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Compiling GDP by final expenditure

An operational guide using commodity flow approach

Vu Quang Viet

Background paper

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Introduction

1. Commodity flow method provides a systematic and consistent frame for the estimation of GDP by final expenditures. Essentially, it is a simple form of the supply and use tables but requires much less up-to-date information. This is in contrast with the supply and use tables which require full information on the supply of products which come from both domestic production and imports and on the uses of products for their own production (i.e. intermediate consumption), final consumption, gross capital formation and exports.

2. The supply and use tables are an integrated framework and therefore allow for the full use of information in national accounts compilation. Data from various sources on the supply and uses of every product in the economy for each accounting period can be entered, evaluated, and adjusted until its total supply is equal to its uses. Unfortunately, very few countries can afford to construct the supply and use tables every time production accounts are prepared, even annually. This document will hopefully provide a short-cut commodity flow method to be used when the supply and use tables are not available. Even in the case that the benchmark supply and use tables are available; countries still have to resort to the commodity flow method, particularly for annual and quarterly accounts.

3. Part A will discuss the valuation system in the SNA, which is the foundation for the commodity flow approach in particular and in national accounting in general.

4. Part B will discuss the supply and use tables in the form that reflect the actual prices at which transactions take place, where outputs are at basic prices (the prices received by the producers) but consumption is at the purchasers' prices that the consumers actually pay for. The commodity flow approach based on the supply and use tables requires a bridge between basic prices and purchasers' prices. This bridge is made up of trade, transport margins and taxes on products. After building this bridge, the method to compile GDP by final expenditures is basically to bring and reconcile actual data collected by surveys, estimates of components of final expenditures by using growth indicators for extrapolation or benchmark coefficients, and allocation of domestic products and imports to the

appropriate consumption categories. Readers should consult Chapter IV in the document *GDP by Production Approach: A General Introduction with Emphasis on an Integrated Economic Data Collection Framework*[1] for the concepts and definitional boundary of activities and products used in GDP by final demand approach. Part D will also discuss the use of commodity flow method to compile GDP by final expenditure at annual and quarterly frequency when limited data is available.

5. Part C will focus on how to estimate trade and transport margins and also taxes on products, which are required to bridge basic values and purchasers' values.

6. Finally, Part D will provide a summary on the technique to estimate GDP by final expenditure approach.

[1] Vu Quang Viet, *GDP by Production Approach: A General Introduction with Emphasis on an Integrated Economic Data Collection Framework,* written as training materials for the China-funded United Nations project: *Statistical Capacity Development in China and other Developing Countries in Asia.*

A. Valuation in national accounting

7. The UN System of National Accounts in principle records transactions of goods and services at the actual prices at which that they are transacted. A good after production normally goes through either wholesalers, retailers or both before reaching another producer or a final consumer. The price received by the producer differs from the price paid by the middleman buyer, and that again differs from the price the final consumer paid. Thus in order to spell out clearly their relationships in the system, the SNA has adopted three distinct types of prices or values of products: basic price, producer's price and purchaser's price.

I. Basic definitions

8. The UN's System of National Accounts defines three types of prices for valuing goods and services as follows:

9. ***BASIC 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, by the producer as a consequence of its production or sale.* ***It excludes any transport charges invoiced separately by the producer.*** (SNA2008, para. 6.51)

10. ***PRODUCER'S PRICE:*** *The producer's price is the amount receivable by the producer from the purchaser for a unit of a good or service produced as output minus any VAT, or similar deductible tax, invoiced to the purchaser.* ***It excludes any transport charges invoiced separately by the producer.*** (SNA2008, para. 6.51)

11. Neither the producer's nor the basic price includes any amounts receivable in respect of VAT, or similar deductible tax, invoiced on the output sold.

12. ***PURCHASER'S PRICE:*** *The purchaser's price is the amount paid by the purchaser, excluding any VAT or similar tax deductible by the purchaser, in order to take delivery of a unit of a good or service at the time and place required by the purchaser. The purchaser's price of a good* ***includes any transport charges paid separately by the purchaser*** *to take delivery at the required time and place.* (SNA2008, para. 6.64).

13. Important to the valuation methods are the concepts of trade margin and transport margins.

14. ***TRADE MARGIN*****:** Trade margin is defined as the difference between the selling price of the good and the price that would have to be paid by the distribution to replace the good at the time it is sold. Thus trade margin is the output of the distributor (either the wholesaler or the retailer or both). Trade margin applies only when there is a distribution service provided by the trader through buying and selling of a product.

15. ***TRANSPORT MARGIN*****:** Transport margins only occur when transport services are separately invoiced. (2800 SNA 14.130). If it is not invoiced separately by the producer to the trader then it is part

of the basic price. If it is invoiced inclusively in the price of the goods sold by trader then it is part of the trade margins. It is called margin because it is the service that is provided to deliver goods to the users.

16. The links between the different valuation methods in the SNA are shown below:

Table 1 Relationship between basic prices, producer's prices and purchaser's prices

Basic prices
+ Taxes on products excluding invoiced VAT
- Subsidies on products
= Producer's prices
+ VAT not deductible by the purchaser
+ **Transport charges (margins) separately invoiced**
+ **Wholesale and retail trade margins** (these margins do not include transport costs that are paid separately by the purchaser, either from purchasing from the trader or from other transporters)
= Purchaser's prices

II. Example to illustrate valuation methods in the circulation of goods and services

17. The following examples showed the circulation of goods from the producer to the final consumer:

(a) Table 2.A covers the case when the retailer is not separately invoiced for the cost of transporting the goods from the producer.

(b) Table 2.B shows the case when the retailer has to pay separately for the cost of delivery.

In both cases, as one can see that, the trade margin is the same as long as the cost to replace the goods sold to the final consumer (replacement cost) remains the same to the retailer. Trade margin can be simply calculated as the difference between the price charged to the consumer and the replacement cost. In both cases 2.A and 2.B. it is 110-102=8. Trade margins can be either in producer's prices or basic prices depending whether sale tax on products is included or not.

18. In the example given in tables 2.A and 2.B, the purchaser's value paid by the consumer is 115.1 for his purchase of rice. In national accounting, the consumer is treated as though he consumed a bundle of products: rice, trade and transport margins, and taxes on products. The reason for doing this is that for the purpose of comparison over time and across consumers, eliminating the influence of government tax policy and distribution costs (consisting of both trade and transport margins), goods and services must be measured in such a way that the value reflects the quantity of goods produced and consumed.

19. The commodity flow tables for the examples 2.A and 2.B are respectively shown in tables 3.A and 3.B.

20. In the first example, reflected in table 2.A and table 3.A, the contract between the producer and the retailer is the delivery of rice at the retailer's gate, with a higher basic value of the delivered rice of 100. The transport output is needed to move the goods only from the retailer to the consumer. Thus, only trade margin 3 is produced (see table 3.A). Here it is assumed the producer has to increase its intermediate inputs to bring the goods to the gate of the retailer.

Table 2.A Example: Circulation from a producer of rice to a consumer (transport not separately invoiced)

Producer		Retailer		Consumer
Sold to the retailer (transport is included but **not separately invoiced**): 100 Sale tax: 2	⇨	Purchaser price/replacement cost: 102 Sold to the consumer: 110 Sale tax: 2 Transport charge extra: 3 [2] Sale tax on transport: 0.1	⇨	Purchaser price : 115.1 Rice: 110 Sale tax: 2.0 Transport: 3.0 Sale tax on transport : 0.1
Output: Goods: 100		Output: Trade margin: 8 = 110-102 Transport: 3		Purchaser price:115.1

Table 2.B Example: Circulation from a producer of rice to a consumer (transport separately invoiced)

Producer		Retailer		Consumer
Sold to the retailer (transport is **separately invoiced**): Basic prices 97 Transport 3 Sale tax: 2	⇨	Purchaser price/replacement cost 102 Sold to the consumer: 110 Sale tax: 2 Transport charge extra: 3 [3] Sale tax on transport: 0.1	⇨	Purchaser price : 115.1 Rice: 110 Sale tax: 2.0 Transport: 3.0 Sale tax on transport : 0.1
Output: Goods: 97 Transport: 3		Output: Trade margin: 8 = 110-102 Transport: 3		Purchaser price:115.1

[2] If the transport is implicit to the price, i.e. the trader delivers the goods without additional charge. For example, the sale price (not including taxes) is 113 instead of 110. The trade margin will be 113-102=11. This trade margin now includes the implicit cost of generating transport service.

[3] See previous footnote.

21. In the second example, reflected in table 2.B and table 3.B, the contract is for the retailer to pay separately for the rice and the transport margin (the rice being 97, and a transport margin of 3). In the second case, transport margins are required to deliver the goods to both the retailer and the final consumer. Thus, transport output to move goods (i.e. trade margins) generated is 6. In general, a good may circulate through more than one layer of trade (wholesaling and retailing), more than one transport service providers and subject to more than one round of taxes on products. In the commodity flow method and the use and supply tables, taxes on products are summed up as one item. The same treatment is for transport margins (see table 3.A and 3.B) which is delivered at different stages of a good circulation, although trade margins at most can be divided into wholesaling and retailing. This is also the basis for estimating trade, transport and tax margins by using the ratios of these margins over the value of a given kind of the consumed goods calculated for the base year, discussed in Parts C and D.

22. Thus the consumer expenditure of 115.1 on rice can be factored into: (i) consumption of rice at basic price; (ii) the consumption of transport margins; (iii) consumption of trade margins and (iv) in addition, taxes on products must also be paid at various stages of the circulation process.

Table 3.A The example presented as commodity flow in supply and use of commodity (transport not separately invoiced)

	Basic price	Taxes on products	Trade margins	Transport margins	Supply in purchaser's prices		Uses in purchasers' prices
	(1)	(2)	(3a)	(3b)	(4)=(1)+…(3)		(4)
Rice	100	2+2+0.1	8	3	115.1	=	115.1
Transport margins	3	0.1			3	=	3.1

Table 3.B The example presented as commodity flow in supply and use of commodity (transport separately invoiced)

	Basic price	Taxes on products	Trade margins	Transport margins	Supply in purchaser' prices		Uses in purchasers' prices
	(1)	(2)	(3a)	(3b)	(4)=(1)+…(3)		(4)
Rice	97	2+2+0.1	8	6	115.1	=	115.1
Transport margins	6	0.1			6	=	6.1

23. The information above allows us to create partially the production account of the producer of rice, the transport agent and the retailer in terms of proving the rice and delivering it to the final consumer.

24. Case B is more complicated as the treatment in table 4.B considers the transport margin as though it is produced by an independent transport agent paid directly by the final consumer. In this case, the retailer is purely transmitting that cost to the final consumer. However if additional information showed that the producer of rice also produces the transport margin as secondary product, then it is treated as part of the industry output of the rice producer.

Table 4. A The use table in case A

	Intermediate consumption					Household final consumption
	...	...	Rice producer	Transport agent	Trade agent	
...						
Rice (and delivery)						100
Transport margin						3
Trade margin						8
Value added at basic prices						
Taxes on products						4.1
Output at basic prices			100	3	8	

Table 4. B The use table in case B

	Intermediate consumption					Household final consumption
	...	...	Rice producer	Transport agent	Trade agent	
...						
Rice						97
Transport margin						6
Trade margin						8
Value added at basic prices						
Taxes on products						4.1
Output at basic prices			97	6	8	

25. Value added of the producer of rice, the retailer and the transport agent of rice can be calculated if data on intermediate consumption (IC) is given.

26. In this example, use goes directly into final household consumption. In general, the consumption of rice can go to intermediate consumption, gross capital formation in the form of changes in inventories or exports. It certainly cannot be treated as gross fixed capital formation because it cannot be used repeatedly over time to produce other products.

27. To see fully the relationships in the supply and uses of goods and services including the income generated by production, we need the supply and use tables.

B. Supply and use tables

28. This part will first describe the supply and use tables and then explain how the supply and use tables can be used to estimate national accounts aggregates.

I. Description of supply and use tables (SUT)

29. The supply table and similarly the use table are shown in a much aggregated manner as an example in table 5. In the activity columns, all economic activities are aggregated broadly into 3 groups: non-financial activities, financial activities, and non-market services. In actual compilation, each column here may contain numerous columns, each of which is identified by an industry classification code, which should be based on ISIC[4]. The reason for so doing is to immediately show the value added generated by every activity in the economy. Economic activities can also be grouped in types of institutional sectors (unincorporated households, corporations, government, nonprofit institutions). The latter distinction is for both the purpose of compiling institutional sector accounts and for balancing purposes. For example rice produced by subsistence farmers will mostly be consumed by households.

30. The rows are also highly aggregated, which may be much more numerous and identified by the commodity classification codes, which should be based on CPC[5].

31. In an economy, as much as in a SUT, the number of products need not be the same as the number of activities. In some counties, some activities are for the purpose of generating product that is totally different in nature from the activity. For example, a television corporation may broadcast its program for free but sells its time for advertising. Thus its activity is television but its product is advertising. Newspaper may operate in a similar manner.

32. In SUT, the total supply of each product must equal its total use, both being measured in purchaser's prices. It is easy to check on column 12 that the row sums from row 1 to 4 in the supply table are equal to the corresponding row sums in the use table.

- Total supply at purchaser's prices = domestic production in basic prices + imports c.i.f. + trade and transport margins+ taxes on products.
- Total use in purchaser's prices = intermediate consumption by industries + exports f.o.b + final consumption + gross capital formation.

33. **In SUT, it is important to distinguish the concept of industry output and product output (or commodity output). Industry output is the value of all types of products produced by that industry. Product output (of a given product) is the total value of that kind of product produced by all industries in the economy. Thus the total value of industry outputs is equal to the total value of product outputs.**

34. The outputs of industries in the supply table are at basic prices, but the uses in the use table are at purchasers' prices. Because of that, in the supply table, the supply of every product at purchasers' prices (column 12) is obtained by adding to the supply of product at basic prices (column 9) trade and transport margins (column 10) and taxes less subsidies on products (column 11).

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[4] *International Standard Industrial Classification of All Economic Activities,* ST/ESA/STAT/SER.M/4/rev.4), United Nations, 2008. http://unstats.un.org/unsd/cr/registry/isic-4.asp

[5] *Central Product Classification (CPC), version 2*, United Nations, 2008. http://unstats.un.org/unsd/cr/registry/cpc-2.asp

35. The elements of imports in the supply table (column 7) must be measured c.i.f. (including cost, insurance and freight) to make them equivalent to basic prices, but the total value of imports must be valued f.o.b. (free on board) so as to arrive at the correct balance of trade (imports less exports). Thus the column and row of c.i.f./f.o.b. adjustment are necessary. In order to avoid double counting, the adjustment row and column (row 5 and column 8) deduct insurance and freight services on imported goods since they are included in both the values of imported goods and the supply of services.

36. Similarly to other product outputs, the output of transport services is shown in row 2 and column 6 of the supply table. However, row 2 of the use table shows only the trade and transport services at purchasers' prices, which are directly purchased by users because trade and transport margins on the goods consumed are already included as a part of the purchasers' prices of goods that are used. Thus to balance the totals of row 2 of the supply and use tables, the total value of trade and transport margins is entered in row 2 and column 10 of the supply table as a negative value.

37. Reading through column 1 and row 1 of both the supply and use tables helps explain how data are presented. The total supply at purchasers' prices of non-financial products in row 1 is 380. 283 are produced domestically and 22 are imported, so the total supply at basic prices is 305. Adding in trade and transport margins (for circulation inside the economy), 60, and taxes less subsidies on products, 15, one obtains the total supply of the first product at purchasers' prices, 380. Column 1 in the supply table shows the outputs at basic prices produced by agricultural activities. They produce non-financial goods and services (except trade margins) and some trade margins. Column 1 in the use table shows the uses of goods and services in production of the financial outputs of corporations. 8 (=7 + 1 shown in row 5) is called intermediate consumption. The gross value added (25) is calculated as the difference between the industry output of industry 1 (33) and its intermediate consumption (8). The value added should be broken down into compensation of employees, other taxes on production, consumption of fixed capital and operating surplus. Gross operating surplus together with mixed income is calculated as a residual. In case of unincorporated enterprises, which mix up expenditures of the enterprise and final consumption expenditure of their owners such that compensation of employees is not paid explicitly to the owner/worker, the residual will be called **mixed income**. In addition, an important part of goods produced by households is for own final consumption, which does not require trade margins or is not even subject to taxes on products, but products produced by corporations would be subject to both. The distinction would help providing better benchmark indicators for estimation in the following accounting periods when complete data is not available.

38. Economic activities can be classified by types of producers, such as households' unincorporated enterprises and corporations as each type of producer may use different technology and more importantly it is easier to reroute the income that is generated. For example mixed income goes to the households while gross operating surplus goes to corporations.

39. GDP is equal to the total of value added at basic prices plus taxes less subsidies on production and imports. GDP = 196 + 20 = (25 + 69 + 33 + 14 + 55) + 20 = 216 (see the use table, column 6, rows 9-11. Taxes less subsidies on products are obtained as the sum of column 11 in the supply table and shown also in the use table in column 6 row 11. Taxes and subsidies are not shown elsewhere in row 11 since producers pay for them only as part of their intermediate consumption.

TABLE 5 SUPPLY AND USE TABLES BY INSTITUTIONAL SECTORS

	A. SUPPLY TABLE	Agriculture	Manufacturing	Trade, transport, communication	Finance and business services	Education, health and other services	Product output of total economy	Imports c.i.f. (Total f.o.b.)	c.i.f./f.o.b. adjustment	Total product supply at basic prices	Trade & transport margins	Taxes less subsidies on products	Total supply of products at purchasers' prices
		(1)	(2)	(3)	(4)	(5)	(6)=(1)+.(5)	(7)	(8)	(9)=(1)+..(7)	(10)	(11)	(12)=(9)+.+(11)
1	Non-financial goods & services except margins*	31	177	5		70	283	22		305	60	15	**380**
2	Trade and transport services	2	2	59			63	3	-1	65	-60	3	**8**
3	Financial services				20		20	2	-1	21		2	**23**
4	Other non-market services					10	10	0		10			**10**
5	c.i.f./f.o.b. adjustment							-2	2	0			0
6	Direct purchases abroad by residents							3		3			3
7	**Industry output at basic prices/total**	**33**	**179**	**64**	**20**	**80**	**376**	**28**	**0**	**404**	**0**	**20**	**424**

	B. USE TABLE	Agriculture	Manufacturing	Trade, transport, communication	Finance and business services	Education, health and other services	Intermediate consumption by product of total economy	Exports f.o.b.	Household final expenditures NPISHs	Government		Gross capital formation	Total use of products at purchasers' prices
										Individual final consumption	Collective final consumption		
		(1)	(2)	(3)	(4)	(5)	(6)=(1)+.(5)	(7)	(8)	(9)=(1)+..(7)	(10)	(11)	(12)=(9)+.+(11)
1	Non-financial goods & services except margins	7	93	30	5	23	158	37	142	3		40	**380**
2	Trade and transport services	-	4	0	-	-	4	2	2				**8**
3	Financial services	1	12	1	1	2	17	1	5				**23**
4	Other nonmarket services		1				1		1	5	3		**10**
5	**Intermediate consumption by industries**	8	110	31	6	25							
6	Direct purchases abroad by residents								3				3
7	Direct purchases at home by nonresidents							1	-1				0
8	Total uses at purchasers' prices	8	110	31	6	25	180	**41**	**152**	**8**	**3**	**40**	**424**
9	Total gross value added/GDP						216						
10	Gross value added at basic prices	**25**	**69**	**33**	**14**	**55**	196						
11	Taxes less subsidies on products						20						
12	**Industry output at basic prices/total**	**33**	**179**	**64**	**20**	**80**	**376**						

40. GDP also must equal the sum of exports less imports, household final expenditure, government and non-profit institutions serving households (NPISHs) final expenditures, gross capital formation. GDP = 41-28 + 152 + 8 +3 + 40 = 216.

II. Use of the supply and use tables to estimate national accounts aggregates

41. Firstly, SUT of the benchmark year can be used to estimate GDP by three methods either annually or quarterly. In this case, the size of SUT may have to be aggregated into a manageable size, with important industries and commodities singled out and other less important ones aggregated together. A benchmark SUT, frequently compiled every five years, may have a few thousands products and hundreds of activities. A large number of countries in Southeast Asia, which includes Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam, has regularly compiled input-output table every five years of the size which is larger than 100 industries.

42. In general, detailed information on inputs which are used by industries is collected only every five years for the purpose of preparing the benchmark SUT. Annually, only surveys on output and total cost of materials and services are collected to estimate value added. For quarterly accounts, data must be collected monthly and therefore only data for output are collected. This data collection practice is based on the strategy for cost saving and timeliness in the publication of important indicators on the performance of the economy.

43. Annually new value added ratios should be used to replace benchmark value added ratios to estimate value added but in general benchmark ratios are used instead. In many countries, due to budget and even time constraint, only benchmark ratios are available.

44. **Guideline principle: Given industry outputs are available, benchmark ratios are used to estimate value added by industry, product outputs, and the values of products used as intermediate inputs. Actual data and estimates of components of final expenditures from various sources are confronted with the total value of products that is available for use in the economy and estimated as a residual in order to arrive at consistent sets of numbers.** The following procedure may be used to estimate national accounts, either quarterly or annually.

45. **Step 1:** Deflate industry outputs and other statistics collected for the year or period under accounting into the prices of the benchmark year of the supply and use tables. Estimation in constant prices should be obtained first because not only that many of the available indexes are on the basis of real growth but also it is easy to evaluate the data on this basis, later the results are inflated back to current prices. One may decide to operate in an opposite way; in that case, tables derived should be inflated to current prices especially in the case that changes in relative prices are significant to such an extent that shares and input coefficients are changed significantly.

46. **Step 2**: Calculate benchmark ratios using the make matrix and the use matrix. The make coefficient matrix is derived by assuming that each industry produces the same shares of products. From the supply table, shares of products produced by a given industry are calculated. For example, product 1 produced by industry 1 is 31/33=0.93939. Table 6.1 and table 6.2 are derived from the supply and use tables given in table 5.

Table 6.1 Make coefficient table: shares of products by industries

		Industries				
Products		1	2	3	4	5
	1	0.93939394	0.98882682	0.078125		0.875
	2	0.06060606	0.01117318	0.921875		
	3	0	0		1	
	4					0.125

Table 6.2 Input coefficient matrix: input coefficients by industries

		Industries				
Products		1	2	3	4	5
	1	0.21212121	0.51955307	0.46875	0.25	0.2875
	2	0	0.02234637	0	0	0
	3	0.03030303	0.06703911	0.015625	0.05	0.025
	4	0	0.00558659	0	0	0
	Value added	0.75757576	0.38547486	0.515625	0.7	0.6875

47. **Step 3**: Derive the supply of domestic products using make coefficient table (similar to table 6.1) and the new industry outputs in the prices of the benchmark year, i.e. in constant prices). This would require price indexes for industry outputs. **Since there is no price index for an industry output, its price index must be constructed as the weighted sum of the price indexes of the products the industry produce, where the shares of products produced by that industry serve as weights**. The price indexes used for this purpose are the basic price indexes which are commonly called producer price indexes. The coefficient use matrix is similarly derived by simply dividing inputs used by the industry output. (See tables 6.2 and 6.3 for the estimated industry outputs in current and constant prices assuming that industry outputs in current prices are respectively 40, 200, 70, 22 and 12).

Table 7.1 Make table (based on table 6) in current prices

		Industries					Product outputs	Price indexes
Products		1	2	3	4	5		
	1	37.6	197.8	5.5		10.5	251.3	105
	2	2.4	2.2	64.5			69.2	102
	3				22		22.0	102
	4					1.5	1.5	100
Industry output in current prices		40.0	200.0	70.0	22.0	12.0	344.0	

Table 7.2 Make table (based on table 6) in constant prices

		Industries					Product outputs
Products		1	2	3	4	5	
	1	35.8	188.3	5.2		10.0	239.3
	2	2.4	2.2	63.3			67.8
	3				21.6		21.6
	4					2	1.5
Industry output in constant prices		38.2	190.5	68.5	21.6	11.5	330.2

48. **Step 4**: Derive the new intermediate consumption using table 6.2 and the industry outputs at constant prices derived previously (as in table 7.2). The results will be similar to column 6 of the use table in table 5. Thus, if industry outputs in constant prices are respectively 38.2, 190.5, 68.6, 21.6, 12 then it is possible to estimate products in constant prices used for intermediate consumption (IC) by industries (see table 7.3 below).

Table 7.3 Use table in constant prices (based on table 6.2)

		Industries					Products used for intermediate consumption
		1	2	3	4	5	
Products	1	8.1	99.0	32.1	5.4	3.3	147.9
	2	0.0	4.3	0.0	0.0	0.0	4.3
	3	1.2	12.8	1.1	1.1	0.3	16.4
	4	0.0	1.1	0.0	0.0	0.0	1.1
	VA	28.9	73.4	35.3	15.1	7.9	160.7
	Industry output	38.2	190.5	68.5	21.6	11.5	330.2

49. **Step 5**: Estimate for the supply table new product taxes and new trade margins in order to finally obtain the total supply of products in purchaser's prices similar to column 12 in the supply table of table 5. Part C will discuss in detail how to estimate trade and transport margin ratios.

50. **Step 6**: Estimate components of final expenditures, namely household final consumption, government final consumption, gross capital formation, exports. These estimates must satisfy the condition that the sum of a given product used (column 12 of the use table in table 5) must equal the sum of the supply of products in the supply table (column 12).

51. **Step 7:** Using the use table, it is also possible to estimate value added at basic prices given industry outputs in basic prices by multiplying the value added coefficients of each industry with the industry outputs in deflated prices of the benchmark year (see table 7.3) .

52. **Step 8:** Check for consistency in GDP estimates by different methods. The GDP estimated by the production approach (using value added ratios) in principle should be equal to the GDP derived by the final expenditure approach. The difference is treated as statistical discrepancy. If discrepancy is large, all the basic data should be re-examined. When discrepancy is less than 1%, it is better, like the case of Canada, to distribute the statistical discrepancy proportionally to the two alternatives to obtain one value of GDP as users generally find it difficult to deal with two estimates of GDP. Otherwise, countries should decide on the value of GDP on the basis of its own evaluation of the reliability of each approach.

III. Final expenditure approach to GDP

53. In the final expenditure approach to GDP, one needs to fill in the components of final expenditures, either individually by main components or group of products. Table 8 provides a glimpse on the relative importance of each component in final expenditures in a number of countries in the world. Final consumption expenditure of households is always the most important component, making up from 37 percent in China to over 70% in the Philippines and the United States. The size of the share of household final consumption in a country is influenced mainly by the relative share of gross fixed capital formation and final consumption expenditure of general government. The People's Republic of China has an exceptionally low share of final consumption expenditure of households. This is due to the fact that it has an exceptionally high share of gross fixed capital formation.

Table 8 Components of final expenditures in GDP in 2009

Country	Final consumption expenditure	Household consumption expenditure	Government final consumption expenditure	Gross capital formation	Gross fixed capital formation	Changes in inventories	Exports of goods and services	Imports of goods and services	GDP
China, People's Republic of	0.504	0.368	0.136	0.456	0.438	0.017	0.392	0.306	1.00
India	0.696	0.573	0.123	0.350	0.337	0.013	0.206	0.253	1.00
Indonesia	0.682	0.586	0.096	0.310	0.311	-0.001	0.241	0.213	1.00
Malaysia	0.645	0.502	0.143	0.140	0.204	-0.064	0.969	0.754	1.00
Philippines	0.844	0.739	0.105	0.146	0.146	0.000	0.317	0.308	1.00
Thailand	0.683	0.550	0.133	0.219	0.244	-0.026	0.685	0.579	1.00
Viet Nam	0.733	0.670	0.064	0.384	0.348	0.036	0.762	0.886	1.00
Australia	0.737	0.557	0.180	0.283	0.283	0.000	0.195	0.200	1.00
Canada	0.807	0.588	0.219	0.210	0.215	-0.005	0.287	0.304	1.00
United States	0.883	0.710	0.173	0.136	0.146	-0.010	0.111	0.138	1.00

Source: United Nations Statistics Division. [6]

[6] http://unstats.un.org/unsd/snaama/selbasicFast.asp

III.1. Data sources

54. **Exports and imports** of goods through customs are regularly collected by every country. These data are supplemented by other data on transactions in services from tourism; postal, telecommunication, transport services; banking, insurance and other financial services. The latter data are collected through administrative channels or sampling surveys (for tourist expenditures).

55. **Household final consumption expenditure**: Household final consumption makes up the most important part of GDP by final expenditure as shown in table 8 and therefore it is important for countries to carry out regular survey to capture it. Household final consumption expenditure is important for other works as shares of household final consumption are necessary as weights for the calculation of consumer price indexes and shares of final expenditures by kind of expenditures and by detailed products are needed for the calculation of purchasing power parity. Generally, benchmark data rely on household expenditure survey which is carried out every 3 to 5 years. Annual and quarterly data are estimated on the basis of benchmark data and monthly retail sale surveys. In many countries that are financially capable, household expenditure survey is carried out annually (see Appendix 1 or the program in the United States).

56. **Government final consumption expenditure:** The data are from benchmark government final expenditure. Annual and quarterly data are estimated by extrapolation on the basis of the benchmark data and the budget plans.

Table 9. Shares of household consumption in USA and Vietnam, 2008 based on household survey[7]

	USA	Vietnam
Average annual expenditures	100	100
Food	12.8	45
Food at home	7.4	38
Food away from home	5.3	6
Alcoholic beverages	0.9	2
Tobacco products and smoking supplies	0.6	*
Housing**	33.9	11
Apparel and services	3.6	4
Transportation.	17	12
Vehicles.	5.5	
Gasoline and motor oil	5.4	
Other transportation	6.2	
Healthcare	5.9	6
Entertainment	5.6	1
Personal care products and services	1.2	0
Reading	0.2	
Education	2.1	5
Miscellaneous	1.7	2
Others, non-consumption	14.5	11
Cash contributions	3.4	
Personal insurance and pensions	11.1	

Note: *Tobacco is included in alcoholic beverages.

**Housing includes rents, utility, furniture, etc. to maintain residential housing.

[7] US Bureau of Labor Statistics, http://www.bls.gov/cex/ and Vietnam Household Living Standards 2008, http://www.gso.gov.vn/default.aspx?tabid=512&idmid=5&ItemID=9646.

57. **Gross fixed capital formation:** Data for the government is from the budget. Data for the corporations may come from enterprise production surveys. Data from households come from either relevant production data or arrive as residuals.

(a) Machinery either domestically produced or imported go to gross fixed capital formation (GFCF) if one can clearly identify them to avoid including with them small tools that can be used as intermediate consumption. By classifying machinery properly in terms of Central Product Classification (CPC), it is possible to identify those that are clearly fixed assets and those that can be used for both or only for household uses. For example, domestic appliances (CPC 448) are mostly used for household final consumption while weapons and ammunition and parts thereof (CPC449) may either go to GFCF or change in inventories (ammunitions for instance).

(b) Automobiles: a share goes to enterprises' gross capital formation, and the rest goes to household final consumption. The share purchased by enterprises may be estimated by using data on new motor registration.

(c) Motorcycles and bicycles mostly go to household final consumption.

(d) Other large values of purchases or construction of transport equipments such as airplanes, ships, boats, pipelines, railroad and rail cars should be treated the same way as automobiles, but for the most part they go to gross fixed capital formation.

(e) Construction: Except a part of output/expenditure for maintenance of either enterprises or owner-occupied housing services that should be treated as gross fixed capital formation, new construction and major repair go to gross fixed capital formation. A real estate services supporting the transactions of both new and old constructions should be estimated and treated as gross fixed capital formation.

58. **Changes in inventories**: Data on changes in inventories of businesses must be based on enterprise production surveys. Many countries may not able to have data on inventories by industries, then at least national commodity reserves, normally oil and gas and cereals, should be included. Some countries may also add statistical discrepancy to this item. This should be definitely avoided as changes in inventories would provide indicators to gauge the future trend of the economy. Growth that is higher than normal indicates that the economy may soon slow down as unsold goods are piling up.

III.2. Balancing commodity supply and use at detail levels

III.2.1 Methods

59. Except when data are fully available for the compilation of the supply and use tables, balancing technique requires ratios that are based on a previous benchmark surveys or expert knowledge of those who are familiar with the industry either as producers or business association that promote the interest of the industry. These ratios are then used to extrapolate data for the more current accounting periods.

60. The principal steps that can be applied in balancing are as follows:

(a) Calculate for each product the total amount that is used as intermediate consumption , which is equal to: supply of products at purchasers' prices less exports of products (see similar result of the calculation as in the last column of table 7.3 or in the worksheet in table 17);

(b) Identify and allocate products to gross fixed capital formation;

(c) Identify and estimate changes in inventories, using data on national commodity reserves and estimates of changes in inventories based on benchmark ratios (inventories required for a given level of output) but, much better, more recent surveys;

(d) Estimate products that are used for intermediate consumption on the basis of the coefficients in the use table of the benchmark year (the procedure has been explained in part B.II). It is important to realize that purchases of intermediate goods and services used by general government and non-profit institutions serving households (NPISHs) are treated as intermediate consumption. The outputs of these sectors, after some adjustments for fees and sales, are than treated as final consumption of government or NPISHs. There are two adjustments that need to be identified and deducted from outputs: [8]

[8] See Vu Quang Viet, *GDP by Production Approach: A General Introduction with Emphasis on an Integrated Economic Data Collection Framework,* Table 3.7 and Table 4.1.

(i) Fees for services paid by enterprises and households must be deducted from output of government and NPISHs;
(ii) The goods and services purchased by the government and NPISHs on the market and delivered for free to the households (which are called by the SNA as social benefits in kind): These expenditures must be identified from government expenditure budget and entered directly to the final consumption of government and NPISHs.

(e) The residual, after allocating to gross capital formation and intermediate consumption, will be allocated to household final consumption.

III.2.2 Examples

61. A few examples are listed for illustration (see table 10 and 11 below).

62. In order to estimate household consumption of rice, one may have to estimate the part that is used to produce flour and other related food (similar to column 1 of table 11) as well as to increase national reserve; the rest of the volume that goes for domestic uses should go to household final consumption. The government may purchase rice to transfer to households; in that case purchase of rice should also enter as final consumption of government. Food products are similarly treated. Retail sale survey may be used to extrapolate household consumption. The rest will go to intermediate consumption after balancing with exports and imports.

Table 10 Example on the supply of a few products

		Domestic production in basic prices	Imports f.o.b.	Trade and transport margins	Taxes less subsidies on products subsidies on products	Total supply of domestic products in purchaser's prices
		(1)	(2)	(3)	(4)	(5)
1	Rice	x	x			x
2	Construction	x			x	x
3	Automobile		x	x	x	x
4	Machinery	x	x	x	x	x

Table 11 Example on the use of a few products

		Intermediate consumption	Exports f.o.b.	Household final expenditures NPISHs	Government Government final consumption	Gross capital formation		Total use of products purchasers' prices
						Gross fixed capital formation	Change in inventories	
		All in purchasers' prices						
		(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Rice	?		x			x	x
2	Construction	x		x		x		
3	Automobile							
4	Machinery					x		

63. It is important to identify household durable goods such as furniture, kitchen equipment and utensils as a group which are treated as household final consumption. Most of other transportable products, not for gross capital formation, are used as intermediate consumption of enterprises. Except for a small share that is used for maintenance of household durable goods for recreation, transport, gardening, sporting, the rest is used as intermediate consumption.

64. One key product that is an important part of gross fixed capital formation is transport equipments, except for vehicles for personal uses. To help allocating vehicles to gross fixed capital formation for enterprises, government or household final consumption, new registration of vehicles by type of owner is needed. Most motorcycles and bicycles can be treated as household final consumption. Other transport equipments from airplanes, to boats, rail box cars are mostly for gross capital formation in developing countries.

65. Data on electricity, gas are normally available from administrative data. Data on the split of use of gasoline to households and enterprises can be estimated by number of registered cars and extrapolated by retail surveys.

III.2.3 Problems in linking COICOP and CPC classifications

66. The United Nations' *Classification of Individual Consumption According to Purpose (COICOP)*[9] is the classification standard that is used to classify household final consumption expenditures. This is the basis to guide regular data collection for household surveys. However, it differs

[9] United Nations, http://unstats.un.org/unsd/cr/registry/regdnld.asp?Lg=1

from the United Nations' *Central Product Classification Version 2* (CPC, Ver.2)[10] which is used to itemize products imported, produced, and used as inputs in the economy for the supply and use tables in some important respects:

(a) The principles used for the two classification systems are different. Consumption by purposes (COICOP) classifies both goods and services together if they are consumed for the same purpose. For example, goods of different materials and services consumed for education purpose are grouped together. In the classification by purposes, goods made of different materials (woods, metal, plastics, etc.) are classified together. This contrasts to CPC that classifies products by the materials and technology that are used to produce them.

(b) In general, aligning items in COICOP to those of CPC is possible if the items at lower levels in both systems are harmonized. However, because COICOP was developed more or less independently of CPC, and because there is no need to know consumption at a very detailed level, as well as it is difficult for households to recollect and answer questions in such a detail, as a consequence, in some cases it is not possible to reclassify COICOP into the same classes of products in CPC even though COICOP has tried to align its classification at the more detailed level.

67. The differences between COICOP and CPC for a number of consumer goods shown in table 12 are not aimed to be comprehensive but only for illustration purpose. One can see that for every class of consumption purpose, COICOP, although grouping them together, has tried to distinguish different classes of products and services but they are not detailed enough to enable a proper link between COICOP and CPC. For example, COICOP group 5.4 (glassware, tableware and household utensils) includes utensils which can be made either of glass, metal, wood or plastics and also include expenditure for repair and maintenance. These items are however classified into different CPC depending mainly on the materials that they are made of. The same problems can be observed for household appliances (05.3), tools and equipment for house and garden (05.5) and to a lesser extent, clothing (03.1), and household textiles (05.1).

68. Thus the links between COICOP and CPC are not possible unless COICOP is broken down into more detailed classes. It is advisable that countries develop their own COICOP with an objective to make as much as possible full correspondences between classes of final consumption by purposes and classes of products in their national classification systems. This alignment is important in the construction of the use and the supply tables.

[10] United Nations, *Central Product Classification Version 2* (CPC, Ver.2). http://unstats.un.org/unsd/cr/registry/cpc-2.asp

Table 12 Some analyses of the differences between COICOP and CPC ver 2

COICOP	CPC, ver 2
Classification of Individual Consumption According to Purpose	Central Product Classification, Ver.2
01-12 - Individual consumption expenditure of households	
01 - Food and non-alcoholic beverages	
01.1 - Food	21-23
01.2 - Non-alcoholic beverages	244
02 - Alcoholic beverages, tobacco and narcotics	
02.1 - Alcoholic beverages	241-243
02.2 - Tobacco	25
02.3 - Narcotics	2509?
03 - Clothing and footwear	
03.1 - Clothing	282-283, + repair services 8723
03.2 - Footwear	293-296, + repair s ervices 871
04 - Housing, water, electricity, gas and other fuels	
04.1 - Actual rentals for housing	
04.2 - Imputed rentals for housing	
04.3 - Maintenance and repair of the dwelling	
04.4 - Water supply and miscellaneous services relating to the dwelling	
04.5 - Electricity, gas and other fuels	
05 - Furnishings, household equipment and routine household maintenance	
05.1 - Furniture and furnishings, carpets and other floor coverings	381 (furniture), 272 (c arpets, floor coverings), 3691 (plastic floor coverings) + repair services 8724
05.2 - Household textiles	281 (knitted or crocheted fabrics), 271 (textile articles), 279 (other textile) + repair services 8724
05.3 - Household appliances	448 (domestic appliances), 269 + repair s ervices 8715
05.4 – Glassware, tableware and household utensils	3693 (table ware), 37 (glass ware), 4291 (domestic metal products), 4299 (chain, locks, safes, trays, photo frames, needles, etc.)

COICOP	CPC, ver 2
Classification of Individual Consumption According to Purpose	Central Product Classification, Ver.2
05.5 - Tools and equipment for house and garden	4292 (hand tools), 4293 (boxes, containers), 4294 (things made of metal wire)
05.6 - Goods and services for routine household maintenance	346 (fertilizers and pesticides), 351 (paints), 353 (soap and cleaning preparations)
06 - Health	
06.1 - Medical products, appliances and equipment	352 (pharmaceutical products), 481 (Medical and surgical equipment and orthopaedic appliances)
06.2 - Outpatient services	
06.3 - Hospital services	
07 - Transport	
07.1 - Purchase of vehicles	
07.2 - Operation of personal transport equipment	
07.3 - Transport services	
08 - Communication	
08.1 - Postal services	
08.2 - Telephone and telefax equipment	
08.3 - Telephone and telefax services	
09 - Recreation and culture	
09.1 - Audio-visual, photographic and information processing equipment	
09.2 - Other major durables for recreation and culture	
09.3 - Other recreational items a nd equipment, gardens and pets	
09.4 - Recreational and cultural services	
09.5 - Newspapers, books and stationery	
09.6 - Package holidays	
10 - Education	
10.1 - Pre-primary and primary education	
10.2 - Secondary education	

COICOP	CPC, ver 2
Classification of Individual Consumption According to Purpose	Central Product Classification, Ver.2
10.3 - Post-secondary non-tertiary education	
10.4 - Tertiary education	
10.5 - Education not definable by level	
11 - Restaurants and hotels	
11.1 - Catering services	
11.2 - Accommodation services	
12 - Miscellaneous goods and services	
12.1 - Personal care	
12.2 - Prostitution	
12.3 - Personal effects n.e.c.	
12.4 - Social protection	
12.5 - Insurance	
12.6 - Financial services n.e.c.	
12.7 - Other services n.e.c.	
13 - Individual consumption expenditure of non-profit institutions serving households (NPISHs)	
13.1 - Housing	
13.2 - Health	
13.3 - Recreation and culture	
13.4 - Education	
13.5 - Social protection	
13.6 - Other services	
14 - Individual consumption expenditure of general government	
14.1 - Housing	
14.2 - Health	
14.3 - Recreation and culture	

COICOP	CPC, ver 2
Classification of Individual Consumption According to Purpose	Central Product Classification, Ver.2
14.4 - Education	
14.5 - Social protection	

Notes: Titles 13 and 14 are transferred from the accounts of NPISH and general government in order to arrive at household final consumption which also includes the final expenditures of NPISHs and general government that benefit the households.

III.3 Balancing commodity supply and use as a short-cut method

III.3.1 Methods

69. The difficulty faced by national accountants in estimating annual and quarterly GDP is insufficient data, for example by the end of a quarter and for a number of activities only data of the previous two months are available. As a consequence, extrapolation technique is needed to estimate a number of data on the basis of their likely trends. This is unavoidable for obtaining preliminary estimates in order to meet the urgent needs of analysts and policy makers. These preliminary estimates will be revised when additional data come in. Statistical offices should provide the reasons and the procedure of estimation so that users are aware of the preliminary nature of the estimates.

70. Again, there is no one set of data that can be used to estimate all components of final expenditures, but a number of them and therefore there is a need to combine different methods for estimating them:

(a) For short-cut methods, the estimates may be by more aggregated groups of products rather than by individual product at detailed levels (see table 12 for more aggregated groups of products).

(b) The methods can be either extrapolation from a previous year or a benchmark year using indicators collected through surveys (such as retail sales) or using the traditional methods by first extrapolating output and then allocating a part of that output to household final expenditure. The same allocation method using at the detailed level can be used at the aggregated level by aggregating the supply and the use table to the same level of aggregation and then estimating intermediate consumption based on the use matrix and the rest of domestic use of the consumption goods and services is allocated to final consumption.

(c) Data on exports and imports are always needed.

(d) Gross capital formation, similarly to the more detailed approach, must rely on output growth indicators of the assets that can be used for gross capital formation, and the data of imports of machinery, equipment for similar purpose or surveys on expenditure on capital equipments. Estimates of construction of registered large construction enterprises must be based on surveys but estimate of construction output of household enterprises can rely on sales of construction materials collected by retail sale surveys.

(e) Final consumption of general government must rely on government budget.

(f) Final consumption expenditure of households must be estimated separately for goods and services which are covered by retail sales and those that are not.

- Goods and commercial services covered by retail sales must be supplemented by production for own consumption of agricultural products.
- Other services which are not covered by retail sales. Output must be estimated first and then part of it is allocated to household final consumption using the ratios in the bench mark use table or experts' knowledge as discussed previously.

71. The important indicators that are used to extrapolate a significant amount of household final consumption are indexes of real retail sales (see table 13). Indexes of retail sales are discussed below.

Table 13 Sources of data and indicators for preliminary estimates of components of household final expenditure when full data are not yet available

Components of household final expenditure	Sources of data or indicators
Food, beverage and tobacco	Retail sales Estimated output of agriculture
Clothing and footwear	Retail sales
Household appliances, articles and equipment	Retail sales. Household appliances, article and equipment can also be estimated from output and allocated to household consumption.
Machinery, equipment and supplies	Retail sales. Transport equipments purchased can be estimated from output and imports and allocated to household consumption.
Personal and other goods	Retail sales
Electricity, gas and water	Administrative records of companies
Telecommunication	Administrative records of companies
Transportation services	Administrative records of large companies, supported by labor in transport in unincorporated enterprises
Trade	Add wholesale and retail trade margins on goods consumed if they are in basic prices, except for production for own use.
Insurance	Administrative records of insurance companies. Output may be estimated by growth in premiums, allocated to households by shares of premiums paid.
Banking	Administrative records of banks or its output extrapolated by loans and deposits, output allocated to households by shares in the sum of loans and deposits.
Other financial services	Survey of financial services or their outputs are extrapolated by employment and other appropriate indicators, allocated to households by employment.
Education and health services	Administrative records or output is extrapolated by quantity indicators such as number of students, patients or revenues deflated by CPI. Allocated to households by benchmark shares.
Personal services	May have to be estimated as a percentage share of all other financial expenditures.
Residential rental /owner-occupied housing	Output - Based on data on benchmark housing stock and survey on rents. Monthly rent can be collected through CPI.

III.3.2 Retail trade turnover indexes[11]

72. Retail indexes are indicators of the monthly activities of the distributive trade industry in nominal and real terms. In real terms, the indexes are calculated by deflating the current values of turnover (which are gross sales that exclude sale taxes and other deductible taxes or shipment when they reflect delivery between establishments in the same enterpirse) with the appropriate price indices. The deflators of retail trade turnover can be the corresponding consumer price indices (CPI). For quarterly accounts, it is preferable to have the data on turnover adjusted for calendar and seasonal variations by applying the appropriate seasonal adjustments methods. The rate of change (or growth) is determined as the percentage change of turnover with respect to the corresponding month of the preceding year (if chain-linked) or a base year. Alternatively, in lieu of the retail trade/wholesale trade turnover index, the volume of turnover, which is based on quantity, may be used.

73. In most of the national statistical offices, the retail trade sample surveys are rarely restricted to one standard form, but tend to comprise a combination of forms differentiated by periodicity and major characteristics, namely:

(a) Activity, size, legal form, type of operation and the types of variables covered (turnover, expenditures, employment, other specialized variables);

(b) An occasional extra characteristic, such as the geographical location of the unit, which may influence the contents of a survey.

74. The statistical units used in sampling survey are based on ISIC, but the data on goods and services collected should be specified in CPC-based commodities for the estimation of household final consumption.

[11] This part is based on The United Nations *International Recommendations for Distributive Trade Statistics 2008* (IRDTS 2008). http://unstats.un.org/unsd/trade/M89%20EnglishForWeb.pdf.

Table 14 ISIC for retail trade survey

"47","Retail trade, except of motor vehicles and motorcycles"

"471","Retail sale in non-specialized stores"

"4711","Retail sale in non-specialized stores with food, beverages or tobacco predominating"

"4719","Other retail sale in non-specialized stores"

"472","Retail sale of food, beverages and tobacco in specialized stores"

"4721","Retail sale of food in specialized stores"

"4722","Retail sale of beverages in specialized stores"

"4723","Retail sale of tobacco products in specialized stores"

"473","Retail sale of automotive fuel in specialized stores"

"4730","Retail sale of automotive fuel in specialized stores"

"474","Retail sale of information and communications equipment in specialized stores"

"4741","Retail sale of computers, peripheral units, software and telecommunications equipment in specialized stores"

"4742","Retail sale of audio and video equipment in specialized stores"

"475","Retail sale of other household equipment in specialized stores"

"4751","Retail sale of textiles in specialized stores"

"4752","Retail sale of hardware, paints and glass in specialized stores"

"4753","Retail sale of carpets, rugs, wall and floor coverings in specialized stores"

"4759","Retail sale of electrical household appliances, furniture, lighting equipment and other household articles in specialized stores"

"476","Retail sale of cultural and recreation goods in specialized stores"

"4761","Retail sale of books, newspapers and stationary in specialized stores"

"4762","Retail sale of music and video recordings in specialized stores"

"4763","Retail sale of sporting equipment in specialized stores"

"4764","Retail sale of games and toys in specialized stores"

"477","Retail sale of other goods in specialized stores"

"4771","Retail sale of clothing, footwear and leather articles in specialized stores"

"4772","Retail sale of pharmaceutical and medical goods, cosmetic and toilet articles in specialized stores"

"4773","Other retail sale of new goods in specialized stores"

"4774","Retail sale of second-hand goods"

"478","Retail sale via stalls and markets"

"4781","Retail sale via stalls and markets of food, beverages and tobacco products"

"4782","Retail sale via stalls and markets of textiles, clothing and footwear"

"4789","Retail sale via stalls and markets of other goods"

"479","Retail trade not in stores, stalls or markets"

"4791","Retail sale via mail order houses or via Internet"

"4799","Other retail sale not in stores, stalls or markets"

	——retail sale of any kind of product in any way that is not included in previous classes: • by direct sales or door-to-door sales persons • through vending machines etc. ——direct selling of fuel (heating oil, fire wood etc.), delivered directly to the customers premises ——activities of non-store auctions (retail) ——retail sale by (non-store) commission agents

75. In principle, products consumed should be classified using CPC but for the purpose of annual and quarterly GDP compilation, the following aggregated breakdown of the turnover by groups of products could be used instead, as they are readily available in household expenditure surveys or retail sales:

- Food, beverages and tobacco
- Clothing and footwear
- Household appliances, articles and equipment
  - Of which: Furniture
- Machinery, equipment and supplies
  - Of which: Information-processing equipment
  - Of which: Motor vehicles and associated goods
- Personal and other goods
- Construction materials
- Other

C. Estimation of trade and transport margins

76. Trade margin as defined in the System of National Accounts is the difference between the price (in basic prices) charged to the consumer and the cost of acquisition in order to replace the goods at the time the goods were sold. Thus, the cost of goods sold recorded in business accounts reflects the book value of the goods, not the replacement value. That cost of goods sold must be adjusted for inflation.

77. There are two ways of estimating trade margins. The first one is to measure directly the trade margins which are the output of trading services provided by wholesalers and retailers. One should be reminded that wholesalers and retailers may provide other product outputs, such as transport margins (if they are invoiced separately to the consumers), repair and installation services and also financial services (lending and insurance), etc. These secondary products are not part of trade margins. Thus in the use and supply tables, the wholesaling and retailing activities may be recorded as producing more than trade products.

I. Through measurement of output of wholesaling, retailing and freight transport

78. This would require an economic census and regular sampling survey to measure the output of wholesalers and retailers.

79. The resulting trade margins will be allocated to the products that are channeled through the distributive trading network. Questionnaire should be designed in such a way to capture the turnover of each commodity and the cost for its replacement. This may not be possible; in general the margin is calculated for each group of commodities of similar nature. It is then allocated proportionally to all consumers. **Wholesaling is allocated to intermediate consumers (i.e. enterprises or businesses) and gross capital formation as generally producers buy in large quantity and therefore they can buy directly from wholesalers in order to get discounts. Retailing is allocated to final consumers. It is true that some final consumers may buy from wholesalers, and vice versa enterprises may buy from retailers; thus adjustment may be necessary if data is available**.

80. Production for own use should not be allocated with any trade and transport margins.

81. Transport margins which are used to move commodities by different modes such as rail, truck, water, air, and pipeline are mostly provided by enterprises specializing in a certain type of transport means. These services together with the transport services provided by wholesalers and retailers and invoiced separately to consumers make up trade margins.

82. These margin ratios calculated from the benchmark data will be used to estimate margins when data is not available. For annual compilation of GDP, new trade margins based on annual survey should replace the benchmark ones. Estimation will be discussed further in Part D.

II. Through indirect direct measurement of composite margins

83. Another method of measuring trade margins is to calculate the percentage difference between the average unit retail price of a given type of product against the unit basic price of the same product. Unit retail prices of products are collected regularly to calculate the consumer price indexes and similarly unit basic prices (at the establishment gate) are also collected regularly by many countries. These prices should exclude all types of sale taxes. These margins may be used to supplement data collected from retailers and wholesalers in order to determine their outputs as discussed in C.III.3.2, in order to obtain trade margins at the detailed level. The difference between the two unit prices consist of all three types of margins: wholesaling, retailing and transport margins. The composite margins calculated this way must be adjusted to guarantee that the total margins are equal to the value of output of wholesaling, retailing services and freight transports. The outputs of these activities should not include other secondary products such repair, installation, passenger transport and financial services).

84. For illustration, some trade and transport margins of the US economy and the full but aggregated set of Vietnam trade and transport margins are shown in tables 15 and 16. The US adopts the producers' price system while Vietnam uses the basic price system. Services do not have trade margins.

Table 15 Some US trade and transport margins, 2002[12]

As percentage of producers' prices

	Producers' prices	Trade and transport margins	Transportation costs	Wholesale and retail trade	Purchasers prices
Auto	100%	45%	3%	42%	145%
Tires	100%	158%	2%	156%	258%
Accessories	100%	136%	3%	133%	236%
Furniture	100%	101%	12%	89%	201%
Cereals	100%	63%	3%	60%	163%
Bakeries	100%	61%	2%	59%	161%
Beef & veal	100%	57%	3%	54%	157%
Sea food	100%	62%	3%	59%	161%
Fruits	100%	101%	13%	88%	200%
Vegetables	100%	114%	21%	93%	214%
Processed fruits and vegetables	100%	62%	4%	58%	162%

85. In the US, trade and transport margins in 2002 were very high varying from 45% to 158% over the producers' prices. The margins of fresh vegetables and fruits (over 100%) tended to be higher than processed food (about 60%) as the latter can be preserved for longer time. It is also interesting to observe that over 95% of wholesale trade services were provided by wholesale trade establishments and only 5% were provided by manufacturing industries; and that 96% of retail trade services were provided by retail trade establishments, the rest were provided by other service industries. [13] Thus surveying of trade establishments would provide good indicators for capturing trade margins and the growth

[12] "US Benchmark Input-Output Accounts 2002", *Survey of Current Business*, October 2007, Appendix C. http://www.bea.gov/scb/pdf/2007/10%20October/1007_benchmark_io.pdf

[13] U.S. Bureau for Economic Analysis, 2002 Standard Make and Use Tables at the summary level. http://bea.gov/industry/io_benchmark.htm#2002data

of the wholesale and retail trade industries. On average, the ratio of trade margins over the total value of goods was 31% and over all products output was 9.3%. The wholesale and retail industry made up 11.8% of US GDP in 2002.

86. In Vietnam, a developing country, trade and transport margins tend to be much lower than in a developed country like the USA. Based on the input-output table for 1996 of Vietnam,[14] most commodities have quite low trade and transport margins. The average trade and transport ratio for Vietnam for goods only was 10%, and for all goods and services 7%. The ones that have higher trade and transport margins like paddy (14%), coffee beans, coal mining (22%), crude oil (20%), etc. are heavy and expensive to transport. On average, the ratio of trade margins over the total value of goods was 9% and over all products output (including both goods and services) was 7.0%. The reason for the overall ratios in USA to be close to those of Vietnam when their trade margin ratios were much larger was due to the fact that the USA has a much larger share of the service industry in the economy which does not require trade and transport margins.

III. Measurement of transport margins and tax on products

87. The measurement of transport margins is different from the measurement of trade margins. They should be the output of transport industry that provides services only for the transportation of goods. They should be assessed by products. The ratios of transport services over the basic value of a commodity are calculated for the benchmark year and used for quarterly or annual estimation of transport service at constant prices.

88. Similarly, ratios of taxes on products at the benchmark period are used to calculate taxes on products, except when there are changes in tax rates. In that case, the benchmark tax ratios should be adjusted.

[14] General Statistical Office, Input-Output of Vietnam 1996, Hanoi, Vietnam, 1999.

Table 16. I-O 1996 Vietnam[15]

	Output in purchasers' prices	Output in producer prices	Output in basic prices	Imports	Output in basic prices + imports	TTM	Taxes	TTM ratios	Tax rates
Crops	81,720,528	72,997,974	70,203,836	10,620,218	80,824,054	8,722,554	2,794,138	11%	3%
Animal husbandry	21,575,982	20,751,664	20,700,927	6,272	20,707,199	824,318	50,737	4%	0%
Forestry	6,358,471	5,886,811	5,146,064	597,151	5,743,215	471,660	740,747	8%	13%
Fishery	18,067,758	16,623,520	15,990,483	14,404	16,004,887	1,444,238	633,037	9%	4%
Coal mining	4,799,625	3,941,313	3,781,956	178,279	3,960,235	858,312	159,357	22%	4%
Crude oil, natural gas	17,275,519	15,002,428	11,431,849	220,756	11,652,605	2,273,091	3,570,579	20%	31%
Other mining	8,225,248	7,720,049	7,415,992	125,747	7,541,739	505,199	304,057	7%	4%
Processed food	89,169,988	82,594,511	78,226,029	7,292,797	85,518,826	6,575,477	4,368,482	8%	5%
Glass, glass products and ceramics	1,632,903	1,492,544	1,390,259	1,277,797	2,668,056	140,359	102,285	5%	4%
Wood and construction materials	38,008,113	31,597,430	30,081,220	6,631,949	36,713,169	6,410,683	1,516,210	17%	4%
Chemicals, fertilizers and medicinal	16,836,660	12,914,168	12,292,204	25,762,279	38,054,483	3,922,492	621,964	10%	2%
Processed rubber and by products	1,378,286	1,051,464	962,219	1,488,110	2,450,329	326,822	89,245	13%	4%
Machinery, tools and metal products	35,499,840	29,076,749	27,942,483	57,417,353	85,359,836	6,423,091	1,134,266	8%	1%
Textiles and leather products	33,679,114	29,409,232	28,446,342	11,140,919	39,587,261	4,269,882	962,890	11%	2%
Printed materials except products of publishing	1,882,121	1,821,187	1,713,644	76,060	1,789,704	60,934	107,543	3%	6%
Products of publishing houses (newspapers, periodicals and books)	1,338,942	1,225,605	1,097,193	8,026	1,105,219	113,337	128,412	10%	12%
Gasoline and lubricants	516,080	213,470	210,624	13,448,001	13,658,625	656,787	2,846	5%	0%
Services	218,137,609	218,136,446	205,244,766	15,419,058	220,663,824	1,163	12,891,680	0%	6%
ALL COMMODITIES	**596,102,787**	**552,456,565**	**522,278,090**	**151,725,176**	**674,003,266**	**44,000,399**	**30,178,475**	**7%**	**4%**
GOODS ONLY	**377,965,178**	**334,320,119**	**317,033,324**	**136,306,118**	**453,339,442**	**43,999,236**	**17,286,795**	**10%**	**4%**

[15] General Statistical Office, *Input-Output of Vietnam* 1996, Hanoi, Vietnam, 1999.

D. Summary on commodity flow method

89. The commodity flow table shown in table 16 should be a guide to prepare GDP by final expenditure approach in the benchmark prices (constant prices). The approach follows the following principles:

(1) Build up the supply of products towards domestic uses in purchasers' prices from the domestic production, imports less exports.
- Trade margins, transport margins and taxes on products are estimated using the trade margin ratios, transport margin ratios and taxes ratios on products of the benchmark year. If benchmark ratios are not available, use other estimates which may be based on ratios based on the difference between consumer prices and basic prices collected for price statistics.
- The total values of trade margins, transport margins should be compared and adjusted to the output values of trade services, value of freight transport services output of the accounting year collected through surveys (after being deflated).
- Estimate of product taxes less subsidies should be compared to taxes less subsidies collected by government (after being deflated by CPI).
- Some components may be directly extrapolated by retail trade indexes and or by other surveys or administrative sources.

(2) Allocate the supply of products to various components of final expenditures.
- For every product or group of products, the use of it as intermediate consumption (column 7) is estimated using the use table. Otherwise, expert assessment is needed.
- The rest should be allocated to other uses.
  - Table 16 groups similar products together. Most of group 1 (except for fishery) if not going into inventory would go to intermediate consumption of manufacturing industries.
  - Food, after deducting its use in intermediate consumption, will mostly go to inventory or household final consumption
  - Other non-asset processed goods can go either to intermediate consumption, inventory or household final consumption. Part of the furniture consumed by business must be treated as gross fixed capital formation.
  - Machinery and equipment (except for low value small tools) should go to gross fixed capital formation. Here, for transport equipments, those that are purchased by households should be treated as household final consumption.
  - Construction, except small repairs, should go to gross fixed capital formation.
  - Output of general government services should go to final consumption of government, except for very small amount of fees paid by business and households.
  - Output of NIPSIH is treated similarly to output of general government.

- Research and development should go to gross fixed capital formation.
- Other services after deducting those consumed as intermediate consumption by industries (including general government and NPISH) should go to household final consumption.

(3) For GDP at current prices, components of household final expenditures may be inflated back by appropriate consumer price indexes, gross capital formation and inventories are inflated by basic price indexes (i.e. producer prices indexes). Exports and imports in current prices are their original prices.

Table 17. Commodity flow table

	Output in basic prices	Plus Imports	Less Exports	Trade margins	Product taxes	Supply to domestic uses in purchasers' prices	IC	GFCF	INV	HHFC	GFC	NPISH FC	Domestic uses in purchasers' prices
							In purchasers' prices						
	(1)	(2)	(3)	(4)	(5)	(6) =1+..+5	(7)	(8)	(9)	(10)	(11)	(12)	(13)=7+..+12
Group 1: raw materials													
Crop and animal products													
Forestry and logging products													
Fishery products													
Ores and minerals													
Group 2: processed non-asset goods													
Electricity, gas and water													
Food products													
Beverages													
Tobacco products													
Yarn, thread and textile materials													
Textile articles and apparels													
Leather products and footwear													
Product of woods and straw													
Paper products, printed materials													
Refined petroleum													
Basic chemicals and other chemicals													
Rubber and plastic products													
Glass products													

	Output in basic prices	Plus Imports	Less Exports	Trade margins	Product taxes	Supply to domestic uses in purchasers' prices	IC	GFCF	INV	HHFC	GFC	NPISH FC	Domestic uses in purchasers' prices
							In purchasers' prices						
	(1)	(2)	(3)	(4)	(5)	(6) =1+..+5	(7)	(8)	(9)	(10)	(11)	(12)	(13)=7+..+12
Furniture													
Basic metals and metallic products, except machine													
Group 3: Asset products													
Machinery and equipment													
Construction													
Group 4: Services													
Wholesale, retail trade													
Transportation													
Postal and telecommunication													
Research and development													
Financial, real estate, rental and leasing													
Business services and production services													
Community ,social and personal services													

Notes:

IC: intermediate consumption
GFCF: Gross fixed capital formation
INV: Changes in inventories
HHFC: Household final consumption
GFC: Government final consumption
NPISH FC: NPISH final consumption.

Appendix 1

Consumer expenditure survey in the United States of America

The consumer expenditure survey in the United States of America is carried out annually by the Bureau of Labor Statistics on behalf of the Bureau of Census. This extraction of relevant information from the section *Frequently Asked Questions* would provide some basic understanding of the consumer or household survey. [16]

What is the Consumer Expenditure Survey?

The Consumer Expenditure Survey collects information from the Nation's households and families on their buying habits (expenditures), income, and household characteristics. The strength of the survey is that it allows data users to relate the expenditures and income of consumers to the characteristics of those consumers. The survey consists of two components, a quarterly Interview Survey and a weekly Diary Survey, each with its own questionnaire and sample.

How is the Consumer Expenditure Survey used?

Data from the Consumer Expenditure Survey are used in a number of different ways by a variety of users. One important use of the survey is for the periodic revision of the Bureau of Labor Statistics Consumer Price Index (CPI). The Bureau uses survey results to select new market baskets of goods and services for the CPI, to determine the relative importance of CPI components, and to derive new cost weights for the market baskets. Market researchers find the data useful in analyzing the demand for groups of goods and services. The data allow them to track spending trends of different types of consumer units (See the response to question 3 for the definition of a consumer unit). Government and private agencies use the data to study the welfare of particular segments of the population, such as those consumer units with a reference person aged 65 and older or under age 25, or for low-income consumer units (See the response to question 4 for the definition of a reference person). Economic policymakers use the data to study the impact of policy changes on the welfare of different socioeconomic groups. Researchers use the data in a variety of studies, including those that focus on the spending behavior of different family types, trends in expenditures on various expenditure components including new types of goods and services, gift-giving behavior, consumption studies, and historical spending trends.

What is a consumer unit?

A consumer unit consists of any of the following: (1) All members of a particular household who are related by blood, marriage, adoption, or other legal arrangements; (2) a person living alone or sharing a household with others or living as a roomer in a private home or lodging house or in permanent living quarters in a hotel or motel, but who is financially independent; or (3) two or more persons living together who use their incomes to make joint expenditure decisions.

[16] http://www.bls.gov/cex/faq.htm#q2

Financial independence is determined by spending behavior with regard to the three major expense categories: Housing, food, and other living expenses. To be considered financially independent, the respondent must provide at least two of the three major expenditure categories, either entirely or in part.

The terms consumer unit, family, and household are often used interchangeably for convenience. However, the proper technical term for purposes of the Consumer Expenditure Survey is consumer unit.

Who is the reference person?

The reference person of the consumer unit is the first member mentioned by the respondent when asked to "Start with the name of the person or one of the persons who owns or rents the home." It is with respect to this person that the relationship of the other consumer unit members is determined.

What types of data are available and in what form?

A number of types of data, in several different formats, are available from the Consumer Expenditure Survey. The standard data releases include the following:

NEWS RELEASE. This annual release consists of a brief discussion of the latest survey results. The information generally is available on the Consumer Expenditure Survey Web site on the day on which the annual data are released. The annual data usually are released late in the year following the reference year (for example, 2002 data will be available late in 2003).

ANNUAL REPORT. The report includes integrated data from the Diary and Interview portions of the Consumer Expenditure Survey in ten standard tables. The tables show average expenditures, income, and characteristics for consumer units classified by 13 standard characteristics—quintiles of income, before-tax income class, age, size of the consumer unit, composition of the consumer unit, number of earners, housing tenure, race, type of area (urban or rural), Hispanic origin of reference person, region, occupation, and education.

TWO-YEAR REPORTS. Two separate reports are published in alternating years.

Biennial Report – This report includes integrated survey data and is published at 2-year intervals. The tables included in the biennial report cover the same characteristics that are shown in the annual report, but with additional detail. Also included are tables showing average annual data over a 2-year period for the following characteristics: Income before taxes cross-tabulated by either age, consumer unit size, or region; single consumers by gender cross-tabulated by either income or age; and selected Metropolitan Statistical Areas. The biennial report also compares survey data with other data sources.

Anthology – This report includes both methodological and analytical articles. The methodological articles are intended to provide data users with greater insight into ongoing improvements in the survey as well as issues that are faced in collecting, processing, and

publishing information from such a complex survey. The analytical articles provide information on topics of interest using Consumer Expenditure Survey data.

MONTHLY LABOR REVIEW AND OTHER JOURNAL ARTICLES. Analyses of Consumer Expenditure Survey data appear frequently in articles in the Bureau's Monthly Labor Review and occasionally in other economic journals.

Does the Consumer Expenditure Survey include information on assets and liabilities?

Information on assets and liabilities is collected from respondents to the survey; however, like the income data, the assets and liabilities data are not as reliable as the expenditure data. Respondents may be unable or unwilling to provide accurate information on their assets and liabilities. Net changes in assets and liabilities are published in the Consumer Expenditure Survey biennial reports. The public-use CD-ROMs also include information on assets and liabilities. An alternative source of data on assets, liabilities, and other financial information of consumers is the Survey of Consumer Finances, conducted by the Federal Reserve Board. For information, visit the Web site at www.federalreserve.gov/pubs/oss/oss2/scfindex.html.

Are historical data from the Consumer Expenditure Survey available?

Yes. Prior to 1980, the Consumer Expenditure Survey was conducted about every 10 years. Since that time, it has been an ongoing survey. Data are available from both the pre-1980 and later surveys. For information about the availability of any Consumer Expenditure Survey data, including historical data.

Caution should be used in comparing data from the current survey with those gathered during pre-1980 surveys, or even during the first few years of the current survey, due to changes in concepts and definitions. For example, integrated data from the Diary and Interview Surveys have been published from 1984 onward; prior to 1984, data from each survey were published separately. Also prior to 1984, published data covered only the urban portion of the population. Beginning in 1984, the published data are for the total population, urban and rural.

How are the Consumer Expenditure Survey data collected?

Data collection is carried out by the U.S. Census Bureau under contract with Bureau of Labor Statistics. In the Interview Survey, each consumer unit is interviewed every 3 months over five calendar quarters. In the initial interview, information is collected on demographic and family characteristics and on the consumer unit’s inventory of major durable goods. Expenditure information also is collected in this interview, but is used only to prevent duplicate reporting in subsequent interviews. Expenditure information is collected in the second through the fifth interviews using uniform questionnaires. Income and employment information is collected in the second and fifth interviews. In the fifth interview, a supplemental section is administered in order to account for changes in assets and liabilities over a one-year period.

In the Diary Survey, respondents are asked to keep track of all their purchases made each day for two consecutive 1-week periods. Participants receive each weekly diary during a separate visit by a Census Bureau interviewer.

How do the Census Bureau and BLS handle respondent confidentiality?

The information that respondents provide is used solely for statistical purposes. All Census Bureau data collectors take an oath of confidentiality and are subject to fines or imprisonment for improperly disclosing information provided by respondents. Names and addresses are removed from all forms, and are not included in any statistical release. As a further precaution, the Bureau of Labor Statistics applies certain restrictions to the microdata shown on the public-use CD-ROMs. These include geographical and value restrictions that prevent the identification of respondents.

Why are there two survey components?

The two survey components—the Interview Survey and the Diary Survey—are designed to collect different types of expenditures. The Interview Survey is designed to obtain data on the types of expenditures respondents can recall for a period of 3 months or longer. These include relatively large expenditures, such as those for property, automobiles, and major durable goods, and those that occur on a regular basis, such as rent or utilities. Each consumer unit is interviewed once per quarter for five consecutive quarters. The Diary Survey is designed to obtain data on frequently purchased smaller items, including food and beverages, both at home and in food establishments, housekeeping supplies, tobacco, nonprescription drugs, and personal care products and services. Each consumer unit records its expenditures in a diary for two consecutive 1-week periods. Respondents are less likely to recall such purchases over longer periods. Although the diary was designed to collect information on expenditures that could not be easily recalled over time, respondents are asked to report *all* expenses (except overnight travel) that the consumer unit incurs during the survey week.

What are some of the limitations of the data?

The Interview and Diary Surveys are sample surveys and are subject to two types of errors, nonsampling and sampling. Nonsampling errors can be attributed to many sources, such as differences in the interpretation of questions, inability or unwillingness of the respondent to provide correct information, mistakes in recording or coding the data obtained, and other errors of collection, response, processing, coverage, and estimation for missing data. The full extent of nonsampling error is unknown. Sampling errors occur because the survey data are collected from a sample and not from the entire population. Tables with standard errors and other reliability statistics are available on request. Standard error tables are available on the Consumer Expenditure Survey Web site; these tables are classified by the same demographic characteristics found in the 10 “standard” tables published for the survey, except for the classification by region.

Caution should be used in interpreting the expenditure data, especially when relating averages to individual circumstances. The data shown in the published tables are averages for demographic groups of consumer units. Expenditures by individual consumer units may differ from the

average even if the characteristics of the group are similar to those of the individual consumer unit. Income, family size, age of family members, geographic location, and individual tastes and preferences all influence expenditures.

Do the data that are published come from both surveys?

Yes. Since 1984, the Bureau of Labor Statistics has published data integrated from the Interview and Diary components of the survey. Because the two components are designed to capture different types of expenditures, integrating data from them combines the important features of both. The integrated data provide a complete accounting of consumer expenditures and income, which neither survey component alone is designed to do.

How are the data integrated?

Detailed expenditure data for some items, such as food items, are unique to the Diary Survey. Data for other items, such as third-party reimbursements for medical care expenses or the cost of auto repairs, are collected only in the Interview Survey. However, there is considerable overlap in coverage between the surveys. Because of this overlap, integrating the data presents the problem of determining the appropriate survey component from which to select the expenditure items. When data are available from both survey sources, the more reliable of the two, as determined by statistical methods, is selected. As a result, some estimates are selected from the Interview Survey and others, from the Diary Survey.

What are the standard errors as reported in the Consumer Expenditure Survey standard error tables?

Sampling error is the difference between the survey estimate and the true population value. The most common measure of the magnitude of sampling error is the standard error. The primary purpose of standard errors is to provide users with a measure of the variability associated with the mean estimates. This variability measures how close different estimates would be to each other if it were possible to repeat the Consumer Expenditure Survey over and over using different samples of consumer units. A small standard error indicates that multiple samples would produce values that are consistently very close to each other, whereas a large standard error would indicate that multiple samples would produce values that are not close to each other.

Beginning with year 2000 data, the Consumer Expenditure Survey program has made available standard error tables using integrated data from both surveys. These standard error tables correspond to the program's standard tables, except for the classification by region, population size of area of residence, and selected age, and are available on the Consumer Expenditure Survey Web site.

Do the data show cost-of-living differences among areas?

No. The Consumer Expenditure Survey data in published tables show average expenditures and incomes of consumer units. The expenditure levels may vary across areas for a number of reasons. These include demographic and economic differences in age levels, income levels, size

of consumer units, tastes, and personal preferences. A commonly used method of comparing the cost of living among areas involves developing an estimate of the cost of a similar bundle of goods and services for each area. The Consumer Expenditure Survey makes no attempt to measure the cost of a standard bundle of goods and services, but instead provides actual expenditure levels of consumer units.

Why do some expenditure levels, such as those for vehicle purchases, appear to be so low?

The data shown in the published tables are averages for all consumer units, or for all the consumer units in a particular demographic group. For example, the expenditures, income, and characteristics for the group with a reference person under age 25 are averaged across all consumer units with that characteristic. Because not all consumer units purchase each item during the survey period, the average expenditure for an item is generally considerably lower than the expenditure by those consumer units that purchased that item. The less frequently an item is purchased, the greater the difference between the average for all consumer units and the average for those purchasing the item.

Are reimbursed expenditures, such as those for medical expenses or car repairs, included in the published totals?

No. Expenditures shown in the published tables are direct out-of-pocket expenditures. The amounts are net of reimbursements.

Why do average annual expenditures exceed income for some of the demographic groups? How can consumer units spend more than they earn?

Data users may notice that average annual expenditures presented in the income tables sometimes exceed income before taxes for the lower income groups. For data prior to 2004, the primary reason for that is believed to be nonresponse to questions about income, a common problem in household surveys. The average incomes shown in the published tables for 2003 and earlier are derived from information provided by complete income reporters (consumer units that provide information for at least one of the major sources of their income, such as wages and salaries, self-employment income, or retirement income). However, even complete income reporters may not have provided a full accounting of all income from all sources. Research has shown that some complete reporter consumer units classified in the lower income classes have expenditure levels that are more typical of upper income consumer units. Their expenditures raise the average expenditure levels of the income class in which they are classified.

Beginning in 2001 for the Interview Survey and 2004 for the Diary Survey, the income data include information collected from respondents using income ranges or brackets—for example $2,000-$2,499—in addition to discrete income amounts, as provided in the past. Respondents who are unable or unwilling to provide a specific dollar amount may be able or willing to estimate a range for their incomes. The use of bracketing in data collection provides more reliable income estimates to the extent that it increases the percentage of households providing income data.

In addition, starting in 2004, the Consumer Expenditure Survey uses imputation to fill in missing values for income data. The published tables now include income data from all consumer units—not just complete reporters. Income imputation has reduced the gap between income and expenditures when negative, and increased it when positive. For example, in 2003 (the last year prior to imputation), expenditures exceed income on average for all complete reporters who report less than $40,000 in income. In 2004, expenditures exceed income on average for all consumer units for whom less than $30,000 is reported or imputed. Similarly, in 2003, income exceeds expenditures for total complete reporters by less than $8,400; in 2004, income exceeds expenditures for all consumer units by more than $11,000.

However, there are reasons why expenditures exceed income for the lower income groups despite the use of imputed income data. Consumer units whose members experience a spell of unemployment may draw on their savings to maintain their expenditures. Self-employed consumers may experience business losses that result in low or even negative incomes, but are able to maintain their expenditures by borrowing or relying on savings. Students may get by on loans while they are in school, and retirees may rely on savings and investments.