4. Valuation, Coverage, and Classifications

A. Introduction

4.1 Price indices are compiled using price ratios for goods and services activities and the weights associated with them. The weights correspond with and derive from the value aggregate for which the index is designed: in this case, exports and imports of goods and services. Since a value aggregate for a good or service comprises the sum of prices times quantities across the types of goods and services in the aggregate, the prices forming the price ratios in the associated price index must be drawn from the prices comprising the value aggregate.

4.2 The properties of the value aggregate that directly translate into properties for the prices and weights of the associated price index are the valuation, coverage, and classification of transactions or assets making up the aggregate. Valuation defines what the prices in the value aggregate of interest include and do not include. Coverage defines the scope of goods and services contained in the aggregate, and classification divides that aggregate into a standard set of subaggregates.

4.3 This chapter considers three valuation bases from the *System of National Accounts, 1993* (*1993 SNA*) that are relevant to export and import value aggregates: the basic price, the purchasers' price, and the "free on board" (fob) price. The basic price is what the supplier receives per unit of a good or service exchanged, and the purchasers' price is what the purchaser pays. Basic prices thus pertain to supply flows of goods and services while purchasers' prices pertain to use flows of goods and services. The two generally differ because to consummate the transaction the purchaser may be required to pay a third party or parties an amount per unit of the good or service over and above what the supplier is willing to receive. Purchasers may pay a tax on products to (or receive a subsidy on products from) a government unit, pay a transportation charge to another non-financial enterprise, pay an insurance charge to an insurance corporation, and/or pay a distribution charge to a retail or wholesale trade enterprise. The fob price is the value of the good or service at the point just prior to departure from the supplying economic territory. The fob price thus comprises the basic price, plus taxes less subsidies on products levied by the general government *of the supplying economic territory*, plus distribution margins, transportation, and insurance services added *to get the product from the point of manufacture to the point of departure from the supplying economic territory*.[1]

4.4 The link between valuation principle and supplier/user status therefore has direct implications for the valuation basis appropriate for exports and imports. To fix ideas, consider the following table, which shows that exports from an economy must equivalently be imports to the rest of the world, and imports to an economy must be exports from the rest of the world.

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[1] These latter services are presumed to be provided by resident suppliers.

Table 3.1 The resident and nonresident approaches to international trade flows

Perspective of a *resident* unit in the economy (*1993 SNA* sector S.1)				Perspective of a *nonresident* unit in the rest of the world (*1993 SNA* sector S.2)		
Exports *fob*			equal	Imports *fob*		
Exports supplied by the resident transacting unit at *basic prices*	plus →	(1) Taxes on products paid to resident general government units (such as export taxes), *less* (2) subsidies on products received from resident general government units *plus* (3) separately invoiced transport, insurance, and distributive services paid to other resident units	plus →	(1) Taxes on products paid to nonresident general government units (such as tariffs), *less* (2) subsidies on products received from nonresident general government units *plus* (3) separately invoiced transport, insurance, and distributive services paid to other nonresident units	equal →	Imports received by the nonresident transacting unit at *purchasers' prices*
Imports *fob*			equal	Exports *fob*		
Imports received by the resident transacting unit at *purchasers' prices*	less →	(1) Taxes on products paid to resident general government units (such as tariffs), *less* (2) subsidies on products received from resident general government units *plus* (3) separately invoiced transport, insurance, and distributive services paid to other resident units	less →	(1) Taxes on products paid to nonresident general government units (such as export taxes), *less* (2) subsidies on products received from nonresident general government units *plus* (3) separately invoiced transport, insurance, and distributive services paid to other nonresident units	equal →	Exports supplied by the nonresident transacting unit at *basic prices*

4.5   When we take the point of view of a unit that is a center of economic interest in the territory of the economy, we will say we are taking the *resident approach to international trade flows*, and value exports of the total economy at basic prices and imports at purchasers' prices (left column of Table 3.1). When we take the point of view of a unit that is a center of economic interest in the rest of the world, we will say we are taking the *nonresident approach to international trade flows*, and value exports of the total economy at purchasers' prices and imports at basic prices (right column of the Table 3.1).

4.6   To foreshadow the significance of this valuation distinction, which will be taken up again in Chapters 15, 17, and 19 of this *Manual*, the *1993 SNA* effectively defines the standard export and import aggregates according to the *nonresident* approach to international trade flows. We can identify exports from the *nonresident approach* as that part of the rest of the world's *uses* of total supply[2], comprising its intermediate consumption, final consumption, gross capital formation and exports obtained from resident suppliers. We can identify imports from the *nonresident approach* in the *1993 SNA* as that part of the total output of the rest of the world supplied to resident users.[3] These standard export and import aggregates appear in the familiar expression for gross domestic product (GDP) by expenditure: GDP = final consumption + gross capital formation + exports – imports.[4] Export and import price indexes defined under the nonresident approach thus are critical for decomposing GDP by expenditure into price and volume factors. The GDP volume index from this decomposition measures the rate of economic growth from the expenditure approach.

4.7   We can, however, also identify exports from the *resident approach* in the *1993 SNA* as that part of total output supplied to nonresident users (users resident in the rest of the world). We can identify imports from the *resident approach* as that part of the economy's *uses* of total supply, comprising its intermediate consumption, final consumption, gross capital formation and exports obtained from nonresident suppliers (suppliers resident in the rest of the world). We will see in Chapter 15 how the resident approach to international trade permits us to show alternative analytical expressions for GDP, compiled by both the production and expenditure approaches, to the standard expenditure-based expression in the foregoing paragraph. These alternative analytical presentations provide the information users need to evaluate the impact of trade on the rate of productivity change in the economy, among other topics of active policy interest.

4.8   To show the price and volume decomposition of these alternative analytical presentations of GDP and other national accounts aggregates in volume terms thus, in principle, requires two sets of export and import price indices, one set for the nonresident

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[2] Total supply is output plus imports plus distribution/transport margins plus taxes less subsidies on products (including import and export taxes). Exports also include sales from goods inventories and ownership transfer of fixed nonfinancial assets from residents to nonresidents.

[3] Imports also include sales from goods inventories and ownership transfer of fixed nonfinancial assets between from nonresidents to residents.

[4] Note that GDP by expenditure shows the final uses of resources yielded from production. Exports are among those final uses.

valuation approach and one set for the resident valuation approach. Chapter 17 considers, among other topics, the conditions under which the two sets of indices coincide, but also notes, by implication, that they generally will not be equal. In any case, for the purpose of deflating the national accounts export and import aggregates, price indices incorporating the nonresident valuation approach will be appropriate. The other analytical price-volume breakdowns will require export and import price indices based on resident valuation approach.

4.9   A final point is worth noting here. The export and import volume indices associated with the resident and nonresident approaches generally will not give exactly the same answer because of the margins driving wedges between basic and purchasers' prices, notably nonproportional taxes less subsidies on products (e.g., export taxes and import tariffs). This difference between the aggregate volume of exports supplied and the aggregate volume of uses of those exports is, in fact, meaningful, as demonstrated in the 1930s by Hotelling[5], and should not be suppressed.

B. Valuation

B.1   Valuation and time of recording

4.10   For any given transaction between residents of different economic territories, a single date of recording in concert with a unique valuation for that date ensures international accounting consistency: the value of the seller's export is the same as the value of the buyer's import, and both are recorded or *accrued* on the same date. The *1993 SNA* (as updated) and the *Balance of Payments and International Investment Position Manual* (*BPM6*) recommend that exports and imports of goods be recorded in the accounts of the transacting parties at the market price prevailing when *change of ownership* occurs. Recording of exports and imports of services should be recorded at the market price prevailing on the date the services are supplied to the purchaser. The market price is the price a willing buyer would pay to acquire the good or service from a willing seller for one specific exchange.

B.2   Valuation Methods

4.11   Three methods of valuation are used in the *1993 SNA*. The **basic price** is the unit price received by the producer from the purchaser, minus any tax payable or subsidy receivable as a result of its production or sale, and excluding any transport charge separately invoiced by the producer. The basic price *plus* taxes on products resulting from production (excluding invoiced VAT) *less* subsidies on products resulting from production *equals* the **producers' price**.[6] The producers' prices *plus* invoiced transportation charges, *plus*

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[5] Harold Hotelling,, The General Welfare in Relation to Problems of Taxation and of Railway and Utility Rates *Econometrica*, Vol. 6, No. 3. (July, 1938), pp. 242-269.

[6] The difference between basic and producer prices is generally the per unit subsidy that the producer receives along with taxes on production. While basic prices are preferred in the XMPI because they represent the per unit revenue received by the producer, producer prices may have to be used when information on subsidies is not available. In most cases producers do not receive subsidies, so the basic and producer prices will be the same.

distribution margins, *plus* non-deductible VAT *equals* the **purchasers' price.** The focus here is on basic and purchasers' prices and the three factors that need to be considered in converting output and imports from basic prices to purchasers' prices, and *vice versa*, are: transport margins, trade margins, and taxes less subsidies on products.

4.12   The United Nations guidelines on International Merchandise Trade Statistics[7] define **fob (free on board) values** to include the transaction value of the goods and the value of services performed to deliver goods to the border of the exporting country. **Cif (cost, insurance, and freight) values** include the transaction value of the goods, the value of services performed to deliver goods to the border of the exporting country and the value of the services performed to deliver the goods from the border of the exporting country to the border of the importing country.[8] The United Nations (1998) and (2004) recommend that the statistical value of *imported* goods be cif and *exported* goods fob. Fob values can be applied to imports, but they exclude the transport cost of the imported goods to the port or place of importation; the cost of insurance while in international carriage; and the cost of loading, unloading and handling charges associated with the transport of the imported goods to the port or place of importation.[9]

4.13   Exports fob thus are in practice the same as "exports at the frontier of the economic territory" in Table 3.1 and imports fob are in practice the same as "imports at the frontier of the economic territory" in Table 3.1. The identities between, respectively, exports and imports of the economic territory and, respectively, imports and exports of the rest of the world make fob valuation a useful accounting tool. Notwithstanding its cif recommendation for valuing imports, United Nations (2004) acknowledges that fob values for imports assist reconciling import data with the corresponding fob export data from the country of origin and allow world trade at a common valuation to, at least in principle, balance.

4.14   If the source data for the weights and unit values (as proxies for prices) are derived from customs declarations there is a need to identify how closely the cif and fob valuations meet analytical needs within and outside of the *SNA 1993*. Since trade transactions for balance of payments and national accounts statistics should be recorded on the basis of their value at the time of change in ownership between residents and nonresidents, and since some freight and insurance services are supplied by residents of the importing country, the cif values need to be separated into their fob and freight and insurance components. Further, balance of payments and national accounts statistics distinguish between goods and services and freight and insurance margins have to be shown separately to allow for this.

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[7] United Nations, Department of Economic and Social Affairs, Statistics Division, 1998, International Merchandise Trade Statistics: Concepts and Definitions, Studies in Methods, Series M, No.52, Rev.2, New York: United Nations; forthcoming Rev. 3 in 200?; and United Nations, Department of Economic and Social Affairs, Statistics Division 2004, International Merchandise Trade Statistics: Compilers Manual Studies in Methods, Series F, No.87, New York: United Nations.
[8] United Nations (2004) Chapter 14 and Annex B *ibid* outline a number of valuation possibilities and how they differ from a cif and fob valuation.
[9] Under fob the cost of loading may be divided between buyer and seller and only partially included in the value of the shipment when it should in principle be included in full in the value of exports.

4.15   There is a need to consider what valuation principles are desirable for analytical purposes. Neither fob nor cif valuation considers the effect on transactors of taxes less subsidies on internationally traded products, for example. This is undertaken in Section B.3. These valuation principles will be seen to be identified according to basic and purchasers' prices and while such principles can be applied when obtaining data from surveys of establishments, there remains a problem if the data source is customs declarations. In Section B.4 the correspondence between the valuation principles used in customs declarations and those required to meet these analytical needs is considered. Practical issues are outlined in B.5. Issues relating to the point at which valuation takes place, the treatment of services, and the unit of account are outlined in sections B.7 to B.9

B.3   Analytical needs for valuing imports and exports

4.16   The first approach to valuation derives directly from the *1993 SNA* (Chapter 15), from the goods and services account and supply and use tables. Exports and imports are nominal value aggregates within the *1993 SNA*. As such, an appropriate approach to the valuation of the prices and weights used in the compilation of exports and import price indices is to follow the valuation principles of their counterpart value aggregate.[10] Price indices for exports and imports can then be readily used to deflate the value aggregates of exports and imports in the *SNA*. As outlined below, the principles used for the valuation of export and import commodity value aggregates in the *SNA* are derived so that they can be meaningfully combined with output, consumption, and investment aggregates to form commodity balances and, on aggregation over commodities, estimates of gross domestic product (GDP) using the expenditure method. The approach in Section B.3.1 is appropriate when the primary purpose of the price indices is for use as deflators of export and import value aggregates in the *SNA*, especially when such deflated aggregates are used as components of gross domestic product (GDP) volume estimates. The valuation requirements for nominal value aggregates for exports and imports thus carry over to the price indices used as their deflators. The valuation principles appropriate for export and import price indices used as deflators will be shown to require a perspective from a nonresident producer.

4.17   Section B.3.2 addresses the valuation principles appropriate for export and import price indices used to analyze the transmission of inflation, terms of trade measurement, and productivity analysis require a resident's perspective. Placing this third approach within the supply and use system and goods and services account of the *1993 SNA* will also be briefly outlined.

4.18   The three approaches to valuation are outlined below in B.3.1 and B.3.2. These approaches also require for valuation principles for the time of recording in a manner consistent with the *1993 SNA,* and these are outlined in section B.4.

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[10] See paragraphs 14.35 and 14.36. These valuation principles are synonymous with those of the *Balance of Payments Manual, Fifth Edition* (*BPM5*).

B.3.1 Valuation based on the 1993 SNA: the nonresident's perspective[11]

4.19   The *1993 SNA* equates the amount of a commodity used for intermediate consumption, final consumption, capital formation (including inventories) or exports with the amount supplied either by domestic production or by imports, that is:

(1) *supply:* output + imports = *uses*: intermediate consumption + final consumption + capital formation + exports

4.20   Since imports are supplied to the domestic economy by the rest of the world and exports produced by the domestic economy and used by the rest of the world, this perspective is referred to as the *nonresident's perspective*. For this framework the uses (including exports) are valued at purchasers' prices and supply (including imports) at basic prices. For the equation to balance *at the commodity level* it is necessary to add trade and transport margins and taxes less subsidies as separate items to the supply aggregates at basic prices on the left-hand supply.[12] Note that summing, for each aggregate, over all commodities and re-arranging the above equation yields:

(2) output - intermediate consumption + taxes less subsidies = final consumption + capital formation + exports – imports

or

$$O - IC + (t - s) = C + I + G + (X - M)$$

where the left-hand-side of (2) is GDP from the production approach and right-hand-side is GDP from the expenditure approach. Trade and transport margins are no longer included since the commodity balances for the trade and transport industries are included in the aggregates.

4.21   This framework establishes how exports and imports fits into the *1993 SNA* and the valuation principles required for them to do so, which carry over to the price indices. The weights and prices for **exports should be valued at purchasers' prices and for imports at basic prices**. However, if imports are to be converted to purchasers' prices within the *SNA* then the national accountants require price indices at purchasers' prices. Note that this should include transport and trade margins since deflators are ideally required for use for individual commodity groups to build up to GDP volume estimates, as opposed to the aggregate as a whole.[13] The nonresident's perspective is appropriate for the deflation of the corresponding aggregates at nominal values in the supply and use table and goods and services account.

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[11]This topic is discussed further in Dridi and Zieschang (2004).

[12] Such commodity balances are used by national accountants to estimate validate data and, where necessary, to estimate missing values as residuals. Supply and use tables consist of a set of such commodity balances covering all commodities in an economy organized in a matrix form with product groups in rows..

[13] This is primarily because the value aggregates for a commodity group will include a wider range of commodities than those sampled for the price indices. The assumption is that the sampled price changes apply to all commodities in the group and this is likely to be more feasible if applied at the group level than for the aggregate as a whole.

Trade price index compilers should establish and maintain close contacts with their counterparts in national accounts to ensure the price index requirements meet their needs.

B.3.2 Valuation based on a deconstruction of the production accounts: the resident's perspective[14]

4.22   GDP estimated from the *production approach* is based on the *value added* to the value of goods and services used in the production process (intermediate consumption) to generate the value of output. GDP can be thought of as being equal to the sum of the value added produced by all institutional units resident in the domestic economy. Taxes less subsidies on products need to be added back to value added to ensure that the values of what are supplied and used are equal. GDP is defined from the production approach on the left hand side of (2), therefore, as the sum of value added by resident producers plus the value of taxes less subsidies on products. The production account in the *SNA* does not break Y and Z down into output to the domestic market, Od, and rest of the world, Orow, and similarly for intermediate consumption, ICd and ICrow. However there remains an obvious decomposition of:[15]

$$Y + M + (t - s) = Z + C + I + G + X$$
$$\left(Y_d + Y_{row}\right) + M + \left(t_d + t_X + t_M - s_d - s_X - s_M\right) = \left(Z_d + Z_{row}\right) + \left(C_d + C_{row}\right) + \left(I_d + I_{row}\right) + \left(G_d + G_{row}\right) + X \tag{3}$$
$$= \left(Z_d + C_d + I_d + G_d\right) + \left(Z_{row} + C_{row} + I_{row} + G_{row}\right) + X$$

4.23   The output in equation (3) is valued at basic prices and includes output supplied to the domestic market Y_d and supplied to the rest of the world Y_{row}, the latter being exports. Intermediate consumption is valued at purchasers' prices and includes intermediate consumption supplied from the domestic market Z_d and supplied from the rest of the world Z_{row}.

4.24   Of course, besides intermediate consumption, final consumption and capital formation also may be supplied from domestic sources $C_d + G_d + I_d$, or the rest of the world $C_{row} + G_{row} + I_{row}$. From the resident's perspective, imports comprise the sum of all domestic uses supplied from the rest of the world, $Z_{row} + C_{row} + G_{row} + I_{row}$. ***Accordingly, exports should be valued at basic prices and imports at purchasers' prices***. The valuation from the production side is from the *resident producer's* perspective: the prices at which they sell and buy. The production approach from a resident's perspective, in concert with utility maximization approaches for consumption, and investment function approaches for capital formation, would be appropriate for import and export price and volume series used for the analysis of (the resident country's) productivity change, changes in the terms of trade, and transmission of inflation.

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[14] Chapter 19 discusses this topic in further detail, especially with regard to its relation to the nonresident's perspective.
[15] It should be noted that while some of the value of exports and imports will be undertaken directly by households, NPISH, and government, for example tourist/cross border shopping, a large proportion of X and M can be represented as Orow and ICrow respectively on the production side.

B.4 Valuation practice and data sources

4.25   The valuation used in practice depends on the source data available. Two sources are considered, establishment-based survey data and data derived from customs declarations.

B.4.1 Establishment-based survey data

4.26   Establishment survey data permits the valuation of transactions to be better determined on the basis of analytical needs. It is possible in a survey to define the required price according to the principles underlying the analytical need. For example, for the analysis from a resident producer's perspective, exports should be valued at basic prices and imports at purchasers' prices. The prices requested in the survey can be defined accordingly. This manual recommends that priority be given to the use of establishment surveys for exported and imported commodities that account for a large proportion of traded values undertaken by a relatively small number of establishments, such as oil and some basic commodities. Establishment surveys should be used not only to minimize the unit value bias that arise from customs-based data, but to better adopt the appropriate valuation principles.

4.27   Even with establishment surveys problems with valuation exist. This is because whether a transaction takes place at basic or purchasers prices depends on whether transport services are separately invoiced or not. The treatment of transport margins depends on when the change in ownership occurs. If, for example, the supplier (exporter) delivers the commodity to the importer without an explicit charge for transportation, the transport margin is part of the basic price—change of ownership takes place on delivery. If the supplier (exporter) separately invoices the importer for the (secondary) activity of transportation, then the transport margin is a separately identifiable part of the purchasers' price—change of ownership takes place on leaving the supplier (exporter). Surveys of establishments will have to ask domestic establishments for such information so that the appropriate valuation is adopted. However, the issue is further complicated if the transportation is sub-contracted to a third party, whether the cost of the sub-contracted transport services are separately invoiced, whether the importer collects the commodity using their own fleet or a sub-contactor, and where the third party contractor is resident, especially if it is in a third country. [16]

4.28   The transaction price for exports and imports will typically be that recorded by the domestic resident establishment. Information on transport margins paid by nonresident importers and exporters and not separately invoiced will generally be unavailable. Say

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[16] Consider the situation of A exporting to B. If A charges B an all inclusive price for transport supplied by her own fleet or by C, the basic price is the cost of the good including the transport margin, to which tax is applied to bring the cost to purchasers' prices. If A separately invoices B for delivery using her own fleet or C, then the basic price is the price of the good, to which the tax is applied and then the transport margin added. B may collect the good from A in which case the basic price is the cost of the good to which tax is added to arrive at purchasers' price. Transport is an ancillary activity of B and not included in the purchased price. Alternatively B may collect from A using C. Again the basic price is the cost of the good to which tax is added to arrive at purchasers' price, but the transport costs are a separate service purchased from C an valued at purchasers' prices. While the basic prices may differ depending on the trans[port arrangements, the final purchasers' price is the same except in the case when B collects the product from A using her own fleet, for which it is excluded, or using C, in which case it will be separately invoiced and recorded as a transportation service.

exports are required at nonresident's purchasers' prices. If the domestic supplier charged a price that included transportation, then transport margins form part of basic prices and only trade margins, taxes less subsidies need to be applied to derive purchasers' prices. If the domestic supplier separately invoices and supplies transportation, then the transport margins is not part of basic prices but a separate component to add to trade margins, taxes less subsidies to derive purchasers' prices. If, however, a third party in a yet different country is contracted by the importer for the transportation, then the records of the exporter do not include the transportation costs and exports cannot be properly valued at purchasers' prices. More details on this valuation are given in the *1993 SNA Rev.* 1. While the principles for valuation of transport margins are outlined and illustrated in Section 5 of Chapter 15 of the *1993 SNA Rev.* 1, the practices of properly incorporating international transport charges is limited by data availability and, in particular, depend on whether establishment-based survey data or data based on customs declarations are available.

B.4.2 Data derived from customs declarations

4.29 For some commodities information from **customs statistics** may be used for weights and for unit value changes, as proxies for price changes. Establishment-survey information is, while more resource intensive to obtain, is preferable to customs data, as discussed in Chapter 2. Customs data is prone to serious unit value bias and, in many cases including intra-country trade within customs unions, may be not be available.[17] Information on imports from customs declarations are valued cif (that is, they include the cost of carriage, insurance and freight) at the point of entry into the importing economy. This valuation is standard, regardless of whether any of the cif elements are provided by domestic enterprises because import duties are imposed on the cif valuation. If it is the exporter that contracts the delivery (whatever the nationality of the carrier) the inclusion of the cost of transport in the value of the good imported renders the cif valuation closer to a basic prices valuation for the purpose of incorporating transport charges.[18] If the exporter separately invoices the importer for the (secondary) activity of transportation, then the transport margin is a separately identifiable part of the purchasers' price and the cif valuation is closer to a (nonresident's) purchasers' price. If the importer undertakes delivery itself or contracts with a unit resident in the same economy, there is in fact no import of services even though it will appear there is when imports of goods are recorded cif. If the importer contracts the delivery and the carrier is not co-resident with the importer, an import of services takes place and while its value will be included in cif, for the *SNA 1993* it would be desirable to separate the cif value into a goods only and transport service element. The valuation using customs declarations also exclude the cost of transport from the border of the importing economy to the premises of the importer. Transport for this may be provided by either a resident or nonresident carrier.

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[17] Examples of commodities that may be excluded for customs statistics are services; goods circulating in customs unions; goods delivered to off-shore establishments such as oil platforms; certain types of small-volume but high-value goods carried by persons, such as diamonds; and ships and aircraft whose transit

[18] Though describing this as cif is not helpful in an SNA context since it is a legitimate part of the cost of the imported good and should not be seen as a separate import of transport services.

4.30   Exports are valued fob (free on board) at the point of exit from the exporter's economy. The *1993 SNA* requires that valuation takes place when the change of ownership takes place. As considered above, this will vary with each transaction depending on the nature of the contract for transportation services.

Table 17.1,Valuation for country A's exports and imports trading with country B		
	Exports	Imports
Resident's approach	*Supply: basic prices* *fob (at border of exporting A)* All inclusive price by A: Basic price ≈ fob plus transport from border of A to B; Separately invoiced: basic price ≈ fob.	*Use: purchasers' prices* *cif (at border of importing A)* All inclusive price by B: cif plus taxes ≈ purchasers' price; Separately invoiced: purchasers' price ≈ cif.
Nonresident's approach	*Use: purchasers' prices* *fob (at border of exporting A)* All inclusive price by B: purchasers' price ≈ fob plus taxes less subsidies plus trade margins; Separately invoiced: purchasers' price ≈ fob plus taxes less subsidies plus trade margins.	*Supply: basic prices* *cif (at border of importing A)* All inclusive price by B: basic price ≈ cif Separately invoiced: purchasers' price ≈ cif.

4.31   Consider the valuation of **imports** to country A from country B. Consider the bottom right quadrant of Table 3.1. From the **nonresident's (country B) perspective**, imports to A are supplied by the nonresident producers B valued at basic prices. Imports from customs data are, however, valued at cif at the border of the importing country A. If B supplies at an all-inclusive price that includes transport margins, then the *SNA 1993 Rev. 1* identifies the all-inclusive price as a basic price and this is approximately equal to a cif valuation at the border of A. The approximation, and subsequent similar ones, is because cif excludes the cost of transportation from the border of A to the importing establishment in A itself. If transport margins are separately invoiced by B, then the *SNA 1993 Rev. 1* identifies the basic price to be defined to exclude the transport margins and the cif value approximates a valuation at purchasers' prices, one inappropriate for the nonresident's approach to imports. However, if a **resident's (country A) perspective** is taken for imports then the desired valuation is at purchasers' prices, and import data from customs sources are valued cif. Again the appropriateness of this depends on how transport charges are priced. If an all inclusive price is charged by B, the transport charges are considered to be part of the basic price and taxes less subsidies plus trade margins have to be added to the basic price to move the estimate up to purchasers' prices. If the transport charges are separately invoiced, then purchasers' prices includes both the transport margins and the price of the good and the cif estimate approximates purchasers prices including the transport margin up to the importer's border.

4.32   **Exports** from the **resident country A's perspective** should be valued at basic prices (top left quadrant). Exports from customs data are however valued at fob at the border of the exporting country, A. If A supplies at an all-inclusive price that includes transport margins,

then the *SNA 1993 Rev. 1* identifies the all-inclusive price as a basic price. However, this all inclusive price includes transport costs from the border of A to B, while the fob price excludes them. If A supplies the goods with the transport charges separately invoiced, then the the *SNA 1993 Rev. 1* identifies the transport costs as a component of purchasers's prices that is not part of the basic price. Exports from the **nonresident's (country B's) perspective** (bottom left quadrant) area are a use and should be valued at purchasers' prices. If A supplies transport services at a separately invoiced all-inclusive price that includes transport margins, then the *SNA 1993 Rev. 1* identifies the all-inclusive price as a basic price. The fob value at the border of the exporting country in excluding the transportation costs from the border is a good approximation of the basic price, but the need of this quadrant is for purchasers' prices and taxes less subsidies plus trade margins need to be added. If A supplies the goods with the transport charges separately invoiced, then the the *SNA 1993 Rev. 1* identifies the transport costs as a component of purchasers' prices, that the fob value again excludes and needs added taxes less subsidies plus trade margins.

B.5 Valuation practice

4.33 Compilers need to identify a target conceptual basis for valuation. Compilers would need to consult with national accountants to determine the valuation basis used in the accounts for imports and exports at nominal values so that consistent price indices are derived as deflators. The *SNA 1993* recommends that exports be valued from the nonresident's perspective at purchasers' prices and imports at basic prices, though the *SNA 1993 Rev. 1* identifies the possible valuation of both exports and imports at basic prices. Compilers should note that the nominal values of exports and imports used by national accountants may not match up to the valuation standards required by the *SNA 1993*. In such a case it is likely to be more appropriate that the deflator should be consistent with the *practice* of the valuation of the nominal values so that the volume series is well defined, albeit with valuation shortcomings. Ity should be noted that for price change measurement if, for example, the transport margin for transporting goods from the border of a country to the establishment is omitted, the price change is in error only if the transport margin as a percentage changes over time.

4.34 There is also the analytical stance considered above of the resident's approach that requires a valuation of exports at basic prices and imports at purchasers' prices. This approach can be associated with the decomposition of output producer price indices into price indices for exports and the domestic market and the decomposition of input producer price indices into price indices for imports and the domestic market. Such export and import price indices are useful for the analysis of the transmission of inflation, terms of trade, and productivity.

4.35 If the data source is establishment surveys then the questions on prices can be framed so that the appropriate concept(s) can be used for the measure. If only customs data are available then the limitations of the valuation system from such data for different analytical purposes can at least be noted in metadata. In the longer run product sectors should be identified that make up significant shares of trade and of which a large part is undertaken by a relatively small number of establishments, or if a larger number of establishments, ones for

which representative samples can be easily surveyed. Such "low hanging fruit" should be the subject of establishment surveys to be combined with data from customs sources to form, for price measurement, hybrid indices as outlined in Chapter 2.

B.6   Point at which valuation takes place

4.36   According to the *1993 SNA*

"Exports and imports should be recorded at the market value of the goods at the point of uniform valuation (the customs frontier of the economy from which they are exported), i.e., the goods are valued free-on-board (f.o.b.) at that frontier. The value includes that of the goods and of the related distributive services up to that point, including the cost of loading onto a carrier for onward transportation, where appropriate." [*1993 SNA*, paragraph 14.36]

4.37   The *1993 SNA* requires that imports and exports be valued at the border of the exporting country, i.e. at a price excluding international transportation and insurance charges from that point, the f.o.b. price. Among the valuation options that might be selected for uniform application in international trade statistics, f.o.b valuation allows separate identification of the transportation and insurance services supplied along with internationally traded goods.

B.6.1 Change of ownership in the 1993 SNA

4.38   The *SNA* also requires that one and only one date be attached to the transaction. For any given transaction between residents of different economic territories, the single point of valuation and single date of consummation ensures international accounting consistency: the value of the seller's export is the same as the value of the buyer's import, and both are recorded or *accrued* on the same date. To guide determination of the accrual date the *1993 SNA* and the *BPM5* direct the statistician to look for evidence of *change of ownership*. From the above quote, the *1993 SNA* takes change of ownership to be the date of international shipment for most transportable goods.

4.39   In some instances, however, goods may change ownership without being transported. For example, in the purchase/sale of aircraft, ships, and trucks, all of which are large-scale equipment capable of transporting themselves (with some added piloting services that might be provided by the buyer), title may change without the equipment changing its location. This uses the same recording principle except either there are little or no transportation and insurance charges for relocation associated with the transaction, or the transportation and insurance services are contracted (delivered) sometime after change of ownership of the goods occurs.

4.40   As acknowledged by the *1993 SNA* and *BPM5*, data sources for international goods trade statistics generally deviate from nonresident valuation and time of recording ideals. The *1993 SNA* notes that

"In the absence of sources specifying the date on which ownership changes, there is strong presumption that the goods will cross the frontiers of the countries concerned shortly before or soon after the change of ownership

takes place and trade statistics reflecting the physical movement of goods across the national or customs frontier may often be used as an approximation."

4.41   The *BPM5* states

"The change in ownership ... is considered to occur at (or is proxied by) the time the parties to the transactions record it in their books or accounts." [*BPM5*, paragraph 114] "In practice, trade statistics based on physical movement of goods across national or customs frontiers may be used in the absence of other statistics to approximate, by showing evidence of physical possession, the timing of changes in ownership." [*BPM5*, paragraph 117]

4.42   Observe that the operational accrual principle *BPM5* proposes is to date transactions when they are booked by the transacting parties, in the interest of consistency with the financial accounts. Unfortunately, as *BPM5* itself observes, this does not result in mutually consistent accounts, for either goods and services or financial transactions, between the transacting parties.

4.43   The World Trade Organization (WTO) Agreement on Valuation[19] establishes the basis for the customs valuation of international trade. The customs value is based on the transaction value of the imported goods, and is equivalent to the market price charged to the importer for the goods at the time of export, plus some adjustments. The adjustments permitted under the Agreement cover the following:

i.   Charges that may be incurred by the buyer before the goods are exported, but are not included in the price payable;
ii.   Royalties and license fees that must be paid by the buyer as a condition of the sale of the goods; and
iii.   The value of goods and services supplied by the buyer and used in the production of the goods.

The customs value including the adjustments under the Agreement is essentially the f.o.b. value in the *1993 SNA*.

4.44   For cases where the transaction value cannot be determined, the WTO has established a hierarchical list of alternative methods that could be considered. The two most important alternatives are the transaction value of identical goods or the transactions value of similar goods, respectively.   The United Nations' *International Merchandise Trade Statistics: Concepts and Definitions*[20] (*IMTS*) recommends that countries follow the WTO guidelines in the valuation of goods for statistical purposes. The statistical value differs from the customs value in such a way that compilers make adjustments "to promote the comparability of international merchandise trade statistics" (IMTS, para 116, Chapter IV. Valuation). The data compilers are encouraged to use additional sources to make sure that imported goods are correctly valued at CIF and exported goods are correctly valued at FOB..

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[19] Agreement of Implementation of Article VII of The General Agreement on Tariffs and Trade 1994.
[20] United Nations, International Merchandise Trade Statistics: Concepts and Definitions. Series M, Number 52, Revision 2, 1998.

B.6.2 Using the resident concept for goods

4.45   For purposes of domestic analysis of price movements, our needs are best met by using a residents' approach. We can view the export price index as a sub-index of the PPI and view the import index as an input index to the PPI. We use the resident's approach for our analysis of domestic inflation, terms of trade, contract escalation, and productivity analysis. Thus, we need to see what valuation method best meets our needs for residents' analysis and how this compares with the accrual principle in the *1993 SNA*.

4.46   For exports, customs information usually permits an exact estimate of f.o.b. value. Further, in our stylized model of a goods trade transaction, the date of export declaration to customs is generally a good approximation for the *1993 SNA* date of change of ownership, though the terms of sale could make change of ownership later, when the buyer receives—and takes possession—of the shipment.

4.47   For imports, valuation usually includes international transport insurance and freight, which many customs data systems do not compile distinctly from the cost of the goods themselves. As noted earlier, the WTO Valuation Agreement allows for adjustments to be made to the transactions prices in arriving at the valuation of goods. For practical purposes, it is therefore common practice in merchandise trade statistics to value imports inclusive of the costs of taking the goods to the customs frontier of the importer, such as insurance and freight "adjustments." This is the cost, insurance, and freight (c.i.f.) value.[21]

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[21] The *IMTS* refers to a range of contracting arrangements to pay for transporting and insuring goods in transit based on the guidelines established by the International Chamber of Commerce (ICC). The f.o.b. and c.i.f. prices are among these arrangements (see in bold below). The ICC's transaction classification is called INCOTERMS and contains the following components, as enumerated in Annex D of the *IMTS* (the following 13 item INCOTERMS 2000 is more recent than the INCOTERMS 1990 in the *IMTS*; see, for example http://www.iccwbo.org/incoterms/wallchart/wallchart.pdf):

> EXW: ex works (named place): The seller makes the goods available to the buyer at the seller's premises.
> "F" Terms: The seller is obliged to deliver the goods to the buyer's appointed carrier.
> FCA: free carrier (named place)
> FAS: free alongside ship (named port of shipment)
> **FOB: free on board (named port of shipment)**
> "C" Terms: The seller has to contract for carriage. The seller does so without assuming the risk of loss of or damage to the goods, and also without assuming additional costs arising from events occurring after shipment or dispatch.
> CFR: cost and freight (named port of destination)
> **CIF: cost, insurance and freight (named port of destination)**
> CPT: carriage paid to (named place of destination)
> CIP: carriage and insurance paid to (named place of destination)
> "D" Terms: The seller bears the costs and risks of transporting the goods to the destination.
> DAF: delivered at frontier (named place)
> DES: delivered ex ship (named port of destination)
> DEQ: delivered ex quay (named port of destination)
> DDU: delivered duty unpaid (named place of destination)
> DDP: delivered duty paid (named place of destination)

(continued)

4.48   The *1993 SNA* notes that the c.i.f. value is akin to the purchasers' price, exclusive of import taxes and duties that the importer would pay for taking delivery of the goods at his customs frontier. As noted under exports, the export declaration date generally is the best approximation to the change of ownership date. This points out the usefulness of compiling imports f.o.b. along with (1) the original date of shipment and (2) distinct compilations for insurance services and for freight services, with breakdowns by the export/import status of these services, if possible. If these statistics were consistently compiled by all countries, a large fraction of trade could be measured on an *SNA* accrual basis, to a closer approximation. Problems would of course remain, one of which is that in practice, trade may involve a sequence of stop-overs through other countries, which makes any bilateral analysis between country of origin and country of final destination very difficult. In many cases the exporter will not know at the time of exportation where the final destination of the goods will be.

4.49   In well-measured customs frontier-based (physical movement-based) trade statistics, the **customs-based imports** of one country from a given partner country comprise three components. They are the **customs-based exports** of the partner to the receiver at f.o.b. value, plus the **change in inventories of goods in transit** from the partner to the receiver at f.o.b. value, plus **the transport and insurance services**, regardless of the residency of the supplier, delivered on imports. The latter may be further **decomposed into services by residency of the provider**. This tautology arises first because customs exports are additions to transit inventory, while customs imports are the withdrawals from it. This decomposition of imports may be of interest to some users of trade statistics, for example, in tracking trade in transit and in enforcing tax law. It also shows why customs exports for the world will not be equal to the customs imports for the world, even if perfectly measured and consistently valued f.o.b. The difference would be the change in worldwide transit inventories of goods.

4.50   We also observe that a well implemented worldwide accrual methodology, by contrast, would produce world exports, f.o.b., equal to world imports, f.o.b., by construction. If we adopted the *1993 SNA* accrual convention that all goods trade be recorded exports, f.o.b., as a consistent approximation to change of ownership dating (analogous, for example, to date of shipment in accrual of output from resident producers, the other component of supply to an economy besides imports), there would be no inconsistencies in the world trade accounts for goods. There could, however, be problems with the quality of the estimate. This would arise in part because exports may not be covered fully in customs statistics if there are no export taxes or export regulations for which the customs service is accountable.

4.51   This weakness in export statistics might lead us to adopting customs import statistics, even if there are compromises in timing (import rather than export frontier) and in the valuation (c.i.f.) of the product detail of trade. Since customs almost always is accountable for tariff collection, imports, while weaker conceptually regarding change of ownership, may be stronger in coverage. The valuation weakness could be dealt with partially by producing f.o.b. imports in the aggregate by netting off estimates of total insurance and freight obtained from non-customs sources. The *1993 SNA* falls back to exactly such an approach:

"Thus, while total imports of goods must be recorded f.o.b. in the System, the extent to which it may be feasible to disaggregate imports valued f.o.b. by type of good or country of origin is uncertain in practice. It may be much easier for some countries than others, but many countries find it difficult, if not impossible, to provide detailed figures of imports valued f.o.b. For this reason it is sufficient for purposes of the System to record total imports f.o.b., together with the value of associated transportation costs, included under services." [*1993 SNA*, paragraph 14.41]

4.52   Regarding timing, for many goods change in transit inventories may be quite small numerically if transport times are small relative to the accounting period, so imports f.o.b., for the receiving country can be very close to exports, f.o.b. of the sending country.[22] For other goods, there is a valid argument for collecting the valuation (f.o.b.) and dating (export frontier) information needed for accrual accounting of imports f.o.b. along with their c.i.f. value on customs forms, at least on a sample basis for the relevant detailed customs classes.

B.7   Services

4.53   This manual follows the guidelines of the *1993 SNA*, the *BPM6*, and the *Manual on Statistics of International Trade in Services* in the valuation of services.[23] Services should be valued at market prices at the time the services are delivered.[24] Where a market price is not available, then an equivalent market price based on similar market conditions should be adopted. This may not be the case in transactions between affiliated units, which may not reflect market conditions. These units often use transfer prices, which are assumed accounting values that may have only a loose relationship to the prevailing market prices when the transactions are recorded.[25]

4.54   Financial services require special treatment because they are provided at an implicit price and imbedded in investment income flows. This manual follows the *1993 SNA* in valuing the insurance services provided to policyholders in one economic territory by insurers in another. This value is premiums less expected claims plus "premium supplements," the investment income on technical reserves over and above the cost of funds to the insurer or "reference rate" of return. We also follow the *1993 SNA* in valuing bank and other financial services provided by financial intermediaries in one economic territory to account holders in another as the sum of (1) the difference between a reference rate and the interest rate paid to liability holders times the liabilities outstanding, plus direct service charges to liability holders, and (2) the difference between the rate earned on assets and the reference rate times the assets on account (at market value).

4.55   Services generally are consumed at the point of production. Therefore, measuring international trade in services does not present the problems of differences in dating

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[22] There are important counterexamples to negligible changes in transit inventories, however. For example, crude petroleum often is held in transit inventory on tankers in international waters while the owners wait for a propitious time to sell.

[23] United Nations, *Manual on Statistics of International Trade in Services*, Series M, Number 86, 2002.

[24] As a clarification regarding international transportation and insurance services, these would be delivered at the time the goods are loaded onto the carrier.

[25] For a more in-depth discussion on the treatment of transfer prices see Chapter 18 of this manual.

transactions presented by trade in goods, at least in principle.[26] However, it may be difficult to determine the residency of the units undertaking the transaction. As trade usually necessitates direct interaction between the units, there may be no official intermediary (like the customs authority for goods) identifying the economic agents, much less valuing and dating their transactions in services.

B.8   Unit of Account

4.56   The goods and services should be converted from the transactions currency to the unit of account used in the statistics at the prevailing exchange rate at the time of the transaction. If this prevailing rate is not available then the average rate, calculated as the midpoint between the selling and buying rates, should be used. This is consistent with the conversion principles recommended by the *1993 SNA* and the *BPM6*. Note that the accrual principle weighs heavily here, as it may provide a date of conversion, and thus an exchange rate that differs significantly from the dates on customs documents.

C.   Coverage

C.1   Goods

4.57   Merchandise trade statistics are based on administrative documents and are defined in United Nations (1998) to include the physical movement of goods across the borders of as country. The effective coverage of such statistics is determined and limited by the effective coverage of the customs procedures in force for the country.[27] As an extreme example, intra-country trade between member countries of the European community is excluded from customs statistics. The required concepts under the *1993 SNA* Rev.1 and the *BPM6*, is that exports and imports cover, in principle, all goods for which a change of ownership takes place between the residents of a given economy and nonresidents. It therefore encompasses sales, purchases, barter, or other transfers of all goods between resident and nonresidents. The nature of resident to nonresident transactions implies that when such a change of ownership occurs, the goods usually cross the customs frontier; thus, data on merchandise trade are often compiled primarily from custom warrants, which may normally only record goods that are subject to customs controls. As noted above custom warrants would be one data source available to develop export and import price indices if the calculated unit values

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[26] However, establishing the date of delivery for the international transportation and insurance of goods may be a problem, depending on transit times relative to the accounting period, as they are recorded in customs administrative systems when crossing the frontier of the destination country rather than the frontier of the source country.

[27] International merchandise trade statistics compilers make some adjustments to the basic customs data which are partly in line with what is sought after by the *1993 SNA* Rev.1 and the *BPM6*. The discussion of coverage is phrased in terms of the needs of coverage of *1993 SNA* Rev.1 and the *BPM6* an data from customs documents. Differences in the coverage concepts of International Merchandise Trade Statistics and BPM5 are given in Annex 4 of the IMTS Compilers Manual: United Nations, Department of Economic and Social Affairs, Statistics Division, (2004) *International Merchandise Trade Statistics: Compilers Manual*, Statistical Papers Series F, No. 87 (New York: United Nations)—a draft supplement had been prepared at the time of writing (Statistical Papers Series F, No. 87, Add. 1).

are unbiased; otherwise, establishment surveys may be necessary to get adequate coverage of all import commodities traded. The process of recording trade in goods may not necessarily coincide with the change of ownership as goods may change ownership without having to cross the customs frontier or may cross the customs frontier without changing ownership. If these are significant then price surveys may be the only source to get accurate price information on the transactions. The following represent goods that change ownership but do not cross the customs frontier but should be included in merchandise trade statistics:

- Transportation or other movable equipment that may be operated outside of the country of residence of the unit of ownership;
- Goods produced by resident units operating in international waters and sold to nonresidents;
- Goods that have been lost or destroyed after the change of ownership occurs but before reaching the customs frontier of the importer.
- Merchanting trade involves a sale by a resident to a nonresident, but there is no physical movement of the goods—they do not cross the border of the country. Examples are some transactions relating to commodity dealing and wholesaling. *BPM6*, in a change from *BPM5*, applies the change in ownership principle with their acquisition by a merchant being included as a negative export and the sale as positive, the difference being recorded as "net export of goods under merchanting."

4.59 Likewise, the following represents goods that may cross the customs frontier but do not change ownership and should therefore be excluded from merchandise trade statistics:

- Goods in transit to a third country;
- Issued banknotes or coins in circulation as these represent financial claims and are not goods.
- Goods being transferred to territorial enclaves such as military bases of foreign countries or foreign embassies.
- Transportation, construction, or installation equipment functioning as such, which may enter or leave a country without changing ownership.
- Goods that have been lost or destroyed before the change of ownership takes place.
- Goods sent abroad for processing (and returned from abroad after processing) should not be included in exports or imports. The *SNA 1993 Rev.1* Chapter 15 and *BPM6*, in changes to the *SNA 1993* and *BPM5*,[28] recommend that if goods are being processed abroad but ownership of the goods have not been passed to the processing company, the processor assumes no risk with the selling of the product and the ownership remains with the resident processor. The transaction is to be treated as international trade in services.
- Goods sent for repair temporarily cross borders but ownership does not change. Their values should be included under *BPM6* as "repairs and maintenance on moveable goods" under services.

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[28] A change in ownership was imputed in the *SNA 1993* for "substantial processing."

4.60   Further, not all goods are subject to customs controls and therefore these transactions may not be recorded by the customs authorities. Electricity and goods transported by pipelines, such as oil and water, are not usually recorded by customs authorities and alternative methods, such as direct surveys of importers, are to be employed to ensure coverage. Again, establishment surveys may be the only adequate source to collect price information for producing XMPIs.

4.61   Though the change of ownership criterion is critical in determining the boundary for merchandise trade, the *1993 SNA* identifies the following exceptions:

i.   Goods transferred as a result of a financial lease. The 1993 SNA recommends that an imputation be made for a change of ownership between the lesser and the lessee;
ii. Goods transferred to or from an enterprise to a nonresident branch or subsidiary. The unit receiving the goods is regarded as having a different residence to the enterprise, therefore a de facto change of ownership is assumed;

C.2   Services

4.62   Trade in services, as in all services recognized by the *1993 SNA*, covers all intangible products that have been created as the output of a production process. However, despite this clear theoretical definition, it may be difficult in practice to delineate service prices because the production of some services may be closely related to the production or delivery of goods. Nonetheless, service price indices should be developed as source data on the price of services are derived.

4.63   Merchandise trade statistics present two boundary problems. First, for practical purposes, imports are normally recorded by customs authorities and in merchandise trade statistics inclusive of the cost of insurance and freight services. The *1993 SNA* and the *BPM6* however, recommend that these services be deducted from the cost of the goods and included in services. Price indices for these services should be developed using establishment surveys.

4.64   Travel (tourism services) is considered a separate service in the balance of payments classification; however, it does not represent a type of production, but rather, reflects mode of consumption. It is the final consumption expenditure of nonresidents and covers the consumption of both goods and services. A number of countries have been successful in developing tourism export and import price indices using establishment surveys.

D. Classifications

4.65   This section describes some of major systems that are used for classifying goods and services. Classifications for merchandise trade statistics have been long established by the United Nations, in particular, and accepted internationally for the economic analysis of the movement of goods and for customs purposes. Most countries use the Harmonized System to classify trade in goods and this is the preferred system for producing XMPIs. Because many countries have historically used the Standard International Trade Classification, they may

choose to produce XMPIs on both systems to have a longer history of detailed price indices on the same classification system.

4.66   Classifications of trade in services have only recently gained prominence primarily due to the increasing interest in international trade in services. In addition to the current trade classifications, other broad classifications have been developed to identify the details of goods and services that are produced. They are generally linked to the merchandise trade classifications, which serve as useful starting points for coverage of goods.

D.1   The Harmonized System

4.67   Harmonized Commodity Description and Coding System (HS) or Harmonized System, as it is commonly known, was introduced in 1988 by the World Customs Organization, as a replacement for the Standard International Trade Classification (SITC). Until that time, the SITC was the single most widely used trade classification system available. The HS is the system recommended by the United Nations Statistical Commission for the compilation and dissemination of merchandise trade statistics and is now widely used by most countries. The classification is revised every 4-6 years to take account of changing conditions of international trade.

4.68   In the HS, goods are classified primarily according to the component material or the type of product, degree of processing, function, and economic activity. Goods are classified under 21 main sections, which are further subdivided into 97 chapters, 1,241 headings, and 5,113 subheadings. Descriptions are common across all countries down to the six-digit level; however, for statistical or tariff purposes, countries are allowed to include additional digits on a country specific basis.

4.69   The chapters of the HS are grouped as follows:

01-05   Animals and Animal Products
06-15   Vegetable Products
16-24   Foodstuffs
25-27   Mineral Products
28-38   Chemicals and Products of Allied Industries
39-40   Plastics and Rubber Products
41-43   Raw Hides
44-49   Wood and Wood Products
50-63   Textiles
64-67   Footwear and Headgear Products
68-71   Stone and Glass
72-83   Metals
84-85   Machinery and Electrical Equipment
86-89   Transportation Equipment
90-97   Miscellaneous Products

D.2 Standard International Trade Classification

4.70 The Standard International Trade Classification has been in use since 1961, and before the advent of the HS was the only trade classification in use. It covers all goods that enter international trade. It groups goods according to the (a) materials, (b) degree of processing that they have undergone (c) uses of the product, and (d) the importance of the product in merchandise trade. The classification structure consists of five levels comprising 10 sections, 67 divisions, 261 groups, 1,033 subgroups, and 3,121 items at the five digit level. The SITC was last revised in 1986 with the release of SITC Rev. 3 and no further revisions are planned.

D.3 Broad Economic Categories

4.71 The classification by Broad Economic Categories (BEC) classifies goods by economic classes distinguishing food, industrial supplies, capital equipment, consumer durables, and consumer non-durables. It was designed to convert goods classified by the SITC according to the three broad end-use classes of consumption goods, intermediate goods, and capital goods commonly used in compiling national accounts statistics. It, therefore, provides a simple one-to-one correlation with the SITC.

4.72 The BEC provides for 19 basic categories. The hierarchical structure comprises seven broad divisions, which may be further broken down into subdivisions and categories. However, only 16 categories are included within the three broad *SNA* classes. The excluded categories cover goods that cannot be identified exclusively with a specific *SNA* class. The excluded categories are 321 (Motor Spirit), 51 (Passenger motor Cars), and 7 (Goods not elsewhere classified). Like the SITC, the UN does not expect to release additional updates of the BEC.

D.4 Central Product Classification

4.73 The Central Product Classification (CPC) is used to classify all goods and services that are the result of a production process and covers broadly the goods and services that fall within the production boundary of the *1993 SNA*. It classifies products according to their physical characteristics, intrinsic nature, and industry of origin.

4.74 The products in the CPC are classified according to the type of production defined in the International Standard Industrial Classification of All Economic Activities (ISIC) in such a way that there are CPC subclasses corresponding to the principal type product produced in each 4-digit activity of the ISIC. The CPC deviates from the definition of production used by the *1993 SNA* in some minor areas; for example, produced assets have been excluded from the CPC but are in the *1993 SNA*. The classification system consists of nine sections, 70 divisions, 305 groups, 1,167 classes, and 2,092 subclasses. Its critical role in the *1993 SNA* is principally to define the product rows of the *SNA*'s Supply and Use Table (SUT). As discussed in Chapter 15, the SUT is, as well, the conceptual framework for the index product weights of the PPI, CPI, and XMPIs.

D.5   Statistical Classification of Products by Activity in the European Union

4.75   The Statistical Classification of Products by Activity in the European Union (CPA) was developed by the European Union for use in member countries. The classification is based on the industrial origin of the products, and it is structurally linked to the Revised Statistical Classification of Economic Activities in the European Community (NACE). It has six levels comprising 17 sections, 60 divisions, 220 groups, 492 classes, 946 categories, and 2,303 subcategories.

D.6   Extended Balance of Payments Services Classification

4.76   The Extended Balance of Payments Services Classification (EBOPS) was developed as an extension to the *BPM5* classification of international trade in services and reflects the main categories of the BOP standard components. It is primarily a product based classification and is therefore described in terms of the CPC. However, as with the *BPM5*, the EBOPS includes some classes that are not compatible with international product classifications such as the CPC or CPA. One such class is travel, which represents a mode of consumption and not a type of production. It includes a wide range of services as well as the specific goods purchased by travelers.