITURES OF HOUSEHOLDS

#### 1. Food, beverages and tobacco (ND)

##### 1.1. Food

##### 1.1.1. Bread and cereals

Rice, glazed or polished, but not otherwise worked (including broken rice); maize, meal and flour of wheat, barley and other cereals; cereal preparations; malt (including malt flour) and malt extract; macaroni, spaghetti, noodles, vermicelli and similar products; bread, biscuits, cake and other bakery products; preparations of flour, starch or malt extract, used as infant food or for dietetic or culinary purposes; potato starch; sago, tapioca and other starches; sealing wafers, communion wafers and similar products. Includes tarts and pies other than meat and fish tarts and pies; macaroni and spaghetti, cooked, ready for consumption; farinaceous products stuffed with substances other than meat; rice, cooked, ready for consumption.

##### 1.1.2. Meat

Fresh, chilled and frozen meat of bovine animals, sheep and goats, swine, poultry, horses, game, and edible offal; bacon, ham and other dried, salted or smoked meat and edible offals; meat extracts and meat juices, sausages, meat preparations; and canned meat. Includes meat pies; frog meat; meat of marine mammals such as seals, walruses and whales; meat soups in liquid, solid or powder form, whether or not containing vegetables, spaghetti, rice etc.; pasta products filled with meat, such as canelloni, ravioli and tortellini.

##### 1.1.3. Fish

Fresh, frozen, canned and preserved fish and other seafood and fish preparations. Included are tinned fish soup, snails, fish pie.

##### 1.1.4. Milk, cheese and eggs

Fresh, evaporated, condensed and dried milk and cream (including buttermilk, skimmed milk, whey and yoghurt); cheese and curd; eggs, including treated eggs.

##### 1.1.5. Oils and fats

Butter, margarine, lard and other prepared edible fats; cooking, salad and other edible oils; peanut butter.



1. Food, beverages and tobacco (ND) (continued)

1.1. Food (continued)

1.1.6. Fruits and vegetables other than potatoes and similar tubers

Fruits and other vegetables, fresh, dried, frozen or preserved, juices and nuts. Includes fruit-peel, nuts and parts of plants preserved by sugar (drained, glacé or crystallized); edible seeds; garlic; culinary herbs; mushrooms; rhubarb; tomatoes; truffles; vegetable soups, without meat or meat extracts or only traces; dried beans, lentils and other pulses.

1.1.7. Potatoes, manioc and other tubers

Potatoes, manioc, arrowroot, cassava, sweet potatoes and other starchy roots. Includes tinned and other products, such as meal, flour, flakes, chips, except starches.

1.1.8. Sugar

Refined sugar and other products of refining beet and cane sugar, not including syrups.

1.1.9. Coffee, tea, cocoa

Coffee, tea, cocoa and their substitutes.

1.1.10. Other foods, including preserves and confectionery

Syrup; jam, marmalade and table jellies; honey; chocolate and sugar confectionery; salt; spices; prepared baking powders; sauces; mixed condiments and mixed seasonings; ice cream; vinegar; yeast.

1.2. Non-alcoholic beverages

Mineral waters and other soft drinks.

1.3. Alcoholic beverages

Spirits; wine; beer and cider, including beer and cider with low alcohol content.

1.4. Tobacco

Cigars and cheroots; cigarettes; smoking and chewing tobacco; cigarette paper; snuff.

2. Clothing and footwear (SD)

2.1. Clothing other than footwear, including repairs

2.1.1. Clothing other than footwear

All made-up clothing and clothing materials, including haberdashery, millinery and custom tailoring and dressmaking. Includes aprons, smocks and bibs; belts; gloves and mittens other than rubber; handkerchiefs, except paper handkerchiefs; muffs and sleeve protectors; sports clothing, including bathing suits and crash helmets; suspenders, accessories for making up clothing such as buckles, buttons, fasteners, patterns, zippers etc.; hire of clothing.

2.1.2. Repairs to clothing other than footwear

2.2. Footwear, including repairs

2.2.1. Footwear

All footwear, including rubbers, gaiters, spats, leggings and puttees; sports footwear other than boots and shoes with ice or roller skates attached.

2.2.2. Repairs to footwear

3. Gross rent, fuel and power

3.1. Gross rents and water charges

3.1.1. Gross rents (S)

All gross rent in respect of dwellings, actual and imputed in the case of owner-occupied houses, including ground rents and taxes on the property. House rent will in general be space rent, covering heating and plumbing facilities, lighting fixtures, fixed stoves, wash basins and other similar equipment which is customarily installed in the house before selling or letting. Also included are payments for garbage and sewage disposal and expenditures of tenants on indoor repair and upkeep, such as indoor painting, wallpapering and decorating. Rents paid for rooms in boarding houses, but not in hotels, are included. Rents of secondary dwellings such as summer cottages, mountain chalets etc. are also included.

3.1.2. Water charges (ND)

3.2. Fuel and power (ND)

3.2.1. Electricity

3.2.2. Gas

Natural and manufactured gas, including liquefied petroleum gases (butane, propane etc.).

3. Gross rent, fuel and power (continued)

3.2 Fuel and power (ND) (continued)

3.2.3. Liquid fuels

Heating and lighting oils.

3.2.4. Other fuels

Coal, coke and briquettes; firewood; charcoal; peat; purchased heat.

4. Furniture, furnishings, and household equipment and operation

4.1. Furniture, fixtures, carpets, other floor coverings and repairs (D)

4.1.1. Furniture, fixtures, carpets, other floor coverings

Beds, chairs, tables, sofas, storage units, and hallboys; carpets, large mats and linoleum; cribs, high chairs, playpens; door and dividing screens; sculptures, carvings, figurines, paintings, drawings, engravings and other art objects; venetian blinds; fireplace equipment; other furniture and fixtures.

4.1.2. Repairs to furniture, fixtures, carpets, other floor coverings

4.2. Household textiles, other furnishings, and repairs (SD)

4.2.1. Household textiles and other furnishings

Curtains, sheets, table-cloths and napkins, towels, tapestries, bedding mattress and other coverings, of all materials; furnishings such as ashtrays, candlesticks and mirrors; awnings, counterpanes and door mats; flags; garden umbrellas; garment and shoe bags, laundry hampers and bags, and shoe racks; mosquito nets; steamer and travelling rugs; wastepaper baskets, flower and plant boxes and pots.

4.2.2. Repairs to household textiles and other furnishings

4.3. Heating and cooking appliances, refrigerators, washing machines and similar major household appliances, including fittings and repairs (D)

4.3.1. Heating and cooking appliances, refrigerators, washing machines and similar major household appliances, including fittings

Covers major equipment such as clothes washing and drying, dishwashing, ironing, sewing or knitting machines; electric floor scrubbing, waxing and polishing machines; vacuum cleaners; water softening machines; refrigerators, food freezers and ice boxes; room air-conditioning units; cooking appliances other than spirit stoves and plate-warmers; reflector ovens; camping stoves and similar appliances; toasters; electric fans, and electric coffee-makers and heating appliances; lawn mowers; non-portable safes; water pumps.

4. Furniture, furnishings, and household equipment and operation (continued)

4.3. Heating and cooking appliances, refrigerators, washing machines and similar major household appliances, including fittings and repairs (D)  
(continued)

4.3.2. Repairs to heating and cooking appliances, refrigerators, washing machines and similar major household appliances

4.4. Glassware, tableware and household utensils, including repairs (SD)

4.4.1. Glassware, tableware and household utensils

Pottery, glassware, cutlery, silverware; hand, kitchen and small garden tools (not power-driven); all types of kitchen utensils; portable toilet and sanitary utensils for indoor use; electric bulbs, plugs, wire, cable and switches; heating-pads, sauce-pans, non-electric coffee-makers; thermos bottles and flasks; watering cans, wheelbarrows, garden hose and sprinkling devices, and small garden appliances (not power-driven); portable money boxes and strong-boxes; household scales; ladders; locksmith's wares.

4.4.2. Repairs of glassware, tableware and household utensils

4.5. Household operation, except domestic services

4.5.1. Non-durable household goods (ND)

Household goods of limited durability such as matches, household soap, scourers, polishes, cleaning materials; household paper products; candles and lamp wicks; clothes hangers; shoe polish; clothes pins; mops; brooms and brushes; rope, string and twine; dyes for dyeing clothing and household textile furnishings; nails, nuts and bolts, screws, tacks, washers, hooks, knobs etc.; needles and pins; insecticides, fungicides and disinfectants; aluminium foil etc.

4.5.2. Household services, excluding domestic service (S)

Cleaning, dyeing and laundering; hire of furniture, furnishings and household equipment, including payments by sub-tenants for the use of furniture etc.; service charge for insurance of household property against fire, theft and other accidents; payments for services such as chimney cleaning, window cleaning, snow removal, exterminating, disinfecting and fumigating etc.

4.6. Domestic services (S)

Remuneration in cash and in kind of domestic servants, cleaners, cooks etc. Includes payments in cash and in kind to baby-sitters, chauffeurs, gardeners, governesses, tutors etc.

5. Medical care and health expenses

5.1. Medical and pharmaceutical products (ND)

Medicines, vitamins and vitamin preparations; cod and halibut liver oil; clinical thermometers, hot-water bottles and ice bags; first-aid kits, elastic medical hosiery and similar medical goods.

5.2. Therapeutic appliances and equipment (D)

Major appliances and equipment: eye glasses; hearing aids; glass eyes, artificial limbs, orthopaedic braces and supports; surgical belts, trusses and supports; medical massage equipment and health lamps; wheel chairs and invalid carriages, motorized or not.

5.3. Services of physicians, nurses and related practitioners (S)

Fees paid to physicians, psychiatrists, nurses, physiotherapists, midwives, dentists etc. who are not employed by hospitals; payments to medical and dental laboratories for tests, analyses etc.; rental of therapeutic equipment.

5.4. Hospital care and the like a/ (S)

Fees to hospitals and clinics, including fees for services provided by physicians, nurses etc. employed by, and ambulances of, these hospitals and clinics.

5.5. Service charges on accident and health insurance (S)

6. Transport and communication

6.1. Personal transport equipment (D)

Motor cars; trailers and caravans; motor cycles and bicycles.

6.2. Operation of personal transport equipment

6.2.1. Tyres and tubes, parts and accessories; and repair charges (SD)

6.2.2. Gasoline, oils and greases (ND)

6.2.3. Other expenditure (S)

Payments for parking and garaging; bridge, tunnel, ferry and road tolls; driving lessons; hire of personal transport equipment; service charges on insurance of personal transport equipment.

6.3. Purchased transport (S)

Fares on railways, trams, buses, cabs, ships and airlines; fees for transporting personal transport equipment in ships, trains and aircraft; fees for baggage transfer, storage and excess charges; tips to porters etc.; service charges for baggage and special transport accident insurance; moving and storage of household goods.

6. Transport and communication (continued)

6.4. Communication (S)

Postal, telephone and telegraph services, including all expenditure on new postage stamps.

7. Recreation, entertainment, education and cultural services

7.1. Equipment and accessories, including repairs

7.1.1. Wireless and television sets and gramophones (D)

Wireless and television sets; gramophones, record players and tape recorders; radio transmitting and receiving sets for amateur radio stations; clock-radios.

7.1.2. Photographic equipment, musical instruments, boats and other major durables (D)

Aeroplanes; boats and outboard motors; cameras, projection equipment, other photographic equipment, binoculars; microscopes and telescopes; pianos, organs, violins, cornets and other major musical instruments; typewriters; power-driven equipment for wood-working, metal-working etc.; horses; swimming pools which are not permanent fixtures.

7.1.3. Other recreational goods (SD)

Goods purchased in connection with hobbies which are not included in 7.1.2; harmonicas and other minor musical instruments not included in 7.1.2; records; flowers; sports equipment and supplies, except sports clothing and sports footwear; camping equipment; films and other photographic supplies; used postage stamps for philatelic purposes; children's outdoor play equipment; pets other than horses; feeding stuffs for pets; exercising equipment.

7.1.4. Parts and accessories for, and repairs to, recreational goods (SD)

7.2. Entertainment, recreational and cultural services, excluding hotels, restaurants and cafés (S)

Expenditure on theatres, cinemas, sports and other places of public amusement; expenditure on private entertainment such as hiring musicians, magicians, clowns etc. for private parties; bridge, social dancing and sports lessons; gambling; portrait and other services, such as film developing and print processing furnished by photographers; hire of wireless and television sets, aeroplanes, boats, horses and other recreational equipment; veterinary and other services for pets; fees for use of teleferics, ski-lifts and similar conveyances; fees to mountain, ski, tourist and other guides; radio and television licences where government broadcasting stations exist; admission fees to museums, art galleries, historical monuments, and botanical and zoological gardens.

7. Recreation, entertainment, education and cultural services (continued)

7.3. Books, newspapers and magazines (ND)

Books, newspapers and other printed matter.

7.4. Education a/ (S)

Fees to schools, universities etc., excluding, if feasible, payments for food, beverages and shelter.

8. Miscellaneous goods and services

8.1. Personal care and effects

8.1.1. Services of barber and beauty shops etc. (S)

Services of barber and beauty shops, baths and massage parlours.

8.1.2. Goods for personal care (SD)

Toilet articles and preparations, including shaving equipment; electric hair driers and hair clippers, electric or not, permanent wave sets for home use; tooth and toilet brushes; repairs to such items.

8.2. Goods, n.e.c.

8.2.1. Jewellery, watches, rings and precious stones

8.2.2. Other personal goods (SD)

Travel goods, handbags and similar goods; umbrellas, walking sticks and canes; pipes, lighters, tobacco pouches; pocket knives; sunglasses; clocks; baby carriages; repairs to such items.

8.2.3. Writing and drawing equipment and supplies (SD)

Pens and pencils; rulers, slide rules, drawing sets and similar instruments; pencil sharpeners; paper punches, hand stamps and seals; typewriter ribbons and carbon and stencil papers; stationery; erasers, ink and paper clips.

8.3. Expenditure in restaurants, cafés and hotels a/ (S)

Included are the value of food, drinks and tobacco consumed; tips for services rendered by the personnel of restaurants, cafés and hotels; fees for use of camping sites and facilities.

8.3.1. Expenditure in restaurants and cafés

8.3.2. Expenditure for hotels and similar lodging services

8. Miscellaneous goods and services (continued)

8.4. Packaged tours b/ (S)

All inclusive tours which provide for travel, food, lodging, guide services etc.

8.5. Financial services, n.e.c. (S)

Service charges for life insurance and for insurance against civil responsibility in respect of injuries to other persons or other persons' property not arising from the operation of personal transport equipment; actual charges for bank services; fees and service charges for brokerage, investment counselling, household finance company loans and services of similar financial institutions; charges for money orders and other financial services provided by the post office; and administrative charges of private pension schemes.

8.6. Services, n.e.c. (S)

Fees for legal services, to tax consultants and to employment agencies; membership dues in professional associations; charges for undertaking and other funeral services; expenditure for duplicating, blue-printing, photostating, addressing, mailing and stenographic services; payments for copies of birth, death and marriage certificates; charges for newspaper notices and advertisements; etc.

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Note: The symbols D, SD, ND and S stand for items classified as durable, semi-durable or non-durable goods and services, respectively.

a/ In addition, it is desirable to have separately the outlay on food, beverages and tobacco made in the case of restaurants, cafés and hotels, hospitals and other medical institutions, and if this expenditure has been included, in the case of payments for educational services.

b/ In addition, it is desirable to have data on the subdivision of the total outlay into transport, lodging, food and other items.



## Annex V

### CLASSIFICATION OF GROSS FIXED CAPITAL FORMATION BY TYPE OF GOOD

#### 1. Residential buildings

Value of work put in place on the construction of buildings which consist entirely or primarily of dwellings; expenditure on major alterations in, and additions to, these buildings; and transfer and similar costs in respect of purchase (sale) of existing residential buildings. Included are outlays on the external and internal painting of new buildings and on the installation of new permanent fixtures such as fixed stoves, central heating, air-conditioning, lighting, plumbing and water-supply facilities, and all other fixed equipment customarily installed before dwellings are occupied. Excluded are repair and replacement of worn-out or damaged fixed equipment and fixtures. Also classified here are the sales proceeds and purchase cost, except the included transfer costs, of transactions in existing residential buildings, leaving out the site of the buildings. Hotels, autocourts and similar buildings operated for purely transient occupancy are considered to be non-residential structures.

#### 2. Non-residential buildings

Value of work put in place on buildings and structures which are entirely, or primarily, for industrial or commercial use; outlays on major alterations in, and additions to, these buildings and structures; and transfer and similar costs in respect of purchases (sales) of existing non-residential buildings. Examples of non-residential buildings are factories, warehouses, office buildings, stores, restaurants, hotels, garages, farm buildings such as stables and barns, and buildings for religious, educational, recreational and similar purposes. Also included are outlays on the installation, alteration and improvement of fixtures, facilities and equipment which are integral and unmovable parts of the structures, but not expenditure on the repair or replacement of such worn-out or damaged fixtures and equipment. Classified here as well are the sales proceeds and purchase costs, net of any transfer costs, of transactions in existing non-residential buildings, leaving out the value of the land which may be involved in the transaction.

#### 3. Other construction, except land improvement

Value of work put in place on the construction and major alteration or renewal of non-military works, such as the permanent ways of railroads, roads, streets, sewers, bridges, viaducts, subways and tunnels, harbours, piers and other harbour facilities, car parking facilities, airports, pipelines, oil wells and mine shafts, canals and waterways, water-power projects, dams and dikes which are not part of irrigation and flood control projects, aqueducts, drainage and sanitation projects, athletic fields, electricity transmission lines, gas mains and pipes, telephone and telegraph lines etc. Includes the cost of raising the surface of future building sites, levelling the sites, and laying out the necessary streets and sewers, but excludes groundwork within the building line, which should be included in residential or non-residential buildings, as the case may be. Also included are transfer and similar costs in respect of purchases (sales) of existing assets of this type. Classified here as well are the sales proceeds and purchase cost, net of included transfer costs, of transactions in such existing assets, leaving out, if feasible, the value of the involved land.

#### 4. Land improvement and plantation and orchard development

##### 4.1 Land improvement

Outlays on all land reclamation and land clearance, irrespective of whether it represents an addition to total land availability or not; irrigation and flood control projects and dams and dikes which are part of these projects; clearance and afforestation of timber tracts and forests; and the transfer costs of transactions in land, farms, mineral deposits and concessions, timber tracts and forests, fishing grounds and concessions, and similar natural resources.

##### 4.2 Plantation, orchard and vineyard development

Expenditure on planting and cultivating until they yield crops, of orchards, rubber plantations, and other new holdings of fruit-bearing and sap-bearing plants which take more than a year to become productive.

#### 5. Transport equipment

Purchasers' value of new and imported, completed ships, aircraft, railway and tramway rolling stock, tractors for road haulage, trucks, moving vans and the like, motor vehicles, carts and wagons acquired by industries, government services for civilian use and private non-profit services; outlays on major alterations and improvements in existing transport equipment of this type owned by these units; and dealers' margins, transport and other transfer costs in respect of purchase (sale) of such second-hand assets. Transport equipment acquired for military purposes is excluded. Also classified here are the proceeds of sales by resident producers of their old and scrapped transport equipment and the cost of their purchases, net of included dealers' margins and other transport charges, of second-hand transport equipment for use as such.

#### 6. Machinery and equipment

##### 6.1 Agricultural machinery and equipment

Purchasers' value of new and imported agricultural machinery and equipment such as harvesters, threshers, ploughs, harrows and other cultivators, and tractors other than for road haulage; outlays on major alterations and improvements in such machinery and equipment; and dealers' margins, transport and other transfer charges in respect of the purchase (sale) of second-hand agricultural machinery and equipment. Also classified to this category are the proceeds of the sales of old and scrapped agricultural machinery and equipment by farmers and the cost, net of included dealers' margins and other transfer charges, of their purchases of such second-hand items.

##### 6.2 Other

Purchasers' value of additions of new and imported durable goods not elsewhere classified to the fixed assets of resident producers; their outlays on major alterations, improvements and renovation of these goods; and dealers' margins, transport and other transfer charges in respect of the purchase (sale) of second-hand fixed assets not elsewhere

6. Machinery and equipment (continued)

6.2 Other (continued)

classified. Included are power-generating machinery; office machinery, equipment, furniture and furnishings; art objects; metal-working machinery; mining, construction and other industrial machinery; cranes and fork-lift equipment; durable containers; equipment and instruments used by professional men; and equipment, furnishings and furniture for use by hotels, boarding houses, restaurants, hospitals, research institutions, schools and other services. Items of small value, such as hand tools, office desk equipment and furnishings, may be excluded on practical grounds if the customary accounting procedure is to treat them as a current expense. Also classified here are the proceeds of sales by resident producers of their used and scrapped fixed assets of the same type and the cost, net of dealers' margins and other transfer charges, of purchases of these second-hand items by resident producers for use as fixed assets.

7. Breeding stock, draught animals, dairy cattle and the like

Value of additions to, less disposals of, breeding stock, draught animals, dairy cattle, sheep, llamas etc. raised for wool clipping.

## Annex VI

### CLASSIFICATION OF EXPORTS AND IMPORTS OF GOODS AND SERVICES

The number 2 at the left of the codes stands for exports; and 1 represents imports; 11 in the next position to the right stands for commodities; and 12 in this position represents other goods and services.

#### 2.11.1 and 1.11.1. Exports and imports of merchandise

The scope is broadly that of general exports and imports in international trade statistics, except for certain additions and exclusions. a/ The exports of merchandise of a country cover the movement to the rest of the world (i) across the country's customs frontier, of domestic produce, nationalized exports or goods from customs bonded manufacturing plants and (ii) from its customs bonded warehouses and free areas, of goods owned by residents or bulk broken, cleaned, repackaged etc. there. The imports of merchandise of a country consist of the inward movement from the rest of the world (i) of goods across the country's customs frontier for domestic use or into customs bonded manufacturing plants and (ii) goods into its customs bonded warehouses and free areas which are owned by residents or which are to be bulk broken, cleaned, repackaged etc. there. Included here and in international trade statistics, in addition, are all transactions (sales and purchases) between the residents of a country and the rest of the world in (i) new and used ships and aircraft, though they may not cross the customs frontier of the country, and (ii) electricity, gas and water. As in international trade statistics, excluded from the exports and imports of merchandise of a country are the inward and outward movement of such items as (i) goods in direct transit through the country, (ii) goods not owned by residents for purposes of storage and transshipment only, (iii) tourists' and travellers' effects and (iv) goods for exhibition or study, samples which are returnable or of no commercial value, returnable containers and animals for racing and breeding.

The main additions here to the external trade in merchandise of a country, as compared to international trade statistics, are (i) sales and purchases of bunkers, stores and ballast to ships, aircraft etc., (ii) fish and salvage sold abroad off national fishing vessels and purchased off foreign vessels, (iii) sales and purchases of gold ore and unrefined gold and of refined gold for industrial use and (iv) sales of newly refined gold ingots and bars for other uses. Since gold ingots and bars which are not for industrial use are classed as a financial asset, the last item is included in the exports of a country in order to reclassify the commodity produced in the course of turning out the gold ingots and bars into a financial asset when the ingots and bars are used for non-industrial purposes.

The main exclusions here from the external trade in merchandise of a country, as compared to international trade statistics, are (i) the outward and inward movement of goods solely for purposes of repair and improvement and (ii) the transfer of leased (rented) machinery, equipment and other goods. The data in respect of exports and imports of merchandise should be net of (i) the value of returned exports and imports and (ii) the value of the loss in, or damage to, goods in transit between the exporting and importing countries.

### 2.11.1 and 1.11.1. Exports and imports of merchandise (continued)

Exports of merchandise of a country should be valued f.o.b. its customs frontier; the imports of merchandise of a country should, in the first instance, be valued c.i.f. its customs frontier. The imports are also to be valued f.o.b. the country of export. The c.i.f. value of imports of merchandise of a country is to be classified into (i) the f.o.b. value of the imports, (ii) the charges in respect of the transport and insurance services furnished by non-resident producers, subdivided into transport and insurance services, and (iii) the charges in respect of the transport and insurance services furnished by resident producers, subdivided into transport and insurance services.

### 2.11.2 and 1.11.2. Transport and communication

Included here are the transactions described below.

#### (i) Freight

Relates to shipments by vessels, aircraft, railways, motor vehicles and other road carriers, and oil, gas and other pipelines.

The exports of a country cover the freighting services rendered by its resident carriers in respect of (i) the exports of merchandise from, and the imports of merchandise to, the country, (ii) the transit of foreign-owned goods through the country, (iii) the transport of goods and gold between foreign countries on the account of non-residents and (iv) the transport to, and from, the country of goods and gold not included in merchandise trade on the account of non-residents, for example, the household effects of foreign diplomats or non-industrial gold. The freighting services of the resident carriers of a country in respect of its imports of merchandise are included in its exports of these services since its imports of merchandise, which are valued c.i.f. in the first instance, include the services in question. The exports of freighting services of a country should be classified into (i) freighting services in respect of the imports of merchandise into the given country and (ii) all other freighting services.

When imports of merchandise are valued c.i.f., the imports of freighting services by a country cover the services furnished by non-resident carriers to its residents in respect of the transport of goods and gold between foreign countries and the import of goods and gold not included in merchandise trade. When imports of merchandise are valued f.o.b., the transport of imports of merchandise to the country by non-resident carriers should be included in imports of freighting services. It is recommended above that data should be compiled in respect of this item.

#### (ii) Passenger services

The exports of a country cover the international transport, that is, between countries, of non-resident persons on resident carriers; the imports of the country cover the international transport of resident persons by non-resident carriers. The passenger fares include shipboard and similar expenses and fees charged for excess baggage and other

## 2.11.2 and 1.11.2. Transport and communication (continued)

### (ii) Passenger services (continued)

articles accompanying passengers, for example, automobiles. Passenger fares paid by non-residents in respect of transport within a country, or paid by residents of a country in respect of transport within foreign countries, are included in categories 2.12.1 and 1.12.1, respectively, which are defined below.

### (iii) Other transport and communication

Receipts and expenditure in respect of charter of ships, harbour and airfield fees, towage, and international settlements on account of post, telegraph, telephone, radio and television transmission services. Not included in the transactions in respect of radio and television transmission are receipts and payments in respect of the rental of films and records, or the use or purchase of copyrighted programmes etc. These transactions are included in categories 2.11.9 or 1.11.9 below.

## 2.11.3 and 1.11.3. Insurance service charges

Included here are the transactions described below.

### (i) Insurance of international freight

The exports of a country consist of the insurance service charges of its resident insuring companies in respect of (i) its exports and imports of merchandise and (ii) movement, on the account of non-residents, of goods and gold between foreign countries and of gold and goods which are not included in merchandise trade into, and out of, the country. The insurance services of the resident insuring companies of a country in respect of its imports of merchandise are included in exports of insurance services, since these service charges are covered in the c.i.f. value of its imports of merchandise. The exports of insurance services in respect of freight by a country should be classified into (i) the insurance service charges on its imports of merchandise and (ii) all other insurance service charges.

In case of the c.i.f. valuation of imports of merchandise, the imports of a country of insurance services on international freight consist of the service charges of non-resident insuring companies in respect of the transport, on the account of its residents, of goods and gold between foreign countries and the import of gold and goods which are not included in merchandise trade. When imports of merchandise into a country are valued f.o.b., the insurance service charges of non-resident insurance companies in respect of the transport of these goods to the country in question should be included in imports of insurance services in international freight. It is recommended above that data should be compiled in respect of this item.

2.11.3 and 1.11.3. Insurance service charges (continued)

(ii) Other insurance services

The exports of a country consist of the service charges of resident insurance companies to non-residents, and its imports consist of the service charges of non-resident insurance companies to residents, in respect of (i) insurance against fire, theft and damage of goods and other items, except international freight, (ii) re-insurance of international freight, (iii) insurance against accident, loss of income and medical costs during illness, and other casualties to persons and (iv) life insurance and participation in pension and similar funds.

2.11.4 or 1.11.2 and 1.12.2. Direct purchases in the domestic market, extraterritorial bodies, or direct purchases abroad, government services, respectively

The exports of a country consist of purchases, less sales of surplus and other second-hand goods and scraps, of supplies, equipment and other goods and services by extraterritorial civilian or military bodies stationed in the given country; the imports of a country consist of purchases, less sales of supplies and other second-hand goods and scraps, in foreign countries of goods and services for the extraterritorial bodies, and other direct uses abroad, of the government of the given country. Included in the goods and services are outlays on the construction of buildings and other works for military or civilian use; rents paid for embassy buildings and other structures; and underwriters' commissions on government securities sold outside the country of issue. Also included in the exports and imports of a country are the deficit or excess, respectively, of the contributions of the given country to outlays on joint military installations and other specific common defence projects over these outlays on goods and services in the domestic territory of the given country.

The direct purchases of extraterritorial bodies in the domestic market of a country are classified among its exports of commodities. In the case of direct purchases abroad by the government of a country, direct purchases on capital account are classed in its imports of commodities, while the direct purchases abroad on current account are classed in its imports of other goods and services.

2.11.9 and 1.11.9. Miscellaneous commodities

Exports and imports include (i) the value of the repair of goods received from abroad, and sent abroad, respectively, for this purpose, (ii) the gross margin realized by merchants of a country on goods they purchase in another country which they ship to, and sell in, a third country, (iii) management and consultation fees and reimbursements for home office expenses due to parent companies from foreign branches and subsidiaries, and similar transactions between other non-residents and residents of a country, (iv) underwriters' commissions and other charges on private securities sold outside the country of issue, (v) fees of agents operating for foreign principals and handling charges in respect of non-industrial gold, (vi) machinery, equipment, film and similar rentals, (vii) advertising fees, (viii) rent for office space and other outlays which are reimbursable by the employer, paid by non-resident

2.11.9 and 1.11.9. Miscellaneous commodities (continued)

commercial travellers, (ix) direct subscriptions to newspapers and magazines, (x) profits or losses on arbitrage transactions in foreign exchange with non-residents, (xi) gifts in kind sent, and received from, abroad by resident households, (xii) migrants' household and personal goods and effects and (xiii) transactions in other goods and services not elsewhere classified.

2.11.10 and 1.11.10. Adjustment to change-of-ownership basis

This category is intended for use when the exports and imports of merchandise of a country are to be recorded in the national accounts at the moment the ownership of the items passes between its residents and non-residents.

The entries here will exhibit the differences between the change-of-ownership principle and the physical-movement criterion of categories 2.11.1 and 1.11.1 above, that is, in the values of the country's exports and imports of merchandise. Under the change-of-ownership principle, goods which residents of a country have sold to, or purchased from, non-residents but which have not yet crossed its customs, free-area or custom warehouse boundaries (e.g., goods stores in, or en-route through, the country, or goods stored abroad or en-route to the country, respectively) will be included.

2.12.1 and 1.12.1. Direct purchases in the domestic market, non-resident households and direct purchases abroad, resident households, respectively

Expenditure in the domestic territory of a country by non-residents and expenditure in the rest of the world by its residents, such as tourists, travelling businessmen and government officials, crews, border and seasonal workers, and diplomatic and military personnel stationed abroad. Covers outlays included in the household consumption expenditure, whether consumed on the spot, elsewhere or brought into the country of residence, and of services, including local transportation. The outlays of travelling businessmen, government officials, crews etc. which are reimbursable by their employer are not included.

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a/ The United Nations recommendations in respect of international trade statistics are described in the Yearbook of International Trade Statistics, 1966 (United Nations publication, Sales No. E.70.XVII.11), and "The treatment of the main categories of commodities in the inward and outward flows in international trade", Statistical Office of the United Nations Secretariat (IT/STAT/27, 15 April 1968).



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