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National Accounts Estimation in the ICP

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1. NATIONAL ACCOUNTS ESTIMATION IN THE ICP

Introduction

1. The most common use of national accounts is to examine the changes over time in GDP and other major aggregates, with the volume measures being particularly important in this regard. While some users analyze some detailed data in the time series national accounts, most analysts examine the relationships between broader national accounts aggregates. As a result, the consistency of data sources from one period (generally a quarter or a year) to another is a key aspect of data quality assurance. On the other hand, the ICP requirement is primarily for "one-off" data sets, with very detailed data needed, but only once every several years.

2. However, the estimation techniques used in compiling the time series national accounts can assist in obtaining the detailed data required for the ICP. In particular, the commodity-flow method and supply-use tables (SUTs) can be used to produce estimates of some components of expenditure on GDP that are not compiled as a matter of course in the time series national accounts.

3. The task of splitting GDP expenditures into the detailed components (basic headings) required for the ICP would be relatively straightforward if the broad aggregates in the national accounts were based on combining detailed data from bottom up. In such a situation, detailed prices, production data and expenditures would be available fairly readily. However, in most countries in the world, the paucity of basic data sources precludes such a simple solution.

4. It is essential to make the most of existing statistics to maximize the consistency in the national accounts activities for the ICP. Consistency is the key requirement: consistency between prices collected in the field and prices embedded in GDP expenditures, between production data and expenditure data, between import prices, producers' prices and purchasers' prices, between wholesale prices and retail prices. Consistency is also important when assessing the plausibility of per capita expenditures at the basic heading level in nominal and real terms, both within a country and between countries belonging to the same economic clusters.

5. Disaggregating GDP into the detailed basic headings required for the ICP is the core part of the national accounts data for the ICP. In principle, only details based on the expenditure approach are required for the ICP. However, the other approaches (particularly the production approach) should also be taken into account. (See paragraphs 16 to 19 of the chapter "The national accounts framework in the ICP" for more details about the three approaches to measuring GDP.) The clear distinction usually made between the three approaches is not always justified as the three methods rely on the same pool of data, at least to some degree, although the extent varies across countries. For example, given the definition of government services, output for these services is the starting point for calculating government final consumption expenditure. Also, in the absence of a survey of businesses' capital expenditures, the major sources of expenditure data for machinery and equipment are import statistics and information on the outputs of producers of these products. If a full set of

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data is available for businesses (i.e. value of output, intermediate inputs, wages and salaries paid, taxes paid etc.) then the production and income approaches will be identical because the gross operating surplus is measured as the balancing item between the production-based measure of value added within the business and the other components of the income-based approach.

6. In cases where all these data sources are available, the various data sets can be reconciled in a supply-use table. The commonalities between the data sources should be used to the extent possible to estimate GDP or its detailed components, particularly using the production and expenditure approaches. A critical advantage of having data on both these approaches to measuring GDP is that it enables the source data to be cross checked and validated so that the best possible data are available on the components of expenditure on GDP.

Commodity-flow analysis

7. Supply-use tables provide a detailed picture of the flows of goods and services in an economy. They are based on the identity that the use of goods and services is equal to the supply of goods and services, not only for the economy as a whole but also for each good and service (or group of goods and/or services). The simplest example of describing how a supply-use table works is to start by examining the commodity-flow approach (sometimes referred to as a "commodity balance" or a "product-flow analysis") for a single product.

8. The commodity-flow approach is based on the identity in the goods and services account, which shows how the total supply of a product is equal to the total amount used:

Output + imports (i.e. total supply) =

intermediate consumption + exports + final consumption + gross capital formation (i.e. total uses).

9. In effect, goods and services are tracked through the economy from their original producers (either resident or abroad) to their users (either resident or abroad). An important requirement is that the supply of products has to be allocated to the various uses (i.e. to consumption, investment and intermediate usage).

10. The commodity-flow method is a useful editing tool when data on supply are available by detailed product classification and each of the aggregates in the above equation can be estimated independently. Commodity flows rarely balance during the first iteration. However, they do provide indications of those parts of the accounts where the greatest tensions are arising in the data. Adjustments are made to the data progressively until the supply and use of a commodity (or commodity group) are equal.

11. The commodity-flow approach can be used in two broad ways. The first is to check on the coherence of a full set of data relating to the supply and use of a product (or product group). When each of the aggregates in the above equation can be estimated independently the supply and use rarely balance, in practice, during the first iteration. However, the extent of the difference provides an indication of the tensions arising in the data. Adjustments are made to the data progressively until the supply and use of a commodity (or group of

commodities) are equal. The second use is to provide the framework for one of the components to be derived residually. In such cases, because of the lack of complete data, the commodity-flow approach becomes a means of data estimation rather than an editing tool. Generally, supply details are more detailed and firmly based than those for uses, so it will often be one of the uses that is calculated residually, with components of gross capital formation commonly being estimated this way.

12. A number of assumptions generally have to be made in using the commodity-flow approach. In some cases, it is necessary to assume a particular split (e.g. the share of business expenditure compared with that of household expenditure) has remained fixed since the last time that survey data were available. In other cases, these shares may be estimated on the basis of data that are not necessarily complete or consistent with the national accounts. Clearly, having a firmly based, consistent dataset from a statistical survey is most likely to produce the best results. On the other hand, the accounting identity embodied in the commodity-flow approach enables inconsistencies to be identified and remedied, even if the corrections have to be based on the experience and expertise of the national accountants involved rather than on firm data.

13. Commodity flows can be expressed in volume terms as well as in values. The volumes may sometimes be obtained directly as the quantities underlying the components of supply and use and so the resulting unit values of the components and of total supply and total use can be used to check the validity of the quantity and value data. For example, the unit value of output at basic prices would be expected to be lower than that for final consumption expenditure. The volumes might also be calculated by applying appropriate price deflators to each of the components. In this case, assuming that the commodity-flow analysis in value terms has been balanced, any inconsistency in the supply and use of volumes is likely to be caused by problems with the prices being used as deflators.

Commodity-flow example

14. A simple example of the logic behind a SUT is provided by examining a commodity flow for a single product. The basic identity involved is that described in paragraph 8 above (i.e. that the supply and use of any product must be equal).

15. In the following example, a farmer harvests a wheat crop with a value of 200. The bulk is exported (160) while the remainder is used domestically, part being sold directly to households (22) with the remainder put into inventories (18) for future use as seed. Earlier in the year, the farmer had used up 80 units of wheat as seed to plant his crop, with imports of wheat seed accounting for 50, and the other 30 coming from inventories of seed that he had stored from the previous year's crop. In summary, the details are as follows:

Imported wheat seed purchased by farmer	50
Wheat seed used from inventories	30
Intermediate consumption (imported wheat seed plus wheat seed withdrawn from inventories)	80

Output (wheat produced)	200
Final consumption expenditure by households	22
Gross fixed capital formation	0
Rundown in inventories of materials (i.e. wheat seed)	–30
Additions to inventories of wheat	18
Exports	160

16. The supply of wheat in the current year is

output + imports = 200 + 50 = 250.

(Note that the withdrawal of 30 from inventories of wheat seed is part of the supply of wheat seed because it is used in the current year. However, it is not part of the current year's production because it was produced and placed in inventories in an earlier year.)

17. The use of wheat in the year is

intermediate consumption + exports + final consumption + gross capital formation =

80 + 160 + 22 + (–30) +18 = 250.

18. Gross capital formation consists of three major components – gross fixed capital formation, change in inventories and net acquisitions of valuables. Broadly speaking, gross fixed capital formation is the total value of businesses' acquisitions, less any disposals, of fixed assets during the year. Net acquisitions of valuables are generally small and this item has been ignored in these examples.

19. Details of the intermediate consumption can sometimes be obtained directly (e.g. if a census of agricultural producers had asked directly for these data). More frequently though, this information is not directly available because it is often difficult for any producer to know exactly how much he has used up as intermediate consumption. A common way of working it out is to use details about the purchases of products used for intermediate consumption and then deduct the change in inventories of materials that are used as intermediate consumption. In the above example, the farmer purchases wheat seed from abroad (50) and runs down his own inventories of wheat seed by 30. Therefore, using the relationship described above:

intermediate consumption = purchases less change in inventories = 50 – (–30) = 80.

20. A different way of expressing this is to say that the total usage of wheat seed was 80, consisting of 50 units imported from abroad and 30 taken from inventories. The important point to note is that a rundown in inventories adds to the amount of intermediate consumption while intermediate consumption will be less than purchases of intermediate goods if inventories of intermediate goods are built up during the year.

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21. It can be seen that the supply and use of the wheat are identical. However, this is a simple example and the issue of valuation has been ignored by assuming that all the above values are based on a consistent price concept (purchasers' prices). In practice, the prices received by a farmer for his wheat will differ from the prices paid by the purchasers of the wheat (in this case, the households and those to whom it has been exported). Also, the value recorded in the customs data for the wheat seed will not be the same as the amount the farmer has to pay for it. The key areas of difference are the costs of transport, the margins charged by distributors (i.e. the difference between the wholesaler's or retailer's selling price and their costs of replacing that good at the time it is sold), and any taxes (less subsidies) levied on the product itself (note that these taxes exclude any that are not levied directly on the product, such as income taxes).

Basic, producers' and purchasers' prices

22. The 1993 SNA identifies three different types of prices - basic prices, producers' prices and purchasers' prices. The **basic price** is the amount receivable by the producer from the purchaser for a unit of a good or service produced as output minus any tax payable, and plus any subsidy receivable, on that unit as a consequence of its production or sale. It excludes any transport charges invoiced separately by the producer.

23. The relationships between basic prices and the other types of prices are described in paragraphs 155 to 167 of the chapter "The national accounts framework in the ICP" in this handbook, and the 1993 SNA also provides details in paragraphs 6.204 to 6.217. In summary, the relationships are:

Basic prices

plus taxes on products excluding invoiced VAT

less subsidies on products

equals **Producers' prices**

plus VAT not deductible by the purchaser

plus separately invoiced transport charges

plus wholesalers' and retailers' margins

equals **Purchasers' prices**.

24. Given that the ICP is based on final expenditures on GDP, the prices required for the ICP are purchasers' prices (these are sometimes referred to as "market prices" because they are the prices that buyers are willing to pay to acquire something from willing sellers).

25. In practice, data collected in economic surveys will not all be on the pricing basis required for the ICP (i.e. purchasers' prices). Therefore, the values that are recorded at either basic prices or producers' prices need to be converted to purchasers' prices by adjusting them for net taxes on products and for trade and transport margins. The margins are generally calculated as part of the national accounting estimation process.

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Supply and use of a product

26. The above example can be expanded to take into account the types of prices likely to occur in each component in practice. The key differences are in imports and the output of wheat. The dataset for the example has to be expanded as follows:

Imported wheat seed purchased by the farmer	50
Import taxes on wheat	2
Transport margin on imported wheat	5
Trade margin on imported wheat (agricultural wholesaler)	3
Change in inventories of wheat seed	–30
Intermediate consumption (imported wheat seed *minus* change in inventories of wheat seed)	80
Output of wheat (value at farm gate)	170
Taxes on wheat (10%)	17
Export subsidy on wheat (5%)	8
Transport margin	15
Trade margin (retailer)	6
Final consumption expenditure by households	22
Gross fixed capital formation	0
Change in inventories of wheat (= –30 + 18)	–12
Exports	160

27. In this case, the imported wheat seed is expressed in terms of the price the farmer pays for it. In practice, it is common for the starting point to be imports data from the Customs database, which is most likely to be expressed in terms of "c.i.f."(i.e. including cost, insurance and freight). If this is the case, the value of wheat purchased by the farmer will have to be estimated by adding domestic taxes and margins (trade and transport) to the c.i.f. value of wheat. The output of wheat is likely to be expressed in terms of basic prices, particularly if the data come from a survey of farmers. In such a case, the values have to be adjusted to purchasers' prices, as required for the ICP.

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28. Based on imported wheat being valued c.i.f. (i.e. 40) and the farmers' output being valued at basic prices (i.e. 170), the process is as follows:

Supply	
Imports of wheat seed (c.i.f.) (basic prices)	40
plus Import taxes on wheat	2
plus Transport margin on imported wheat	5
plus Trade margin on imported wheat (agricultural	3
equals **Imports of wheat seed (purchasers' prices)**	**50**
Output of wheat (value at farm gate) (basic prices)	170
plus Taxes on wheat (10%)	17
less Export subsidy on wheat (5%)	8
plus Transport margin	15
plus Trade margin (retailer)	6
equals **Output of wheat (purchasers' prices)**	**200**
Total supply (purchasers' prices)	**250**
(*equals* output + imports, both at purchasers' prices)	
Use	
Imports of wheat seed (purchasers' prices)	50
minus Change in wheat seed inventories (purchasers' prices)	–30
equals **Intermediate consumption (purchasers' prices)** (imported wheat seed minus change in inventories of wheat seed)	**80**
Final consumption expenditure by households	**22**
Rundown in inventories of wheat	–30
Additions to inventories of wheat	18
Gross capital formation	**–12**
Exports	**160**
Total use (purchasers' prices)	**250**
(*equals* intermediate consumption + final consumption + gross capital formation + exports)	

29. The supply and use balance neatly in the above example. In practice, the numbers will not generally come together so well. If there is a gap between the supply and use then the national accountants have to determine what is causing the discrepancy. If, as is likely, all the underlying data are confirmed then a decision has to be made on the most likely source(s) of the discrepancy. These estimates are then adjusted to bring the supply and use into balance.

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A more common scenario though is that one of the components is not measured directly. In the above example, it may be inventories. In this case, we would know that imported wheat seed had been purchased by the farmer for 50 and that 200 had been produced. However, agricultural statisticians know that it would require wheat seed worth about 80 to obtain the yield of wheat worth 200. In this case, the national accountants can assume that the remaining 30 worth of wheat seed was sourced domestically and so show a rundown of 30 in inventories of materials. Likewise, on the use side of the ledger, information is available on intermediate consumption, final consumption expenditure by households and exports. Aggregating these leads to a surplus of 12 over the supply and so a rundown of 12 is shown for the year in inventories (i.e. a change in inventories of –12 is recorded).

Residual estimation and data validation

30. One of the major uses of commodity flows in the ICP is expected to be estimating one of the final expenditure components residually. The following examples provide details of the types of data sources that may be used to calculate the total supply and also some of the use components so that one of the final expenditure aggregates can be estimated residually.

Poultry

31. The first example is for basic heading "1101124 Poultry". In this example, all poultry is domestically produced. The value of domestic production comes from estimates of the total numbers of poultry in the country, take-off (slaughter) rates and average prices per bird obtained from various sources such as the Ministry of Agriculture, the Veterinary Department and the consumer price index (for prices). Pet food manufacturers have reported purchases of 1,000 and exports of poultry meat come to 45. Transport margins are roughly estimated at 1% of the value of domestic production and retail margins on poultry for domestic consumption are estimated at just over 2%. These margins are low because most poultry in this country is produced by farm households for own consumption and only a small part is commercialized. A nominal figure of 10 is assigned to "other trade margins" to represent the margin on sales of poultry meat to the pet food manufacturers. The national accountants have no firm information on the actual margin, but they are sure that it is not zero and that 10 must be closer to the truth than zero. Inventories are always very small because of the problems of storing the slaughtered poultry for any length of time so it is reasonable to assume zero change in inventories.

32. The basic data available for the national accountants can be summarized as follows:

Poultry	
Domestic production (value at farm gate)	6,500
Imports (c.i.f.)	0
Taxes on poultry	0
Subsidies on poultry	0
Transport margins	65
Trade margins (on household consumption)	130
Trade margins (other)	10
Intermediate consumption (for pet food)	1,000

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Final consumption expenditure by households	Unknown
Gross fixed capital formation	0
Change in inventories	0
Exports	45

33. The commodity-flow technique can be applied to these data to estimate a value of 5,660 for final consumption expenditure on poultry by households.

Basic heading: 1101124 Poultry	
Supply	
Domestic production (value at farm gate)	6,500
plus Imports (c.i.f.)	0
plus Taxes on poultry	0
less Subsidies on poultry	0
plus Transport margins	65
plus Trade margins (on household consumption)	130
plus Trade margins (other)	10
equals **Total supply**	**6,705**
Uses	
Intermediate consumption (for pet food)	1,000
plus Household final consumption expenditure	Unknown
plus Government final consumption expenditure	0
plus Gross fixed capital formation	0
plus Change in inventories	0
plus Exports	45
equals **Total known uses**	**1,045**
Residual calculation	
Total supply	6,705
less Total known uses	1,045
equals **Final consumption expenditure by households**	**5,660**

Beer

34. Household final consumption expenditure on beer is covered by basic heading "1102131 Beer". A household expenditure survey from a few years ago reported expenditure on beer at 7,000. Updating this value by the CPI gives 8,000 for the current year. However, the latest industrial census shows domestic production at basic prices came to 8,200, while imports (c.i.f.) are 1,200 and the Ministry for Excise reports sales taxes and import duties on beer, which are both levied at a rate of 10%, amounted to 940 for the year. Transport and

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trade margins are estimated at 400 and 1,500 respectively. The brewery companies reported a fall in inventories of beer of 10 and exports of 350 were recorded in the merchandise trade statistics.

35. The following table summarizes these data.

Beer	
Domestic production (basic prices)	8,200
Imports (c.i.f.)	1,200
Taxes on beer	940
Subsidies on beer	0
Transport margins	200
Trade margins (on household consumption)	1,700
Trade margins (other)	0
Intermediate consumption	0
Final consumption expenditure by households	8,000
Gross fixed capital formation	0
Change in inventories	–10
Exports	350

36. Given that estimates are available for each of the components, the commodity-flow technique can be used to check the consistency of the data.

Basic heading: 1102131 Beer	
Supply	
Domestic production (basic prices)	8,200
plus Imports (c.i.f.)	1,200
plus Taxes on beer	940
less Subsidies on beer	0
plus Transport margins	200
plus Trade margins (on household consumption)	1,700
plus Trade margins (other)	0
equals **Total supply**	**12,240**
Uses	
Intermediate consumption	0
plus Household final consumption expenditure	8,000
plus Government final consumption expenditure	0
plus Gross fixed capital formation	0
plus Change in inventories	–10

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plus Exports	350
equals **Total uses**	**8,340**
Discrepancy	
Total supply	12,240
less Total uses	8,340
equals **Discrepancy**	**3,900**

37. The imbalance between supply and uses (which should be equal, by definition) is very large. Checking the source data shows that all the supply components are based on reliable sources and the taxes received are consistent with the value of domestic production and imports. Similarly, the change in inventories and the value of exports are considered to be fairly firm estimates. However, experience has shown that household expenditure surveys are renowned for underestimating the true value of alcohol consumption and so the estimate of 8,000 from the household expenditure survey is replaced by 11,900, which is the balance between the total supply (12,240) and the uses other than household final consumption expenditure (340).

Motor cars

38. Motor cars are classified in two different ways. Those purchased by households are part of household final consumption expenditure while those purchased by businesses are classified as gross fixed capital formation. As a result, in the ICP, motor cars are covered by two basic headings: "1107111 Motor cars", which is part of household final consumption expenditure, and "1501211 Motor vehicles, trailers and semi-trailers", which is part of gross fixed capital formation on transport equipment.

39. In the following example, there is no domestic production of motor cars so they all have to be imported. There are some firm pieces of information available relating to motor cars – the c.i.f. value of imports (955), customs duties paid (30) and purchases of motor cars reported by enterprises in a survey of capital expenditures (135). The government finance statistics show that government purchased cars worth 20. Discussions with the main importers of motor cars result in transport margins and trade margins being estimated as 60 and 80 respectively. Cars are not used as intermediate consumption and an assumption is made that there is no change in inventories. No exports of motor cars were recorded in the merchandise trade statistics. In theory, sales of second-hand motor cars by businesses to the household sector should be recorded as a positive amount in household final consumption expenditure (plus any dealers' margins involved) and as a corresponding negative in gross fixed capital formation. Any second-hand sales overseas would be recorded as exports with offsetting negative amounts in either final consumption expenditure or in gross fixed capital formation, depending on who sold the cars. To simplify this example, no second-hand sales occur.

40. Accordingly, the following data set is available:

Motor cars	
Domestic production (basic prices)	0
Imports (c.i.f.)	955

Taxes on motor cars	30
Subsidies on motor cars	0
Transport margins	60
Trade margins (total)	80
Intermediate consumption	0
Final consumption expenditure by households	Unknown
Final consumption expenditure by government	20
Gross fixed capital formation	135
Change in inventories	0
Exports	0

41. The commodity-flow technique can be applied to these data to estimate a value of 1,015 for final consumption expenditure on motor vehicles by households.

Basic heading: 1107111 Motor cars	
Supply	
Domestic production (basic prices)	0
plus Imports (c.i.f.)	955
plus Taxes on motor cars	75
less Subsidies on motor cars	0
plus Transport margins	60
plus Trade margins (total)	80
equals **Total supply**	**1,170**
Uses	
Intermediate consumption	0
plus Household final consumption expenditure	Unknown
plus Government final consumption expenditure	20
plus Gross fixed capital formation	135
plus Change in inventories	0
plus Exports	0
equals **Total known uses**	**155**
Residual calculation	
Total supply	1,170
less Total known uses	155
equals **Final consumption expenditure by households**	**1,015**

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Commodity-flow approach and basic headings

42. Official data are generally not available in sufficient detail to estimate the values for all the ICP's basic headings. It will be necessary to use data from a variety of sources to assist in calculating values for all basic headings. Although the data from these sources are unlikely to be completely consistent with the national accounts, they often contain sufficient detail to provide a reasonable basis on which to split a more firmly based, broader aggregate. For example, it may not be possible to obtain separate details for households and businesses of the amounts paid by users of internet services but information is available on the number of households and the number of businesses connected. A reasonable estimate of household final consumption expenditure on internet services could be calculated as the number of households connected to the internet combined with a "price", which could be based on the cost of a middle of the range household internet contract by one or more major internet service providers (ISPs).

43. National accounts aggregates can also be split into more detailed components on the basis of expert advice. Industry groups such as chambers of commerce or trade associations could be useful sources of information in their specialized fields. Universities and research institutes are also potentially worthwhile contacts.

44. Finally, large companies generally have to provide publicly available reports each year, which often contain useful information on the major factors underlying their accounts, as do their websites. Many countries have regulatory authorities for particular industries or more broadly based ones such as those that investigate anti-competitive practices. The results of their investigations are often released in detailed reports providing information that can be useful for splitting national accounts aggregates.

2. SUPPLY-USE TABLES

Introduction

45. A supply-use table (SUT) uses the same type of techniques as those described in the previous section, but applies them to all the goods and services in an economy. SUTs show where goods and services are acquired (domestic production or imports) and where they are used (intermediate consumption or final uses: final consumption, gross capital formation, exports).

Layout

46. The supply-use table starts by showing, in the first part of the table, the value of domestic production and imports. Product taxes and trade and transport margins are then added to obtain the total value of supply at purchasers' prices. The second part of the table shows the various uses to which they may be put. The columns are filled in using whatever firm or partial information is available on these various items from statistical surveys, foreign trade statistics and other administrative sources. The task is then to provide a coherent picture of the passage from total supply to final expenditures allocated to the various major aggregates. In this process, both the supply and the uses parts of the table are likely to be modified and improved.

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47. The use table is particularly important for the ICP because it shows the end uses of each product group, split between intermediate consumption and final expenditures (household final consumption expenditure, government final consumption expenditure, gross fixed capital formation, change in inventories, exports). The use table also shows how the domestic industries generate value added, including its broad components (compensation of employees, net taxes on products, consumption of fixed capital, net operating surplus). However, this part of the use table is of little relevance to the ICP, which focuses on the final expenditure components, and so has been omitted from the example below.

48. Paragraph 14.13 of the 2008 SNA provides a succinct summary of supply-use tables:

> *14.13 With a complete set of product balances, supply and use tables can be created. Supply and use tables exist in pairs with common valuation and level of detail as regards the products identified. The most common format of supply and use tables is at purchasers' prices. A use table at purchasers' prices consists of a set of product balances covering all products available in an economy arranged in the form of a rectangular matrix with the products, valued at purchasers' prices, appearing in the rows and the columns indicating the disposition of the products to various types of uses. A supply table at purchasers' prices consists of a rectangular matrix with the rows corresponding to the same groups of products as the matching use tables and columns corresponding to the supply from domestic production valued at basic prices plus columns for imports and the valuation adjustments necessary to have total supply of each [group of] product[s] valued at purchasers' prices.*

49. Supply-use tables have a number of important uses in the national accounts. They focus on the goods and services account and enable national accounts compilers to compare data from different sources (e.g. production, international trade, household expenditures, investment) to check their consistency. Two important identities in SUTs are that industry output equals total industry inputs for each industry and total supply of each product equals total use of each product. SUTs also provide a mechanism that makes it possible to impute estimates of a national accounts aggregate when there are no data available directly related to that aggregate. For example, in the absence of a survey of expenditure on investment goods, it is possible to use details of the domestic production of particular types of equipment in conjunction with data on their imports to estimate the gross fixed capital expenditure on those types of equipment. SUTs are also the starting point for producing input-output (I-O) tables.

50. For the ICP an important aspect of supply-use tables is that they can assist in linking production-based GDP to expenditure-based GDP, which is often based on less, and lower-quality, data than the production estimates. Their potential for estimating coherent values at the basic heading level is also important for the ICP.

A simple supply-use table

51. SUTs have a standardized layout, at least at the broadest level. The detailed components (i.e. industry and product) tend to vary based on the economic structure of the country involved. The starting point is to examine the characteristics of a simple supply table and a simple use table.

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52. The supply table shows the source of the supply (imports or domestically-produced) of each good and service (i.e. product) and, if domestically produced, the industry producing them. A simplified example of the layout of a supply table is presented in the following table, using the data from the above example of the wheat farmer.

Supply table

Products	**Industries**			**Total domestic economy (basic prices)**	**Imports**	**Total supply (basic prices)**	**Trade, transport margins**	**Net taxes on products**	**Total supply (purchasers' prices)**
	Agriculture	**Trade**	**Other**						
Wheat	170			170	40	210	29	11	250
Wholesaling		3		3		3	–3		0
Retailing		6		6		6	–6		0
Transporting			20	20		20	–20		0
Other									
Total	170	9	20	199	40	239	0	11	250

Use table

Products	**Intermediate consumption**			**Total domestic economy**	**Final uses**			**Total use (purchasers' prices)**
	Agriculture	**Trade**	**Other**		**Final consump-tion**	**Gross capital formation**	**Exports**	
Wheat	80			80	22	–12	160	250
Wholesale		0		0				0
Retail		0		0				0
Transport			0	0				0
Other								

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Total uses (purchasers' prices)	80	0	0	80	22	–12	160	250

53. A point to note is that, in the use table, the trade and transport margins that have been allocated against retail, wholesale and transport products are deducted in the trade and transport margins column to avoid double counting with the margins already shown against wheat in that column.

Calculating GDP

54. Data in the supply and use tables can be used to calculate GDP. In the above example, the Use Table has not been extended to include details of the income side of the national accounts (compensation of employees, gross operating surplus etc) because this is not directly relevant for the ICP. Therefore, the examples of deriving GDP are confined to those for the production-based and the expenditure-based measures.

Production-based GDP

55. Total output of industries is reported in the last rows of the supply and use tables. Value added at basic prices is calculated as a residual by deducting intermediate consumption at purchasers' prices from output at basic prices. To derive GDP at purchasers' prices, taxes less subsidies on products as reported in the supply table have to be added to value added at basic prices.

Example 1

Output (basic prices) for total domestic economy	199
less Intermediate consumption	80
equals Value added (basic prices)	119
plus Net taxes on products	11
equals **GDP at purchasers' prices**	130

56. The production-based approach could also be presented as the difference between output at purchasers' prices and intermediate consumption at purchasers' prices:

Example 2

Output (basic prices) for total domestic economy	199
plus Net taxes on products	11
equals Output (purchasers' prices)	210
less Intermediate consumption (purchasers' prices)	80

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equals **GDP(P) at purchasers' prices**	130

Expenditure-based GDP

57. The required information on final demand is derived from the last row of the use table. Final demand in the use table is reflected by domestically-produced and imported goods and services. To calculate GDP according to the expenditure approach, total final demand has to be reduced by total imports as reported in the supply table. The supply and use tables contain all the flows of the goods and services account, the production account and the generation of income account. Basically, the goods and services account for the total economy can be seen as highly aggregated supply and use tables without a breakdown by product or industry (sector). In supply-use tables the goods and services account for the total economy is broken down in two dimensions: in the rows by products and in the columns by industry and by categories of final uses. Further disaggregations of final uses are the matrices for consumption expenditure by purpose (COICOP), government consumption according to the main functions of the government (COFOG), and the investment matrix identifying the producing industry and investing industry for gross capital formation.

58. Using the simple example above, expenditure-based GDP can be derived as follows:

Final consumption	22
plus Gross capital formation	-12
plus Exports	160
less Imports	40
equals **GDP(E) at purchasers' prices**	130

Detailed supply-use tables

59. The main restriction on the level of detail in a supply-use table is the availability of the data required to support that detail. In practice, data are not generally available on individual products and so the product dimension of the supply and use tables mainly relates to product groups. The situation is similar for industries, with data availability dictating the level of the industry classification to be used. For example, it is rarely possible to collect sufficiently detailed data to produce supply-use tables classified by the 4-digit (class) level of the International Standard Industrial Classification of All Economic Activities (ISIC). It is common for the industry classification in a supply-use table to be a mixture of the division (2-digit) and group (3-digit) levels of the ISIC, with the group level being applied to those industries that are most important in the country concerned.

60. The following example is designed to go one step further than the one above, by showing how the interactions between products and industries are presented in a supply-use table. In the following example, the details for each of the four products involved (wheat, flour, bread and distributive services) are provided individually and the results of a commodity flow analysis are presented for each product in turn. These details are then

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consolidated into a supply-use table. As was the case in the earlier example, the income approach to GDP has not been included in the table because it is not directly relevant for the ICP.

Wheat

61. The first product being considered is wheat. In this case, the farmer purchases imported wheat for 150 (i.e. at purchasers' prices), with imports c.i.f. recorded as 110. The government accounts show that import taxes of 10 would be payable on this amount of imported wheat and a survey of margins indicates that transport margins and trade margins of 18 and 12 respectively were paid. These data fit together neatly in adjusting the wheat price from basic prices to purchasers' prices. In addition, the farmer used seed worth 20 from his inventories of wheat seed. The output of wheat (valued at the farm gate) was 570, on which 57 worth of taxes had to be paid given the tax rate of 10%. A large part of the wheat (340) was exported, which attracted a subsidy of 17 (based on a rate of 5%). Final consumption expenditure on wheat by households was 70 and 210 was sold to the manufacturing industry (millers) as an input into their flour-making business. The remainder (50) went into inventories. In summary, the data are as follows:

Summary of data on wheat

Imports of wheat (c.i.f.)	110
Imported wheat seed purchased by the farmer	150
Import taxes on wheat	10
Transport margin on imported wheat	18
Trade margin on imported wheat	12
Change in inventories of wheat seed	–20
Output of wheat (value at farm gate)	570
Taxes on wheat (10%)	57
Export subsidy on wheat (5%)	17
Transport margin	24
Trade margin	36
Final consumption expenditure by households	70
Gross fixed capital formation	0
Change in inventories of wheat (= –20 + 50)	30
Exports	340

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Wheat purchased by millers (manufacturing industry)	210

62. Using the commodity-flow technique, the following results are obtained for the supply and use of wheat:

Wheat

Supply	
Imports of wheat seed (c.i.f.) (basic prices)	110
plus Import taxes on wheat	10
plus Transport margin on imported wheat	18
plus Trade margin on imported wheat (agricultural wholesaler)	12
equals **Imports of wheat seed (purchasers' prices)**	**150**
Output of wheat (value at farm gate) (basic prices)	570
plus Taxes on wheat (10%)	57
less Export subsidy on wheat (5%)	17
plus Transport margin	24
plus Trade margin (retailer)	36
equals **Output of wheat (purchasers' prices)**	**670**
Total supply (purchasers' prices)	**820**
(*equals* output + imports, both at purchasers' prices)	
Use	
Intermediate consumption (purchasers' prices) by farmer	**170**
(imported wheat seed (150) less change in wheat seed inventories (–(–20))	
Sales of wheat by farmer to miller	210
(*equals* Intermediate consumption (purchasers' prices) by miller)	
Final consumption expenditure by households	70
Gross fixed capital formation	0
Rundown in inventories of wheat seed	–20
Additions to inventories of wheat	50
Exports	340
Total use (purchasers' prices)	**820**
(*equals* intermediate consumption + final consumption + gross fixed capital formation plus change in inventories + exports)	

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Flour

63. The miller purchases the whole of his inputs of wheat (210) from the local farmer and uses this to produce 580 (valued at the mill door) of flour. The transport margins are 19 and trade margins are 13, while the 10% tax rate results in 58 being paid in taxes. The bulk of the flour output (490, at purchasers' prices) is sold to local bakers as inputs into their bread making. Households purchase 40 of flour for their own use and exports amount to 130 on an f.o.b. basis. The remainder (10) is added into inventories. The following tables summarizes these data:

Summary of data on flour

Purchases of wheat	210
Output of flour (value at mill door)	580
Taxes on flour (10%)	58
Transport margins	19
Trade margins	13
Final consumption expenditure by households	40
Gross fixed capital formation	0
Change in inventories of flour	10
Exports	130
Flour purchased by bakers (manufacturing industry)	490

64. Applying the commodity-flow technique results in the following details for the supply and use of flour.

Flour

Supply	
Output of flour (value at factory door) (basic prices)	580
plus Taxes on flour (10%)	58
plus Transport margins	19
plus Trade margins	13
equals **Output of flour (purchasers' prices)**	**670**
Total supply (purchasers' prices)	**670**
(supply *equals* output because imports are zero)	
Use	
Sales of flour by miller to baker (i.e. intermediate consumption by baker)	490

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Final consumption expenditure by households	40
Gross fixed capital formation	0
Changes in inventories of flour	10
Exports	130
Total use (purchasers' prices)	**670**
(*equals* intermediate consumption + final consumption + gross fixed capital formation + change in inventories+ exports)	

Bread

65. The baker relies entirely on supplies of locally-produced flour (worth 490) so there are no imports involved. The value of bread produced is 1,040 (valued at the bakery door). Taxes are charged on bread at a rate of 5% and so come to 52, while transport margins are 30 and trade margins are 158. Most of the bread is sold to local households (1,110) with the remaining sales (170) being exports to a neighboring country, so no other industry purchases bread for the purposes of intermediate consumption. There are no inventories because of the short shelf-life of bread. These data can be summarized as follows:

66. The data available on bread are summarized in the following table.

Summary of data on bread

Purchases of flour	490
Output of bread (value at bakery door)	1,040
Taxes on bread (5%)	52
Transport margins	30
Trade margins	158
Final consumption expenditure by households	1,110
Gross fixed capital formation	0
Change in inventories of flour	0
Exports	170

67. The following supply and use data are derived using the commodity-flow technique:

Supply	
Output of bread (value at factory door) (basic prices)	1,040

plus Taxes on bread (5%)	52
plus Transport margin	30
plus Trade margin	158
equals **Output of bread (purchasers' prices)**	**1,280**
Total supply (purchasers' prices)	**1,280**
(supply *equals* output because imports are zero)	
Use	
Intermediate consumption of bread by other industries	0
Final consumption expenditure by households	1,110
Gross fixed capital formation	0
Changes in inventories of bread	0
Exports	170
Total use (purchasers' prices)	**1,280**
(*equals* intermediate consumption + final consumption + gross fixed capital formation + change in inventories+ exports)	

Distributive services

68. The distributive services are provided by businesses in the transport, wholesaling and retailing industries. In total, the amount to 90 to agricultural business, 100 to manufacturers, 80 to wholesalers and retailers, and 40 to businesses in the transport industry. The cost of these services is embedded in the prices of goods via the "margins" that are charged by businesses providing the services. Therefore, they must be deducted in the total to avoid double counting them at the total economy level. In the simple example of the supply-use table, the distributive services were shown separately, whereas they are shown in total in this example. However, the process of avoiding double counting is exactly the same in both tables.

69. The distributive services provided to industries can be summarized as follows:

Summary of data on distributive services

Distributive services provided to agriculture	90
Distributive services provided to manufacturing	100
Distributive services provided to wholesaling and retailing	80
Distributive services provided to transport	40

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70. The commodity-flow approach is not applied to these distributive services because their values are already covered in the adjustments to production at basic prices to obtain production at purchasers' prices.

Integrating commodity flows into a supply-use table

71. The commodity-flow analyses for each of wheat, flour, bread and distributive services are summarized in the following supply-use table. An important aspect of such a summary is that the interactions can be readily observed between the output from one industry and its use, in part, as intermediate consumption of another industry.

72. Note that the quadrant showing the income approach to GDP is not in this table, partly to simplify the presentation and partly because it is not required for the purposes of the ICP.

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SUPPLY-USE TABLE

SUPPLY	Industries				Total domestic economy (basic prices)	Imports (c.i.f.)	Total supply (basic prices)	Transport margins	Trade margins	Total trade, transport margins	Taxes on products	Subsidies on products	Net taxes on products	Total supply (purchasers' prices)
Products	**Agri-culture**	**Manu-facturing**	**Retail/ wholesale**	**Trans-port**										
Wheat	570				570	110	680	42	48	90	67	17	50	820
Flour		580			580	0	580	19	13	32	58	0	58	670
Bread		1,040			1,040	0	1,040	30	158	188	52	0	52	1,280
Distributive services	90	100	80	40	310	0	310	-91	-219	-310			0	0
Total	660	1,720	80	40	2,500	110	2,610	0	0	0	177	17	160	2,770

USES	Intermediate consumption				Final uses				Total uses
Products	**Industries**				**Final consumption expenditur**	**Gross fixed cap formati**	**Change in inventori**	**Exports (f.o.b.)**	
	Agri-cultur	**Manu-facturin**	**Retail/ wholesal**	**Trans-**					

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	e	g	e	port	e	on	es		
Wheat	170	210		0	70	0	30	340	820
Flour		490		0	40	0	10	130	670
Bread			0	0	1,110	0	0	170	1,280
Distributive services									
Total (purchasers' prices)	170	700	0	0	1,220	0	40	640	2,770

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Supply-use tables and the ICP basic headings

73. The basic headings in the ICP are defined in terms of the final expenditures in the use table. Ideally, a SUT should be defined at the basic heading level. However, even if a country compiles a SUT that is defined at a very detailed level, it is unlikely that an existing SUT would explicitly cover all the basic headings defined for the 2011 ICP, although it may be possible to modify it to better align with the ICP requirements. A more likely scenario is that a SUT could be developed to provide firmer data for the ICP for at least some of the more important components of GDP within a country.

74. If the starting point is a supply-use table that is balanced in value terms then any discrepancies arising in the supply-use table expressed in terms of volumes are due to inconsistencies in the price deflators used to estimate the volumes.

75. Chapter 15 of the 1993 SNA contains numerical examples of various aspects of supply-use tables.

Quantities

76. One of the advantages of the commodity-flow approach is that it can also be used to track the supply and uses of products in physical terms provided, of course, that the product concerned can be expressed meaningfully in physical units. The wheat example above was expressed in currency units, partly because that is the way that most commodity-flow analysis is undertaken and partly to show the effects of the different price bases used in different stages of the analysis and how to adjust them to a common basis. However, the wheat example could also have been expressed in terms of the tonnes of wheat imported, produced etc. While it is possible to measure the flows of wheat in this way, many products cannot be expressed meaningfully in terms of quantities because their characteristics are so diverse. For example, adding together the numbers of computers does not produce a useful result economically because top-end computers are worth many times what the cheapest models cost. Similarly, cars are sufficiently different that measuring the total number is not useful in economic terms, even though it may be a helpful indicator for other purposes, such as the potential for traffic congestion.

77. In countries that have relatively narrowly-based economies, it is often possible to identify and measure the main outputs in physical terms. Agriculture is one of the main industries in many such countries and so the output of the main crops can generally be measured in terms of quantities (tonnes of wheat, tonnes of maize, kilolitres of olive oil etc.). In many such cases, part of the agricultural output is exported while the remainder is used within the domestic economy either as household final consumption expenditure or as intermediate consumption by businesses that are processing these crops further (e.g. wheat into flour). Generally, the exports component can be identified explicitly through data from the Customs system. If the split between intermediate consumption and final consumption cannot be obtained through a reliable data source (a business survey or a household expenditure survey, for example) then an estimate could be based on past relationships and its credibility checked by comparing the final consumption per head of population implied by the estimate with a more firmly based figure from an earlier year.

Possible data sources

78. The ideal data source for compiling supply-use tables would be a survey that covers all the data required to compile the national accounts. In practice, a variety of data sources is used and so it is necessary to "mix and match" data from the various sources. Combining the data from different sources can be messy and result in inconsistent outcomes unless a systematic process is followed, such as that provided by commodity-flow techniques or SUTs. The strength of systematic methods is that the consistency of the data from different sources can be checked. When inconsistencies are discovered it is possible to adjust the data, based on judgments about the reliability of the data from each of the sources. Such judgments should take into account the scope, coverage and sample size of the underlying surveys, their reference periods and their consistency with national accounting concepts.

79. The list of potential data sources below is designed to identify possibilities rather than imply that countries should have all these available. Ideally, the reference year for data sources used in the 2011 ICP would be 2011. However, it is clear that many of these data sources are not available annually (or even regularly) while others might be available frequently (perhaps even monthly in some cases such as merchandise trade data or VAT data). It is important that the reference period(s) of any surveys or other data sources are provided to the regional office to enable the validity of the data to be assessed against the objective of having the best possible data for 2011.

80. The data sources are not necessarily independent and so it may be necessary to extract information for some components from one source and "mix and match" with data from another source but ensuring no double-counting occurs. For example, data from a household expenditure survey generally overlap considerably with retail trade data but are often more comprehensive in terms of covering more components of household final consumption expenditure, particularly amongst the services items. On the other hand, they are often based on a very small sample and so can have much higher standard errors than those from a regular retail survey. In determining which data source (or mix of data sources) to use it is necessary to balance issues such as breadth of coverage, how recent the reference period is for the potential alternatives, how well the underlying concepts match the SNA concepts etc. Using the above example of data from a household expenditure survey versus those from a retail trade survey, the types of issues to be weighed up in making a decision would be:

- the reference period of each compared with the ideal of 2011;
- the relative sample size and standard errors of the each of the surveys;
- the data item coverage of each compared with the products covered by household consumption expenditure;
- the extent to which retail trade data would need to be adjusted to remove expenditures by businesses and non-residents plus purchases abroad by residents;
- how well the classification used can be matched with the ICP basic heading classification.

81. The following list provides some suggestions on the types of data sources that could be used to estimate detailed expenditure components at the basic heading level:

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- household expenditure surveys or equivalent (e.g. such surveys may be called family budget surveys or household budget surveys or similar names in some countries);
- population censuses;
- labor force surveys;
- broadly-based censuses and surveys of businesses;
- retail trade data;
- production statistics from industrial and agricultural censuses and surveys;
- surveys of restaurants and hotels;
- capital expenditure surveys;
- inventory surveys;
- merchandise trade data from the Customs Service;
- international passenger surveys;
- surveys of trade in services;
- balance of payments data;
- government accounts (government finance statistics);
- information from Excise authorities on sales of tobacco and alcohol products;
- records of motor vehicle registrations (need to split household and business use);
- sales to households by utility companies and state monopolies
  - water, gas and electricity;
  - posts and communications;
  - rail and air travel;
  - broadcasting;
- taxation data (income, businesses);
- data from VAT or other sales taxes classified according to the goods and services taxed;
- the value of credit card transactions;
- the Food and Agriculture Organization (FAO) has data for expenditure on food in its *Food Balances Database*;
- regulatory agencies (e.g. gambling, financial sector);
- public marketing authorities;
- industry organizations (lobby groups, chambers of commerce, trade associations);
- research organizations (university, commercial);
- annual reports of monopoly (or dominating) companies;

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- company reports to shareholders (often include accounting details);
- publications of regulatory bodies and trade associations;
- weights used in price indexes such as the consumer price index and producer price indexes;
- internet;
- scanner data.

82. If data are not available from sources such as those listed above, it will be necessary to adopt a fallback procedure. Possibilities include:

- commodity-flow estimation (or SUT balancing) to fill data gaps;
- an expenditure breakdown for an earlier year (updated to take account of known changes, such as in relative prices);
- an expenditure pattern from a neighboring country with a similar type of economy;
- expert opinion either from within the NSO or from experts on the local economy;
- the last resort would be an even allocation below a particular level (but even rough estimates based on the opinions of staff from the NSO would be preferable).

Consistency between values and prices

83. In the 2005 ICP, some of the real expenditures at the basic heading level appeared to be implausible but it was difficult to obtain data that would either confirm the values and prices supplied by the country or point to a specific problem with one or the other of them. As a result, in the 2011 round, national accountants will be asked to supply details of the products most likely to be contributing to each basic heading and, if possible, a quantity for each of these products. In addition, the prices underlying the national accounts values of products within a basic heading should be compared with the prices provided for the ICP. The restriction caused by products being defined in terms of both their comparability and representativity can sometimes result in prices being reported for the ICP that are not equivalent to those underlying the national accounts. It is important to use extra information wherever possible to identify such cases. If the real expenditures are being significantly distorted then extra price data may be required to remedy the problem.

3. FINAncial intermediation services indirectly measured (fisim)

Calculating FISIM

84. Financial institutions accept deposits from units (e.g. households) that want to receive interest on spare funds and then lend these funds to units (e.g. businesses) that wish to borrow funds. The money involved is not matched directly between a depositor and a borrower. Rather, a pool of funds is provided collectively by depositors and funds are loaned to borrowers from this pool. There is a margin between the interest rate provided to depositors

and that paid by borrowers, which provides the funds for the financial institutions to defray their operating costs and to make a profit on their operations.

85. Loans and deposits are rarely equal although they are broadly equivalent in many cases. Sometimes deposits may be larger than loans because some money deposited may not have been loaned at a particular point in time. On the other hand, loans may be larger than deposits because the financial institutions have used some "own funds" to meet the demand for loans. The own funds may be retained profits from an earlier period or they could be obtained by the financial institution issuing debt securities.

86. In order to calculate FISIM it is necessary to introduce the concept of a "reference rate". According to paragraph 6.128 in the 1993 SNA, the reference rate represents the pure cost of borrowing funds (i.e. a rate from which the risk premium has been eliminated to the greatest extent possible and which does not include any intermediation services). The type of rate chosen as the reference rate may differ from country to country but the inter-bank lending rate would be a suitable choice when available; alternatively, the central bank lending rate could be used. In practice, it has been found that using such rates may result in negative FISIM, particularly when FISIM is calculated at disaggregated levels. For example, the structure of long-term loans may result in the average interest rate on these loans being quite different from the current interest rate if rates have changed quickly. Negative FISIM implies that output is negative, which is impossible. To overcome this problem, some countries use the simple average of the loan and deposit rates as the reference rate. If loans and deposits are roughly the same then the choice of reference rate has little impact on the amount of FISIM calculated but the choice of reference rate can have a significant effect when loans and deposits are not broadly equivalent such as when a large proportion of loans is financed from own funds.

87. In the 1968 SNA, FISIM was considered to be entirely the intermediate consumption of a "nominal industry", which meant that FISIM did not affect the level of GDP. The 1993 SNA introduced the concept of allocating FISIM across the users of the financial services for which no explicit charges are levied. FISIM can arise from the operations of both resident and non-resident financial institutions, so it is possible to have both exports and imports of FISIM. In practice, FISIM from resident financial institutions should be allocated to households (as final consumption expenditure), to government and businesses (as intermediate consumption) and to non-residents (as exports). Any FISIM from non-residents (i.e. imports of FISIM) should also be allocated. The convention adopted to measure government output is to sum the costs and so, in effect, FISIM allocated as intermediate consumption of government becomes part of government final consumption expenditure in the expenditure on GDP.

88. In paragraph 6.132, the 1993 SNA suggested that the services of financial intermediation provided by central banks should be measured in the same way as those of other financial intermediaries. However, in the same paragraph the 1993 SNA acknowledged that, because of the unique functions that may be performed by central banks, the value of their output may sometimes appear exceptionally large in relation to the resources employed. In some cases, the value of FISIM proved to be so large that it made little sense for the central bank output to include FISIM. Therefore, the 2008 SNA has suggested that the output of the

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central bank should be valued as the sum of costs incurred in a similar way to that of other government units.

89. For countries compiling FISIM for the first time, the Global Office recommends adopting the 2008 SNA recommendations because they are simpler to implement in practice than those in the 1993 SNA. The first step is to calculate the reference rates to be applied. Details are required about the levels of deposits and loans between financial institutions and units in other institutional sectors (non-financial corporations, general government, households and NPISHs) and also between residents and non-residents.

90. FISIM is estimated separately for borrowers and depositors. For borrowers, FISIM is the level of loans times the difference between the interest rate on loans and the reference rate. For depositors, FISIM is the level of deposits times the difference between the reference rate and the interest rate on deposits. If the levels of loans and deposits are L and D respectively and if the corresponding interest rates on loans and deposits are RL and RD respectively and if the reference rate is RR then:

FISIM = [(RL – RR) x L] + [(RR – RD) x D].

91. If the level of loans is equal to that of deposits then the reference rate becomes irrelevant. In such a situation, it would be possible to substitute L for D in the above equation giving:

FISIM = [(RL – RR) x L] + [(RR – RD) x L]

= L x [(RL – RR) + (RR – RD)]

= L x [(RL – RD].

92. In other words, when deposits and loans are identical, then the amount of FISIM recorded is equal to the difference in the interest rates between loans and deposits times the level of loans (or deposits, because they are identical to loans). If there is a large imbalance between deposits and loans (such as when financial institutions' own funds are a significant component of loans) then it can be seen that the choice of reference rate could impact on the level of FISIM recorded.

93. Conceptually, the reference rate should be between the interest rates for deposits and loans. The 1993 SNA is not prescriptive about the choice of reference rate although it suggest that the inter-bank lending rate would be suitable. However, at times it is possible for a reference rate based on the inter-bank lending rate to fall outside the bounds of the deposits and loans interest rates. For example, if the structure of loans were heavily weighted towards longer-term loans and interest rates rise rapidly then the inter-bank lending rate could be higher than the average interest rate on loans. An alternative would be to set the reference rate equal to the average of the interest rates on deposits and loans. The Global Office suggests this treatment as a practical solution to determining an interest rate, particularly for any countries that are calculating FISIM for the first time. Ideally, FISIM should be calculated separately for different types of financial institutions (e.g. banks, finance companies, credit unions), particularly if they have different loan and deposit structures, and then summed to obtain total FISIM.

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94. For the ICP, FISIM needs to be allocated across final expenditures, which will increase the level of GDP compared with a situation in which FISIM is assumed to be entirely the intermediate consumption of a nominal industry.

Allocating FISIM

95. Some details concerning the allocation of FISIM are provided in the 1993 SNA (see *Annex III Financial Intermediation Services Indirectly Measured (FISIM)*). They are based on the 1993 SNA approach to calculating FISIM, which has now been modified as a result of countries' experiences in implementing the 1993 SNA's recommendations. However, the methods suggested to allocate total FISIM are still valid. The key point to note is that the methods of allocating FISIM suggested by the 1993 SNA can still be used.

96. For ICP purposes, the second section ("2. The allocation of FISIM to institutional sectors") in Annex III is the most relevant part of that annex and the procedures it describes can be applied to the total FISIM estimates calculated using the methods described in the section above titled "Calculating FISIM"). The relevant part of this annex is reproduced below (with an error in the numbers of NPISHs corrected).

Extract from 1993 SNA:

ANNEX III - FINANCIAL INTERMEDIATION SERVICES INDIRECTLY MEASURED (FISIM)

2. The allocation of FISIM to institutional sectors

5 It is assumed that FISIM is purchased implicitly by borrowers paying higher interest than would be necessary if FISIM were charged for explicitly and by lenders receiving lower interest than would be necessary if FISIM were charged for explicitly. The purpose of allocation of FISIM by sectors and industries is to identify the purchase of these services explicitly and to classify them as intermediate consumption, final consumption expenditure or exports according to which sector incurs the expenditure.

6 The first stage in the allocation of FISIM to sectors is to determine the amount of FISIM earned by resident intermediaries payable by borrowers and the amount payable by lenders. In this example it is assumed that borrowers must pay 19 and lenders 29 (total 48). These amounts must be allocated to all institutional units borrowing from and lending to resident financial intermediaries. In this example it is assumed that different rates of interest are applied to different classes of borrowers and lenders since, for example, transactions with the household sector are assumed to be more costly than similar transactions with general government. The value of FISIM earned in relation to interest paid to the rest of the world (20) and interest earned from the rest of the world (3) is taken to be 2 and to relate only to borrowers. The second part of table A.III.1 shows the allocation of FISIM by sectors for both borrowers and lenders.

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7 The third part of table A.III.1 shows interest payable and receivable after FISIM has been deducted from actual payables by borrowers and added to actual receivables by lenders. The amount of interest receivable by resident financial intermediaries is now by definition equal to the amount of interest payable by them. It is this set of interest receivables and payables that appears in the item "interest" in the allocation of primary income account.

8 The value of FISIM produced by resident financial intermediaries represents output (value 48) and that coming from the rest of the world (value 2) represents imports. The total supply of FISIM is thus 50.

9 The FISIM paid by non-resident borrowers (value 3) and lenders (value 1) to resident financial intermediaries represents exports (total value 4). Payments by non-financial corporations (value 18), NPISHs (value 3) and general government (value 6) represent intermediate consumption. In this example no FISIM is consumed by financial intermediaries themselves, though inter-bank lending could give rise to a non-zero allocation of FISIM to financial corporations. Further, it is assumed that no interest paid by households is in respect of their productive activities and so all their consumption of FISIM (value 19) is treated as final consumption expenditure.

10 At this point the total demand for FISIM of 50 balances the supply, but the calculations are not complete. Intermediate consumption of non-financial corporations (18), financial corporations (0) and households (0) subtract from the amount of value added to be calculated. However, because general government and NPISHs are non-market producers whose output is valued at cost, their intermediate consumption increases the value of their output and also the value of their final consumption expenditures by the same amount (3 for NPISHs and 6 for general government). The fourth and last part of table A.III.1 shows the attribution of expenditures arising out of the allocation of FISIM, as follows:

	Allocation of FISIM	**Effects on non-market producers**	**Total**
Output of FISIM	48		48
Output of general government		6	6
Output of NPISHs		3	3
Imports	2		2

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Total supply	**50**	**9**	**59**
Intermediate consumption			
Non-financial corporations	18		18
Financial corporations	0		0
General government	6		6
Households	0		0
NPISHs	3		3
Final consumption expenditure			
General government		6	6
Households	19		19
NPISHs		3	3
Exports	4		4
Total demand	**50**	**9**	**59**

The effects on GDP are as follows:

Output of FISIM	48	**Final consumption expenditure**	
Output of general government	6	- General government	6
Output of NPISHs	3	- Households	19
***less* Intermediate consumption**		- NPISHs	3
Non-financial corporations	18	Exports	4
Financial corporations	0	*less* Imports	2

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General government	6		
Households	0		
NPISHs	3		
GDP	**30**	**GDP**	**30**

4. DATA VALIDATION PROCEDURES

Introduction

97. Data validation is a critical part of the ICP process. Much attention is paid to ensuring that the prices collected are soundly based and consistent. However, less attention has been paid in the past to the national accounts data probably because, in most cases, the estimates of GDP and the broader aggregates are data that are released by the national statistical office and so have an official status. Few further checks were applied provided the basic heading data were consistent with the broader aggregates (i.e. the sum of the basic headings equaled the data for the broader aggregates supplied to the relevant international organization in the annual national accounts questionnaire). In practice, the national accounts data are very useful in checking the price data because, in conjunction, the two datasets provide a first estimate of the real expenditures (and their per capita equivalents) for each basic heading. In particular, the per capita real expenditures can point to problems in the prices or in the national accounts data (sometimes in both).

Editing checks

98. Some simple edits can be applied by each country before the data are provided to the regional office. Basic checks are straightforward to carry out and potentially save both the regional offices and national statistical offices from wasting time in resolving queries that arise as a result of the GDP estimates not being consistent. For example, ensuring that the national accounts aggregates correspond to the latest published version (or that any differences are explicable) is a simple check that should be applied before sending the national accounts data to the regional office. Similarly, making sure that no basic heading values are missing and that the basic heading values add to broader aggregates is a straightforward process that should be undertaken as a matter of course. One other simple edit is to check that all basic headings for which prices have been provided have non-zero expenditures recorded for them.

99. Three major components of GDP can potentially have negative values (changes in inventories, net acquisition of valuables and the balance of exports and imports). It is important to ensure that the correct sign is applied to each of these and that any negative values are correctly deducted when calculating gross capital formation and GDP. The national accounts data collected for these components will not be restricted to each of the net figures above; the basic headings will include opening and closing inventories as well as the change at average 2011 prices, acquisitions of valuables and disposal of valuables, and exports of goods and services and imports of goods and services.

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100. A more complicated procedure is required to check the consistency of the prices and the values for a country. For example, a geometric mean of the prices for each basic heading can be applied to the corresponding expenditure and then the "notional volumes" derived in this way can be checked for their plausibility based on the national accountants' knowledge of their country's economy. Similarly, going a step further and deriving a per capita value of these volumes can also indicate areas that need to be examined closely for possible errors in the values or inconsistencies between the prices and the values. The corresponding data from the 2005 ICP can be used to assist in this process by identifying outliers that have changed significantly more than the average for all basic headings. A spreadsheet has been set up to assist in this process. One of the possible reasons for apparent outliers is that a country may have priced different products in 2011 than in 2005. In such a case, it would be useful to check the consistency of the prices for those products that were priced in both years as well as verifying the accuracy of any 2011 prices for products that were not priced in 2005.

101. Once the data are supplied to the ICP regional offices it becomes possible to compare real expenditures and their per capita equivalents across the countries in each region or for groups of like countries within a region. The attached spreadsheets show the types of analysis that will be undertaken to identify outliers, which will then be queried back to the countries concerned for either an explanation or for the data to be corrected.

102. One of the major problems that will arise in providing national accounts data is that countries do not compile their national accounts in the detail required to readily supply data for all the basic headings specified. Countries will be asked to provide the best estimates they can of the basic heading values. In this process, they will be encouraged to provide the detailed splits using whatever information is available, even if it is not completely consistent with the national accounts. It is important to emphasize that splitting an expenditure category evenly is not satisfactory (e.g. allocating 25% of a class expenditure to each of the four basic headings in that class).

103. The following checklist should be used by countries to ensure that all the basic edits have been applied to their estimates of expenditure on GDP prior to supplying these data to the regional office.

Quick checklist for national accounts data

Edit check	**Yes/No**	**Comments/Explanation**
GDP and its major aggregates are identical to the information supplied in the annual national accounts questionnaire (if "No", please explain any differences)		
All basic heading values have been supplied (please explain the reasons for any valid zero basic headings)		
Basic heading values for each aggregate of GDP sum to the values reported for those major aggregates in the national accounts questionnaire		

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(please explain any discrepancies)		
The correct sign (+ or -) has been assigned to change in inventories when aggregating expenditures to gross capital formation and GDP		
The correct sign (+ or -) has been assigned to net acquisition of valuables when aggregating expenditures to gross capital formation and GDP		
The correct sign (+ or -) has been assigned to the balance of exports and imports when aggregating expenditures to GDP		

Data validation – Regional offices

General

104. Two major phases will be involved in validating national accounts data. The first will be on an individual country basis (referred to as "national validation") while the second will be a regional process that compares the consistency of data from like countries within a region (referred to as "regional validation").

105. The first step in the national validation will be to check that all steps recommended above in the section "Editing checks" have been implemented. The following procedures are involved:

- compare GDP and its major aggregates with data reported to international organizations (United Nations Statistics Division (UNSD), the OECD and Eurostat) in the annual national accounts questionnaire and which are stored in the UNSD data base;
- basic checks such as the sum of components equaling corresponding aggregates and that correct signs have been applied to those components that are potentially negative (inventories, net acquisitions of valuables and net international trade);
- completeness checks, such as all basic headings containing non-zero values;
- check whether FISIM is allocated or not (the 1993 SNA allows for non-allocation of FISIM) but it is a 2011 ICP requirement that it be allocated across intermediate and final uses;
- check whether net expenditures abroad are allocated across products within household final consumption expenditure;
- verify price dynamics from production and imports to final uses for 2011 for all major products;

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- compare average price changes from 2005 to 2011 for each basic heading with overall price changes in the country over this period;

- compute per capita expenditure data in nominal values and at 2005 constant prices for each basic heading.

106. Each country will be asked to provide some economic justification, as detailed as possible, for the changes observed in their data between the 2005 and 2011 calendar years.

Clustering countries with similar economies

107. The regional validation process will involve comparing the data for countries that have similar economies. Each regional office will establish clusters of countries according to economically-based and regionally-agreed criteria. Regional Coordinators will be asked to provide details of the criteria they have used and the rationale for their choice to assist in maintaining consistency across regions. Broadly speaking, there will be various categories of clusters according to the overall economic situation in each country, with GDP per capita being a key indicator of the group to which a country should be allocated.

108. The types of checks to be applied within each cluster of countries are as follows, with outliers being identified on the basis of their standard deviations from the mean:

- comparisons of shares of GDP contributed by each basic heading;

- comparisons of basic heading shares of real expenditures with those in national currency (note that, even though the real expenditures are not additive if compiled using the EKS method, a large variation in their shares compared with those in national currency can indicate underlying problems and so need to be checked);

- comparisons of per capita real expenditures for each basic heading;

- the variations in per capita real expenditures for each basic heading between the countries in each cluster;

- the consistency of PLIs across basic headings within a country;

- the variation of PLIs within basic headings between the countries in each cluster.

FISIM

109. FISIM is a potentially important component. Differences of up to about 3% have been observed in the level of GDP between countries that allocate FISIM and those that do not. For the 2011 ICP, GDP estimates are required which contain FISIM estimates allocated across end uses. One-off adjustments will need to be negotiated between Regional Coordinators and the NSOs in those cases where FISIM is not usually allocated within a country's national accounts.

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Net expenditures abroad

110. Net expenditures abroad should also be allocated to avoid the problem of having a potential negative value and also because a large value of net expenditures abroad could potentially distort the basic heading real expenditures and the PPPs for actual final consumption. Distributing net expenditures abroad has to be based on assumptions. A reasonable starting point for the allocation is that the net value is all tourism related and so the Tourism Satellite Accounts (TSA) framework can be used as the basis for the allocation. The TSA definitions of tourism include both domestic and international tourism and so the allocation needs to be based on those products that are mainly related to international tourism. Each Regional Office should assist their countries in estimating the allocations. The exercise should be reasonably straightforward in those cases where a country has a TSA. However, most countries for which it is necessary to allocate net expenditures abroad will not have a TSA so a series of assumptions is required. The key point is to identify the types of expenditures by international tourists and then allocate the net value expenditure of expenditures abroad proportionally to the domestic expenditure on those products. (Ideally, the two gross flows underlying the net expenditure abroad would be distributed on the basis of the TSAs for each economy but this is not possible due to lack of data so the Global Office recommends that the net value form the basis for the allocation.) A broad range of products should be included so that no individual basic heading can unduly influence the result.

Compliance with 1993 SNA concepts

111. The 1993 SNA is the statistical framework being used for the national accounts in the 2011 ICP because it is the standard that most countries will be using in 2011.

112. To ensure the best possible consistency in the national accounts data being used in the 2011 ICP, all participating countries should either compile their national accounts according to the 1993 SNA standards or adjust their accounts for the major differences between the 1993 SNA and the basis on which their national accounts are compiled. To assist in determining whether or not a country's national accounts comply with the 1993 SNA standard, the Global Office intends to use a set of indicators developed by the Inter-Secretariat Working Group on National Accounts (ISWGNA) in 2001[1].

113. The main basis for the ISWGNA assessment is the extent to which the 1993 SNA concepts, accounting rules and classifications are being used in a country's national accounts. The ISWGNA considered that a quick assessment of compliance with the 1993 SNA could be achieved reasonably by concentrating on the major conceptual differences between the 1993 SNA and the 1968 SNA that affect GDP and gross national income (GNI). Their logic was that, if the majority of these changes have been implemented, then it is likely that other relevant changes introduced in the 1993 SNA have also been introduced. The list of conceptual issues in the following table is not exhaustive; rather, it simply covers some of the key conceptual differences between the 1993 SNA and the 1968 SNA. The ISWGNA emphasized that it is not necessary for all these key concepts to be implemented in order for a country to comply with the 1993 SNA conceptual requirements. However, if a country failed

[1] See "Report of the Task Force on National Accounts" to the thirty-second session of the United Nations Statistical Commission, 6-9 March 2001

to comply with a significant number of them then it could lead to doubts about the extent to which the 1993 SNA has been implemented in practice.

114. The following table, which is available as an Excel spreadsheet, should be completed by each country and returned to the relevant regional office.

Table 1: Compliance with 1993 SNA concepts

Country: _____

Do your country's published national accounts data currently include estimates for the following? (Please place an "X" in the relevant column.)				
	Yes	***No***	***Partly***	***Not significant***
Elements affecting the level of GDP				
Gross capital formation (GCF)/output				
Is government defense expenditure on fixed assets that can be used for civilian purposes included in GCF?				
Is consumption of fixed capital included on all government fixed assets (roads, dams and breakwaters and other forms of construction except structures)?				
Is all mineral exploration (successful and unsuccessful) capitalized?				
Is expenditure on computer software purchases included in GCF and on software development included in output?				
Is expenditure on entertainment, literary or artistic originals included in GCF and on their development included in output?				
Is expenditure on valuables included in GCF?				
1993 SNA extends the production boundary of households to include goods that are not made from primary goods: are these goods included in output?				
1993 SNA extends the production boundary of households to include goods that are processed				

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from primary goods that are not self-produced: are these goods included in output?				
Is expenditure on valuables included in GCF?				
Volume estimates				
Are volumes estimated using a chaining procedure with annually changing weights?				
Social contributions/insurance				
Are unfunded social contributions (for sickness, unemployment, retirement etc.) by enterprises imputed as compensation of employees and included as contributions to private employer-initiated social insurance schemes?				
Rather than be based just on premiums less claims, do non-life insurance estimates include premium supplements?				
Elements affecting GNI				
Are reinvested earnings estimates included in the rest of the world account?				
Are foreign workers' remittances excluded?				
Elements not affecting the level of GDP/GNI				
Final consumption				
Is government final consumption expenditure broken down into individual and collective consumption?				

Rent of owner-occupied dwellings

115. Experience in previous ICP rounds has shown that inconsistencies often arise between the prices reported for dwelling rents and the corresponding values reported in the national accounts. The ideal solution would be for national accountants and prices statisticians to collaborate in producing estimates of imputed expenditures on dwelling rents based on prices that are consistent between the national accounts and the ICP.

116. The methodology underlying the estimates of the imputed rent of owner-occupied dwellings is quite straightforward but data problems often complicate the process. The starting point is data on the stock of owner-occupied dwellings and the stock of rented dwellings, both classified by a number of characteristics of the dwellings (e.g. city/major urban/rural, house/apartment, size, facilities available). Typically such detailed data are

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available infrequently, generally when detailed estimates are obtained from a housing census, which is often conducted in conjunction with a population census. Therefore, benchmark estimates of the rent of owner-occupied dwellings are produced in those years for which detailed data are available and they are then extrapolated using less detailed indicators until the next benchmark year. The rents of owner-occupied dwellings are obtained by applying the market rents recorded for rented dwellings to similar owner-occupied dwellings (i.e. based on their location, type of dwelling, its size and the facilities that are available).

117. The methods used to extrapolate the rents of owner-occupied dwellings depend on the data available. However, a standard type of methodology would be to update the dwelling stock using details about the numbers of new dwellings completed (classified in as much detail as possible), add an adjustment for improvements to dwellings via alterations and additions, and deduct the numbers of dwellings demolished. Updated prices based on changes in the dwelling rent component of the consumer price index between the previous benchmark period and the current year would then be applied to the updated dwelling stock estimates to obtain a value of the rent of owner-occupied dwellings.

118. In some countries the rental market is distorted either by being subsidized or by being dominated by dwellings that are not typical of the general type of dwelling in the country, particularly if the rental property market caters mainly for high income groups, such as expatriates who are living in the country for a relatively short time. In other countries, many houses are constructed from traditional materials (e.g. sunbaked bricks) as opposed to modern materials (e.g. furnace-fired bricks). The classification by location and by facilities should be determined by the extent to which these various factors influence the level of rents and this will vary from one country to another. Equally important is the availability of data. Clearly the matrix cannot be more detailed than the information that is available on the characteristics both of owner-occupied and of rented dwellings.

119. The key point for the ICP is that the prices reported for rents must be consistent with those underlying the values in the national accounts. Any inconsistencies will potentially affect the real expenditures derived using the reported prices. An alternative is to collect quantity information directly and calculate real expenditures from these data. However, any inconsistencies will affect the PPPs for rents of owner-occupied dwellings and flow through into the PPPs for GDP.

120. More details about the treatment of rents of owner-occupied dwellings can be found in paragraphs 34 to 39 in the chapter "The national accounts framework in the ICP".

121. The regional offices will be asked to focus closely on the consistency of prices and real expenditures for rent of owner-occupied dwellings at an early stage in the ICP to enable countries to improve their estimates, particularly the consistency of prices and the national accounts values, where necessary.

Data processing

122. Each Regional Office will be responsible for producing its regional estimates. The World Bank will aggregate the regional results into those for the world as a whole. A key

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issue is to determine the aggregation methods to be used. The ICP's Technical Advisory Group (TAG) is examining the alternatives and will make a recommendation in due course.

5. ESTIMATING 2011 GDP FROM AN EARLIER BENCHMARK

Introduction

123. According to the ICP timetable, national accounts data for 2011 need to be available by July 2012 so they can be incorporated into the final ICP results. Those countries that produce quarterly national accounts should be able to meet this timetable, with data available for all major expenditure aggregates, even though many components will potentially be based on preliminary data. Many basic heading details might have to be estimated by using data relating to years earlier than 2011 to split the major aggregates for 2011.

124. The situation is less clear-cut for those countries that compile only annual national accounts. In many cases, a first set of expenditure-based accounts will be available for 2011, including a number of the major aggregates. On the other hand, the latest set of accounts available in some countries will relate to 2010 or even an earlier year. This section describes some techniques that might be used to update such accounts to 2011.

Possible data availability and methods

125. The methods and source data used in compiling national accounts differ significantly from one country to another depending on the type of statistical system in a country, the extent to which data come from administrative sources or from statistical surveys, and the methods underlying the accounts. It is impossible to describe specific procedures to be followed in extrapolating GDP to 2011 from an earlier year because they will potentially vary considerably from one country to another. Some general principles and ideas are described below. They are not intended to be prescriptive; rather, they should be used as a starting point and adapted to fit each country's specific needs. Key characteristics, though, are that some 2011 data are available for use in the process and that a reasonably stable historical relationship should exist between any indicator series and the corresponding national accounts dataset.

126. A common scenario is for a country to regularly compile annual production-based measures of GDP but expenditure-based estimates are available infrequently, or they may even be produced specifically for the ICP. In such a case, the starting point for estimating expenditures on GDP for 2011 is the production-based estimates. Unless some specific problems have arisen in the past with large and consistent discrepancies between the production-based and expenditure-based estimates of GDP, the 2011 level of expenditure GDP can be assumed to be equal to that measured from the production side of the accounts. A number of methods can then be used to allocate GDP to basic headings. The simplest would be to prorate the level of GDP according to the basic heading distribution from the 2005 ICP, if available. However, this procedure would be an absolute last resort because it is probable that the distribution would have changed over the intervening years, even if it was reasonably accurate in 2005, which would probably be a dubious assumption for a country that does not regularly compile annual estimates of expenditure on GDP.

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127. The Global Office encourages countries to develop improved procedures to allocate expenditures to basic headings. Commodity-flow techniques and supply-use tables are important tools, both of which have been described in an earlier part of this chapter. Even if details for only a small number of components of expenditure on GDP are obtained systematically, they will assist by providing a firmer starting point for those components than would otherwise have been the case. It is inevitable that data will have to be used from sources that are not consistent with the national accounts. However, such datasets, combined with the experience and knowledge of the national accountants, can be invaluable in calculating the detailed splits required for the ICP. (A list of possible data sources for these purposes is provided in paragraph 81.)

128. Another potential scenario is that expenditure-based estimates of GDP are available on a regular basis but there is a considerable lag in producing them and they have not yet been updated to 2011. It is necessary to develop some means of systematically updating as many components of the accounts as possible. Economic indicators tend to become available at different times depending on their source. For example, administrative data based on VAT or a similar type of sales tax are generally available shortly after the period to which they relate. Similarly, merchandise trade data are often released fairly quickly after the reference period. On the other hand, income tax data can take several years to be finalized because of the lags involved in the income taxes themselves being processed before the statistics can be produced. In between extremes like these are statistical surveys, where the delay in data becoming available depends on the amount of time required to process the results which is affected by factors such as the nature of the survey, the quality of the returns from businesses, the extent to which queries are required as a result of editing and the efficiency of the survey procedures and processing systems.

129. It is clear that not all aggregates can be updated otherwise the expenditure-based national accounts themselves would be available. Data availability will dictate the aggregates that can be systematically updated, either partially or wholly. For example, data on exports and imports of goods may be available for the latest year but there is nothing on services. A process that could be adopted would be to calculate the estimates of exports and imports of goods and then examine the past relationships between goods and services for each of exports and imports. For example, do services change from year to year at a fairly steady rate? In the past, have their levels been proportional to those for the corresponding goods estimates? Can some parts of services be estimated using other data sources (e.g. can the travel components of services be estimated using data on the numbers of tourist arrivals and departures)? Similarly, if there is no (or only a little) domestic production of investment equipment, then the commodity-flow approach could be used to obtain estimates of gross fixed capital formation on machinery and equipment. Gross fixed capital formation on buildings may be estimated by using data from administrative processes. For example, is there a building approvals system that covers the whole country (or at least all major cities)? If so, can past relationships between building approvals and gross fixed capital formation on buildings (preferably split between residential and non-residential) be used to estimate the gross fixed capital formation on buildings? Is there any information on the number (and value) of buildings that have received final approval for occupancy?

130. Household final consumption expenditure is by far the largest single aggregate in GDP in most countries so it would be useful to estimate at least some significant parts of it.

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Because of its importance as a driver of an economy, it is possible that the government agency responsible for economic policy produces forecasts that could be used as an indicator of expenditure levels. In some cases, private agencies (such as ratings agencies) may also produce forecasts of different aspects of economic activity, as could international organizations such as the International Monetary Fund.

131. Another potential means of estimating the level of household final consumption expenditure (or at least some large parts of it) is credit cards. If data are available on purchases made using credit cards then examining the history of changes in the value of credit card transactions against those in a group of the relevant components of household final consumption expenditure could determine whether it is possible to use them to update those components. Are any retail sales data or VAT data available? Can they be used to provide an indication of either levels or changes in the relevant components of household final consumption expenditure? Do major retailers belong to an industry group that periodically publishes details (e.g. via press releases) about the levels of, or changes in, sales by its members? Are many of the non-food consumer goods imported and, if so, can commodity-flow techniques be used to estimate the relevant components of household final consumption expenditure?

132. In many cases, production data become available earlier than expenditure data because the nature of the country's economy lends itself more readily to collecting data on production rather than on final expenditures. The question that then needs to be asked is whether sufficient production data are available to enable a reasonable estimate of GDP to be computed for use as a benchmark.

Conclusion

133. There are many potential sources of data that could assist in producing 2011 estimates of various parts of expenditure on GDP. They will vary from one country to another and so decisions have to be made by the national accountants in each country as to the best data sources to use and the best procedures to follow.

6. SUPPORTING NATIONAL ACCOUNTS ACTIVITIES IN THE 2011 ICP

Introduction

134. For the 2011 ICP, a much larger role is envisaged for national accounts experts in participating countries than was the case in the 2005 round. Chart 1 lists 17 "national accounts activities" and many of these are new activities compared with the 2005 round of the ICP. In this section we introduce six reporting forms that will support these activities. They are designed to assist the national accounts experts in their own work and to help the ICP Regional and Global Managers to better understand the data sources and methodologies underlying country estimates of final expenditures.

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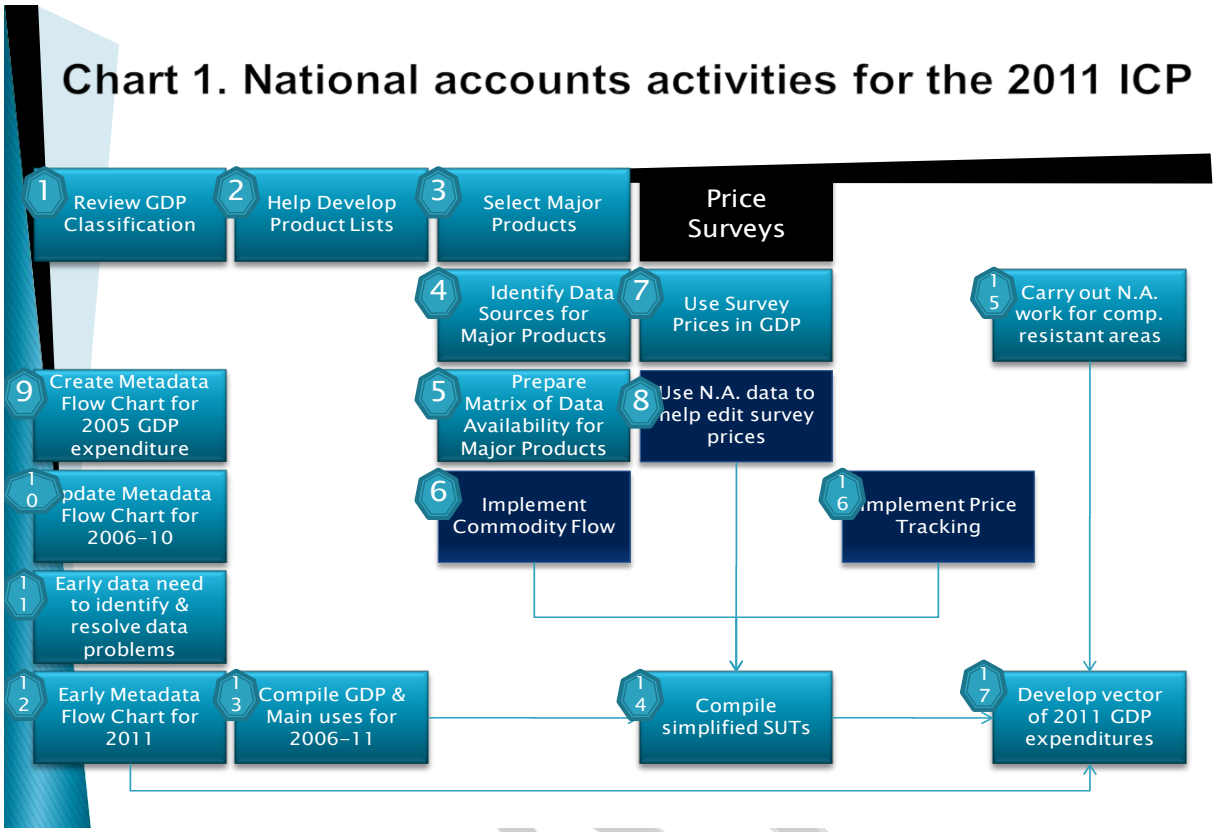

135. All countries will be asked to review their national accounts data for the ICP against the following aspects so that the Regional Coordinators can assess the implications for their respective regions and then provide advice to individual countries on the best way to progress on improving their national accounts under the framework provided by the 1993 SNA. Generally speaking, regions can split their countries into clusters depending on the quality of their national accounts. The grouping should discriminate between those that have a proven, sound and timely system for compiling national accounts and so which should be able to provide the detailed expenditure splits at the basic heading level with little external support being required, and those that are likely to require extensive assistance to produce such estimates.

136. Separate details will be required for NPISHs final consumption expenditure (which is combined with relevant categories of household final consumption expenditure in many countries' national accounts).

137. National accountants will be required to:

i. identify all major products or, if no major products are specified for a country within a particular basic heading, identify the most representative products from the list of products to be priced under each basic heading;

ii. be fully aware of what prices statisticians will do when developing product lists

– to assist in developing product lists, national accountants should identify the most representative products in each basic heading in the national accounts,

particularly establishing which products are particularly relevant for the national accounts so that the most important products within each country can be assessed for potential inclusion in the regional product list;

- national accountants should also use ICP survey prices and collect data and other types of information deemed useful for all/major products in the country's product lists to include them in the compilation/validation of their GDP data;
- conversely, national accounts data available prior to ICP price surveys will be properly documented and utilized to assist in editing survey prices;

iii. conduct early data collection for 2009 GDP estimates [provisional], 2010 [estimate] and 2011 [forecast] that will enable data problems to be resolved before the final data collection for the 2011 reference year;

iv. identify data sources that could be used to obtain detailed information for all products in the product lists or at least each major product, in terms of values, quantities and prices; sources could include statistics on imports, production, household consumption and other expenditures as underlined in the next section;

v. prepare a matrix of data availability for all products in the product lists or at least for each major product, which will include proposed methods for forecasting to 2011 if data are available only for earlier years;

- details of products will be contained in the rows while the columns will show the type of data available to provide product details that can be used to provide the best possible price information for each basic heading;

vi. implement the commodity-flow approach (supply and use of products via production, imports, final consumption, capital formation and exports) for all major products under each basic heading; at this level of detail, it is inevitable the approach will have to be implemented roughly because of the lack of reliable basic information;

vii. implement a price monitoring system for each product in the lists of products to be priced in the ICP surveys (household consumption products, construction materials, machinery and equipment) showing the price dynamics from imports and production to final uses;

viii. carry out activities aimed at determining prices/costs and expenditures for comparison resistant areas; public and private health services; public and private education services; compensation of employees; housing; NPISHs; construction; equipment;

ix. create a map, a flowchart or a table showing linkages between input data, data sources, vintage of data, estimation methods and GDP expenditure values used in 2005;

x. update the metadata flowchart for each subsequent benchmark year (2006, 2007, 2008 and 2009) for which the country will have updated its GDP expenditure values;

xi. create a new metadata flowchart for 2011;

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xii. compile estimates/forecasts for GDP expenditures and main aggregates for 2006, 2007, 2008, 2009, 2010 and 2011;

xiii. compile simplified supply-use tables (SUT) at a reasonable classification level;

xiv. update the vector of GDP breakdown for the reference year 2011, building on the steps above.

138. A number of different reporting forms have been developed to assist in undertaking the above tasks.

7. REPORTING FORMS

Estimation of basic heading expenditures for the 2005 ICP

139. The first reporting form (Table 2) refers to the expenditure estimates that were supplied by countries that participated in the 2005 ICP. These countries are asked to describe the sources for these estimates and how data from the original source were adjusted to update them to 2005 or to correct them for coverage shortcomings or differences in definitions. In many cases, countries may have used rather simple methods to estimate expenditures on some basic headings. For example:

- they may have had only a single figure for expenditure on two or more basic headings and they decided to split that figure equally between them;
- they perhaps had an estimate of expenditure on a basic heading from a survey carried out several years ago and they may have updated the estimate to 2005 using the population growth rate;
- another simple method used by some countries was to "borrow" an estimate or a ratio from a neighboring country.

140. It is important that countries fully describe their methodology even if it consisted of a simple method of the kind described above.

141. Tables 3 through 7 are more detailed than Table 2. This table asked only for information about basic headings, but in Tables 3 through 7 countries are asked to provide information about products within basic headings. Specifically they ask national accounts experts to identify which are the important products under each basic heading and to provide estimates of the prices, quantities and expenditures for these items. Important products are those which either account for at least 0.5% of GDP or which are very commonly bought even though they may not be so important in terms of total GDP. For these "important products" it is clearly essential that accurate expenditures and prices are reported for calculating PPPs. Equally important, however, these same prices and expenditures should be used in calculating GDP. The main purpose of the ICP is to generate comparable estimates of total and per capita GDP and this purpose will be defeated if one set of prices and expenditures is used to calculate PPPs but a different set is used in calculating the components of GDP.

142. Table 7 differs from the others because it is to be completed by the regional offices rather than by participating countries. It will be used as a quality control check by comparing

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per capita expenditures on basic headings from the 2011 ICP with those that were calculated for the 2005 ICP.

Table 2: Estimation of basic heading expenditures for the 2005 ICP

143. The purpose of this table is to establish how expenditures on basic headings were estimated for the 2005 ICP. It covers all the basic headings listed in the ICP Expenditure Classification. The following explanatory notes are provided to assist in completing the details required in this table. (Note: The World Bank will fill in column 8 for each country.)

144. A small part of the table is shown here so that the explanatory notes can be seen in context. The full table will be provided in an Excel file by the Global Office for countries to complete. If it is necessary to describe multiple data sources then the text entered into the cells in this Excel file will wrap around to provide as much space as is required.

Explanatory notes for Table 2

Column 1 lists the basic headings (and their codes) of the ICP Expenditure Classification used for the 2011 ICP.

Details of the data provided for the 2005 ICP that came directly from the regular national accounts estimates should be shown in **Column 2**. For example, the national accounts may have details available on the value of total purchases of vehicles and also the value of purchases of motor cars, but not any of the other three components (motor cycles, bicycles and animal drawn vehicles). In this case, the value of total purchases of vehicles would be entered in column 2 in the row for item "110710 Purchase of vehicles" while the value for purchases of motor cars would be entered in column 2 in the row for item "1107111 Motor cars". Details for the remaining three items ("1107121 Motor cycles", 1107131 Bicycles" and "1107141 Animal drawn vehicles") would be entered into columns 3 to 8, describing the data sources used to derive the splits for these three items and the adjustments made in arriving at the value shown in column 8, which was the expenditure reported by your country for the 2005 ICP.

The primary source, or sources, used should be provided in **column 3**. Both the name of the source (e.g. "Agricultural Census 2003") and the actual data series taken from that source (e.g. "total production of maize") should be provided here. In some cases more than one source will need to be mentioned for a given basic heading. For example, expenditure data for basic heading "1103121 Garments" may have been based on a combination of manufacturing survey statistics, import and export statistics and household expenditure surveys.

Column 4 asks for the reference year of the sources listed in column 3. This may be 2005 but will often be an earlier year.

In **column 5** countries should enter the estimated expenditure on each basic heading obtained from the sources listed in column 2.

Column 6 shows the total amount of any adjustments that were made to obtain the expenditures reported in column 8.

In **column 7**, countries should provide a brief explanation of the adjustment shown in column 6. These adjustments may have been made because an estimate for an earlier year had to be extrapolated to 2005. Adjustments may also have been made to correct the coverage or definitions used for the figure reported in column 5.

Column 8 contains the final expenditures, in national currency, as reported by each country for the 2005 ICP.

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Table 2: Estimation of basic heading expenditures for the 2005 ICP

NOTE: The basic headings are shown in grey highlight.

(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)
Basic headings		National accounts data	Original data source used to estimate expenditure for this basic heading		Adjustments from original data source to obtain expenditure for 2005			Expenditure reported for ICP 2005
Code	**Description**		Data source	Year of data source	Estimated expenditure in year of data source	Adjustments made to data from original data source	Brief explanation of adjustments	
100000	**GROSS DOMESTIC PRODUCT**							
110000	**INDIVIDUAL CONSUMPTION EXPENDITURE BY HOUSEHOLDS**							
110100	**Food and non-alcoholic beverages**							
110110	***Food***							
110111	*Bread and cereals*							

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1101111	Rice							
1101112	Other cereals, flour and other cereal products							
1101113	Bread							
1101114	Other bakery products							
1101115	Pasta products							
……								
……								
110700	**Transport**							
110710	*Purchase of vehicles*							
1107111	Motor cars							
1107121	Motor cycles							

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1107131	Bicycles							
1107141	Animal drawn vehicles							
……								
……								
170000	**BALANCE OF EXPORTS AND IMPORTS**							
170100	**Balance of exports and imports**							
1701111	Exports of goods and services							
1701112	Imports of goods and services							

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Table 3: Prices, quantities and values of important products.

145. This table serves three purposes:

- It identifies the goods and services that are particularly important in each country. The aim is to ensure that, as far as possible, these items are included in the product lists that will be drawn up for each region.
- Respondents are asked to estimate the quantities, prices and total expenditure for these products. These may be only approximate figures but they can help to assess the importance of the estimates and the plausibility of the data. Do the estimates of quantities sold and total expenditures seem reasonable? If they seem much higher or lower than expected, the prices, quantities or expenditures may need to be revised.
- The price, quantity and expenditure estimates in this table should be used to improve estimates of final expenditure on GDP. The expenditure estimates only refer to the most important products in each country and will need to be supplemented by estimates for less important products. This is described as a "bottom-up" approach in which the main aggregates are built up using the most detailed information available. The bottom-up approach is always preferable to a "top-down" method in which some main expenditure aggregates are derived in total as residuals.

146. The following table outline shows details of the type of information required, using a handful of basic headings as examples. The full table will be provided in an Excel file by the Global Office for countries to complete.

Explanatory notes for Table 3

Column 1 lists the basic headings (and their codes) of the ICP Expenditure Classification expected to be used for the 2011 ICP, together with the products likely to be included in the lists of products for pricing within each basic heading. The basic headings are highlighted in grey to distinguish them from the higher levels of the expenditure classification, while the products are highlighted in blue.

There is a category at the end of the list of products in each basic heading titled "Other important products (please specify)", including in those basic headings for which no products have been defined as yet. Details of the important products in these cases that are considered to be important in a particular country and which could potentially be included in the product lists should be provided in column 3 in the Excel spreadsheet. The spreadsheet has been set up so that each cell in column 3 will expand to cater for detailed descriptions.

In **column 2** "YES" indicates that the product is considered to be an important one for a particular country and "NO" that it is not. An important product is one that that accounts for at least 0.5% of final expenditure on GDP **or** one that is very commonly

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sold within a given basic heading even if it only accounts for a smaller part of total GDP (i.e. less than 0.5%).

Column 3 contains the average annual price of each product that has been identified in column 2 as being important in a particular country. This price should be the national annual average price, i.e. it is averaged both over all the months or quarters of the year and across all the towns or villages where prices are collected.

Column 4 gives the quantities of each important product sold in the year. Some countries may have difficulty in finding this quantity information. Possible sources are censuses of agriculture or industry and merchandise import statistics. In some cases it may be necessary to derive the quantity estimate by dividing prices into the estimated total expenditure on the product – i.e. column 5/column 3. Quantities derived in this way should be reviewed for their plausibility. If the quantity appears to be much higher or lower than expected, it may be necessary to revise the price or expenditure estimates.

Column 5 should be equal to the product of columns 4 and 5 (price times quantity) for each product, even though it is not necessarily obtained in this way. In many cases information will only be available on total expenditure on the product from a household expenditure survey or similar source.

The values shown in column 5 may account for a large part of total expenditure on the basic heading concerned but if it is greater than the total basic heading expenditure then one or other of these values must be wrong and will need to be revised.

Total expenditure on each basic heading and the prices of one or more products in each basic heading were collected in the course of the 2005 ICP. These data can be used as a starting point for completing this table but they will need to be updated using detailed price indices, population growth rates, or other sources such as broad-level price indices.

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Table 3: Prices, quantities and values of important products

NOTE: The basic headings are shown in grey highlight and the products in blue highlight.

(1)		(2)	(3)	(4)	(5)
Code	**Basic heading and product description**	Is this product an **important product** in your country? Answer YES or NO	For important products give the average national, annual price in national currency for the latest year available and briefly describe the products (type, variety, seasonal availability, size, packaging, brand name (if applicable), and pricing basis)	Quantity in latest year available (specify units and the year)	Value of expenditure in national currency for latest year available (specify year)
110000	**INDIVIDUAL CONSUMPTION EXPENDITURE BY HOUSEHOLDS**				
110100	**Food and non-alcoholic beverages**				
110110	***Food***				
110111	*Bread and cereals*				
1101111	Rice				
110111101	Long grain rice				

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1101111 02	White rice, 25% broken
1101111 03	White rice, broken
1101111 04	Basmati rice
1101111 05	Brown rice
	Other important products (please specify)
……	
……	
……	
110300	**Clothing and footwear**
110310	***Clothing***
1103111	Clothing materials, other articles of clothing and clothing accessories
1103111	Material 100% cotton

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01	
1103111 02	Material 100% viscose
1103111 03	Material 100% polyester
1103111 04	Zipper
	Other important products (please specify)
……	
……	
……	
110800	**Communication**
1108111	Postal services
1108111 01	Postage of a letter, domestic
1108111 02	Postage of a letter, international

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	Other important products (please specify)
1108211	Telephone and telefax equipment
1108311	Telephone and telefax services
110831101	Basic fee, fixed telephone line, monthly
110831102	Telephone call, local, evening
110831103	Telephone call, international, weekday
110831104	GSM call to GSM mobile phone (between providers)
	Other important products (please specify)
……	
……	
……	

Table 4: Data sources available for prices, quantities and expenditures for important products

147. Table4 records the main sources that are available for estimating the prices, quantities and expenditures for the important products that were identified in Table 3. In many countries these sources will not refer to the latest year and this table also asks countries to indicate how they will update estimates that relate to earlier years.

148. The following table outline shows details of the type of information required, using a handful of basic headings together with examples of the types of details that are required in this table. The full table will be provided in an Excel file by the Global Office for countries to complete.

Explanatory notes for Table 4

Column 1 lists the basic headings in the **ICP Expenditure Classification**, together with the products specified for pricing under each basic heading. It includes the descriptions of the important products that were identified in Table 3 under each basic heading (those not listed there as being important should be shown in ~~strikethrough~~). It includes products from the regional list and other products that were not included in the list but which were identified in Table 3 as important products in your country (in the product category "Other important products (please specify)").

Columns 2 to 4 describe the data sources that are available for estimating prices, quantities and expenditures. The entries in italics in these columns in the table below are examples of the kinds of information that could be used. Note that you should identify the series used and not only the name of the data source. Paragraph 81 of this chapter suggests some of the kinds of data sources that may be useful.

Column 5 requests information about how data referring to an earlier year will be updated. Prices, quantities and expenditure values may all need to be updated for some products.

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Table4: Data Sources for prices, quantities and expenditures for important products

(1)		(2)	(3)	(4)	(5)
Code	**Basic heading and product description**	Description of data sources			Indicators used to extrapolate forward from latest benchmark
		Average national, annual price	Quantity	Value in national currency	
110000	**INDIVIDUAL CONSUMPTION EXPENDITURE BY HOUSEHOLDS**				
110100	**Food and non-alcoholic beverages**				
110110	***Food***				
110111	*Bread and cereals*				
1101111	Rice				
11011111	Long grain rice	*Consumer price index for long grain rice*	*2004 Agriculture census and merchandise trade statistics: total quantities produced minus quantities exported*	*Annual household expenditure survey: expenditure on long grain rice*	*Population growth rate used to extrapolate quantities*
~~1101111~~	~~White rice, 25% broken~~				

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~~02~~					
~~1101111 03~~	~~White rice, broken~~				
1101111 04	Basmati rice	*Price of basmati rice from the 2005 ICP*	*2005 Industrial census: total domestic sales*	*Product of columns (2) and (3)*	*Population growth rate used to extrapolate quantities, and CPI average price for rice used to extrapolate price from 2005 ICP*
~~1101111 05~~	~~Brown rice~~				
	~~Other important products (please specify)~~				
……					
……					
……					
110720	***Operation of personal transport equipment***				

1107221	Fuels and lubricants for personal transport equipment				
1107221 01	Petrol	*Consumer price index for unleaded petrol*	*Column (4) divided by column (2)*	*Annual household expenditure survey (2009): expenditure on unleaded petrol*	*Quantity updated by number of new cars registered; price from CPI for unleaded petrol*
~~1107221 02~~	~~Petrol, Super~~				
~~1107221 03~~	~~Petrol, Superplus~~				
~~1107221 04~~	~~Diesel fuel~~				
	~~Other important products (please specify)~~				
……					
……					
……					
150000	**EXPENDITURE ON GROSS FIXED**				

	CAPITAL FORMATION				
150100	**Machinery and equipment**				
150110	***Metal products and equipment***				
1501111	Fabricated metal products, except machinery and equipment				
	~~Other important products (please specify)~~				
1501121	General purpose machinery				
	Other important products (please specify) Woodworking lathe	*Price for lathe from 2005 ICP*	*Annual census of manufacturing*		*Price from 2005 ICP updated using producer price index*
1501131	Special purpose machinery				
	~~Other important products (please specify)~~				
……					
……					
……					

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Tables 5a to 5d: Price formation for domestically-produced and imported goods

149. Tables 5a to 5d request more details about the products identified in Table 3 as **important products**. Tables 5a and 5b refer to the important products in Household final consumption expenditure, with Table 5a relating to the domestically-produced goods and Table 5b to the imported goods. Tables 5c and 5d refer to the important products in Gross fixed capital formation on machinery and equipment, with Table 5c relating to the domestically-produced goods and Table 5d to the imported goods. Separate tables should be completed for each product that has been identified as an important product in Table 3 and for which purchasers' prices had to be estimated from either basic prices or producers' prices, rather than being directly available on the correct basis (i.e. purchasers' prices).

150. Multiple copies of all four tables are available as Excel workbooks. A separate table should be completed for each product. In each case, the first part (in columns A, B and C) is for domestically-produced goods while the second part (in columns E, F and G) is for imported goods.

Explanatory notes for Tables 5a to 5d

The **ex-factory price** or the **farm-gate price** is the basic price of the good at the establishment of the producer (e.g. manufacturer or farmer). The 1993 SNA (paragraph 6.205) defines the **basic price** as the amount receivable by the producer from the purchaser for a unit of a good or service produced as output minus any tax payable, and plus any subsidy receivable, on that unit as a consequence of its production or sale. It excludes any transport charges invoiced separately by the producer. The value of a product valued at basic prices includes the costs of the labor and intermediate inputs and the value of gross operating surplus and general taxes that are not levied on a specific product (such as payroll taxes and income taxes).

In paragraph 7.62, the 1993 SNA defines a **tax on a product** as a tax that is payable per unit of some good or service. The SNA goes on to say that such a tax may be a specific amount of money per unit of quantity of a good or service (the quantity units being measured either in terms of discrete units or continuous physical variables such as volume, weight, strength, distance, time, etc.), or it may be calculated ad valorem as a specified percentage of the price per unit or value of the goods or services transacted. It is important to distinguish a tax on a product (e.g. excise taxes and sales taxes) from other taxes (such as income tax or payroll tax) because a tax on a product directly affects the price of that product and its effect has to be estimated in adjusting from basic prices to producers' prices and purchasers' prices.

The 1993 SNA explains that **value added tax (VAT)** is a tax on products collected in stages by enterprises. Details about VAT, including the definitions of deductible VAT and non-deductible VAT, are provided in paragraphs 158 to 167 of chapter "The national accounts framework in the ICP".

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The **c.i.f. unit value** is obtained by dividing the c.i.f. value of imports by the quantity imported. It is called a "unit value" rather than a "price" because the product is usually defined rather broadly and so generally consists of similar, but not identical, products. For example, in the case of rice, it may only be possible to calculate an import unit value for "rice imported in bulk" without any detail about the type of rice – brown, white, long-grain, glutinous, etc.

The **transport margins** refer to the costs of moving the goods from the producer's establishment (e.g. the factory or farm) to the retail outlet or to the establishment of the purchaser.

Installation costs are low or zero for most types of transport equipment but may be quite high for products in Gross fixed capital formation on machinery and equipment that are installed in a fixed position in a producer's establishment. Examples include machine tools, dies, vats, motors, generators, centrifuges, and material handling and lifting equipment. Their installation usually requires some building work and connecting the equipment to power supplies, water, and exhaust outlets. The producers of these types of equipment can often provide information on the installation work involved and the length of time it may take.

The **purchaser's price,** sometimes called the market price, is equal to the basic price *plus* trade and transport margins and taxes on products. It is the price that the final consumer pays in order to take ownership of the good. In the case of Gross fixed capital formation on machinery and equipment, the purchasers' price includes any "installation costs" that may be required so that the machine or piece of equipment is in place and functioning correctly in the purchaser's establishment.

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Table 5a: Price formation for domestically-produced goods for Household final consumption expenditure

Important products (domestically-produced)		
Year to which data relate: 20 _ _		
Basic heading to which the important product relates (copy from Table 3): Basic heading code: _____ Basic heading description: _____ ____ Product description: _____ ____		
	Show percentage applied (where applicable)	**Price** (national currency)
Basic price		
plus Taxes on products excluding invoiced VAT	%	
less Subsidies on products	%	
equals **Producers' price**		
plus VAT not deductible by the purchaser	%	
plus Separately invoiced transport charges	%	
plus Wholesalers' margins	%	
plus Retailers' margins	%	
equals **Purchasers' price**		

Table 5b: Price formation for imported goods for Household final consumption expenditure

Important products (imported)

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Year to which data relate: 20 _ _		
Basic heading to which the important product relates (copy from Table 3): Basic heading code: _____ Basic heading description: _____ ____ Product description: _____ ____		
	Show percentage applied (where applicable)	**Price** (national currency)
C.i.f. unit value (i.e. Basic price)		
plus Customs duties	%	
plus Other taxes on products excluding invoiced VAT	%	
less Subsidies on products	%	
equals **Producers' price**		
plus VAT not deductible by the purchaser	%	
plus Separately invoiced transport charges	%	
plus Wholesalers' margins	%	
plus Retailers' margins	%	
equals **Purchasers' price**		

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Table 5c: Price formation for domestically-produced goods for Gross fixed capital formation on machinery and equipment

Important products (domestically-produced)		
Year to which data relate: 20 _ _		
Basic heading to which the important product relates (copy from Table 3): Basic heading code: _____ Basic heading description: _____ ____ Product description: _____ ____		
	Show percentage applied (where applicable)	**Price** (national currency)
Ex-factory price (i.e. Basic price)		
plus Taxes on products excluding invoiced VAT	%	
less Subsidies on products	%	
equals **Producers' price**		
plus VAT not deductible by the purchaser	%	
plus Separately invoiced transport charges	%	
plus Wholesalers' margins	%	
plus Retailers' margins	%	
plus Installation costs	%	
equals **Purchasers' price**		

Table 5d: Price formation for imported goods for Gross fixed capital formation on machinery and equipment

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Important products (imported)		
Year to which data relate: 20 _ _		
Basic heading to which the important product relates (copy from Table 3): Basic heading code: _____ Basic heading description: _____ ____ Product description: _____ ____		
	Show percentage applied (where applicable)	**Price** (national currency)
C.i.f. unit value (=Basic price)		
plus Customs duties	%	
plus Other taxes on products excluding invoiced VAT	%	
less Subsidies on products	%	
equals **Producers' price**		
plus VAT not deductible by the purchaser	%	
plus Separately invoiced transport charges	%	
plus Wholesalers' margins	%	
plus Retailers' margins	%	
plus Installation costs	%	
equals **Purchasers' price**		

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Table 6: Commodity flow table for important products

151. Table 6 is a commodity flow matrix showing how the total supply of important products (the sum of columns 2 to 5 and shown in column 6) is distributed among intermediate and final uses (columns 7 to 12). The sum of total supply at purchasers' (or "market") prices should be the same as the sum of intermediate and final uses at purchasers' prices. The layout of the table is shown below.

152. If this table were completed for all products, GDP could be derived either as total supply less intermediate consumption (i.e. column 6 minus column 7) or as total final expenditures plus net exports of goods and services (i.e. the sum of columns 8 through 12 minus column 3).

153. The full table will be provided in an Excel file by the Global Office for countries to complete. It should be completed only for those products identified as being important products in your country (in Table 3).

Explanatory notes for Table 6

Column 1 should contain details of each basic heading (code and description) to which an important product relates and also the description of each product that was identified as "important" in Table 3.

Under the Uses part of the table, there is no column for final consumption expenditure by Non-profit institutions serving households (NPISHs) because most countries include these expenditures as part of Household final consumption expenditures. If NPISH expenditures are available separately in your country then you will need to add them into household final consumption expenditure when completing this table.

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Table 6: SUPPLY AND USE OF IMPORTANT GOODS

Year to which data relate: 20 _ _

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Basic heading and Product	**Supply of important goods**				*EQUALS* **Total Supply and Use at purchasers' prices**	**Uses of important goods**					
	Domestic production at basic prices	*plus* **Imports at c.i.f. values**	*plus* **Trade and transport margins**	*plus* **Taxes on products (including customs duties and non-deductible VAT**		**Intermediate consumption**	*plus* **Household final consumption expenditure**	*plus* **Government final consumption expenditure**	*plus* **Gross fixed capital formation**	*plus* **Increase in inventories and Acquisition less disposal of valuables**	*plus* **Exports at f.o.b. values**
……											
……											
……											
……											

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Table 7: Per capita "notional volumes" of expenditures on basic headings

154. This table is completed by the regional offices. Its purpose is to provide some basic edits by comparing the per capita notional volumes in 2011 with those from the 2005 ICP. The notional volumes are obtained by first calculating a "price" for a basic heading as the geometric mean of the prices provided by your country for products listed under that basic heading. Basic heading "prices" are then divided into reported expenditures to obtain the basic heading notional volumes. The final step is to obtain per capita notional volumes for 2005 and 2011 by dividing the notional volumes by the population estimates for each of those two years.

Explanatory notes for Table 7

All basic headings are listed in the spreadsheet in **column 1**.

Column 2 contains the expenditures in national currency on each basic heading in 2005.

Column 3 is the geometric mean of the 2005 prices of the products priced under each basic heading.

Column 4 contains the "notional volume" of expenditures obtained by dividing the expenditures by the geometric mean of the prices within each basic heading (i.e. column 2 divided by column 3).

Column 5 is the "notional volume" of expenditures per capita and is obtained by dividing the notional volumes (column 4) by the 2005 population.

Column 6 contains the expenditures in national currency on each basic heading in 2011.

Column 7 is the geometric mean of the 2011 prices of the products priced under each basic heading. (Note that the "price" for 2011 may be calculated from a different set of products than that used for 2005.)

Column 8 contains the "notional volume" of expenditures obtained by dividing the expenditures by the geometric mean of the prices within each basic heading (i.e. column 6 divided by column 7).

Column 9 is the "notional volume" of expenditures per capita and is obtained by dividing the notional volumes (column 4) by the 2005 population.

Column 10 is the percentage change in the per capita notional volume of expenditure on each basic heading between 2005 and 2011.

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Table 7: Per capita notional volumes (by basic heading)

Country: _____

Population in 2005: _____

Population in 2011: _____

National currency: _____

NOTE: The basic headings are shown in grey highlight.

(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
BASIC HEADINGS		2005 ICP data				2011 ICP data				% change in notional volumes per capita from 2005 to 2011
Code	**Description**	Expenditure in national currency	Average "price"	Notional volume	Notional volume per capita	Expenditure in national currency	Average "price"	Notional volume	Notional volume per capita	
100000	**GROSS DOMESTIC PRODUCT**									
110000	**INDIVIDUAL CONSUMPTION EXPENDITURE BY HOUSEHOLDS**									
110100	**Food and non-alcoholic beverages**									
110110	***Food***									
110111	*Bread and cereals*									

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1101111	Rice									
1101112	Other cereals, flour and other cereal products									
1101113	Bread									
1101114	Other bakery products									
1101115	Pasta products									
……										
……										
170000	**BALANCE OF EXPORTS AND IMPORTS**									
170100	**Balance of exports and imports**									
1701111	Exports of goods and services									
1701112	Imports of goods and services									

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