

CHAPTER 8

Global manufacturing

Introduction

8.1 Previous chapters have described and analysed certain corporate activities (sending partly manufactured goods for processing, merchanting, and the transfer of rights in IPPs and the flows arising from their use), and described how their treatment has been affected by the introduction of the new international statistical standards.

8.2 This chapter concerns cases in which corporate activities are combined in what is known as global manufacturing. The focus here is not on the particular activities but on how they may be combined, often by MNEs, and the challenges presented for national accounts (including the balance of payments). After reference to the description of global manufacturing in BPM6, and a useful definition of manufacturing arrangements taken from some recent work by the US Office of Management and Budget (OMB), Chapter 8 examines some examples of global manufacturing, illustrating the difference between the previous and new statistical standards with numerical examples. It then describes the treatment of large turnkey projects, where, coordinated by an enterprise whose main contribution is project design, planning and management, several enterprises from different countries contribute goods and services, while assembly and construction works are carried out in the country commissioning the project. Annex 8.1 describes the experience in Israel of handling the statistical treatment of global production. The second part of this annex concerns the case in which manufacturing is entirely outsourced – what the OMB calls “factoryless” goods production. Annex 8.2 presents some recent work in the United States concerning the classification of such “factoryless” manufacturers who outsource all production while maintaining management control over all stages of the work and ownership of the product. In some respects the coordinating enterprise in a turnkey project (the project vendor in the terminology used in the section on turnkey projects) resembles a factoryless producer as described here. This is why large-scale international assembly and construction

projects and the role of project vendors are also discussed in this chapter.

8.3 Although the chapter and the annexes draw on work undertaken for particular national or regional statistical purposes, some or all aspects of the phenomena described are relevant to most countries.

Background

8.4 Earlier versions of the SNA and BPM did not mention global manufacturing. The phenomenon however now receives some prominence. In the 2008 SNA, the term is used only in connection with merchanting. Thus paragraph 14.73 repeats the prescribed treatment of merchanting activity as a negative export (when the merchant – here an entity engaged in global manufacturing – acquires the goods) and a positive export when they are subsequently sold, without having entered the country in which the merchant is resident. Elsewhere (paragraph 26.21) the 2008 SNA says that, under merchanting, the goods themselves should be sold on in the same condition.

8.5 The BPM6 has more to say on global manufacturing. Thus box 2 in Chapter 10 reads as follows.

“Recording of global manufacturing arrangements

With the trend toward a more globalized economy, there has been growth in cross-border production arrangements. These arrangements involve different aspects of production processes being partly or wholly undertaken by affiliates or outsourced to unrelated entities.

There are several types of arrangements, such as:

(a) Re-exports. Re-exports can be very significant in economies that are international centers for trading, transshipment, and processing that does not change the physical form of the goods (such as packing and labeling).

(b) Goods under merchanting. While sometimes used for simple wholesaling, merchanting also arises when parent companies acquire ownership of

goods from their own manufacturing affiliates for resale to wholesaling affiliates or other customers, without taking possession.

(c) Manufacturing services on physical inputs owned by others and the associated movements of goods under these processing arrangements.

(d) Free trade and other special zones.

For economies where some or all of these arrangements are significant, it may be useful to use supplementary presentations that bring these processes together and/or provide more detail, such as presenting gross flows by type of activity, in order to enhance knowledge of economic developments.”

8.6 The main text contains further relevant material.

“Merchanting arrangements are used for wholesaling and retailing. They may also be used....for the management and financing of global manufacturing processes. For example, an enterprise may contract the assembly of a good among one or more contractors, such that the goods are acquired by this enterprise and resold without passing through the territory of the owner. If the physical form of the goods is changed during the period the goods are owned, as a result of manufacturing services performed by other entities, then the goods transactions are recorded under general merchandise rather than merchanting.....In cases where the merchant is the organizer of a global manufacturing process, the selling price may also cover elements such as providing planning, management, patents and other know-how, marketing, and financing. Particularly for high-technology goods, these non-physical contributions may be large in relation to the value of materials and assembly (paragraph 10.42).

.....Manufacturing on own account and manufacturing services on physical inputs owned by others are different arrangements for manufacturing, and it is desirable to show them separately because the role of the manufacturer in designing, marketing, and financing the goods is quite different. With globalization and outsourcing, it is becoming more common to have parts of a production process conducted in different economies. Showing these transactions on a change of ownership basis assists in identifying actual transactions and correctly attributing value added due to the owner for designing, marketing, financing, and so forth, rather than to the party that undertakes physical processes” (paragraph 10.71).

The message from the international standards, and their application

8.7 As noted above, the 1993 SNA and BPM5 do not mention global manufacturing. The 2008 SNA mentions global manufacturing only in the context of merchanting, though it later says that, under merchanting, the goods should be sold on in the same condition in which the merchant acquired them.

8.8 BPM6 gives global manufacturing a much fuller treatment. Taking box 10.2 and the relevant parts of the main text together suggests the following. Where the parent MNE acquires ownership of goods from a manufacturing affiliate (or an unrelated enterprise) abroad and sells them on, the parent MNE engages in merchanting. In this case the goods are already in a finished state when the parent MNE buys them. The main text (paragraph 10.42) then indicates that the merchant (as principal in the global manufacturing process) may provide planning, management, patents and other know-how, marketing, and financing.

8.9 The previous paragraph describes the case in which the parent MNE buys manufactured products from a manufacturing affiliate or unrelated enterprise abroad. Another possibility however is that the parent MNE owns the physical inputs or semi-manufactured goods on which the manufacturing affiliate or unrelated enterprise abroad works to produce the final article. BPM6 describes manufacturing services on physical inputs owned by others as processing arrangements. Here it seems that the parent MNE is buying a processing service from the manufacturing affiliate or unrelated enterprise abroad. This differs from the more familiar processing case discussed in Chapter 5, where the principal sends goods abroad for working up and then takes them back when the processing is complete. But the intended treatment seems to be the same – instead of recording negative then positive exports, as where the parent MNE is deemed to engage in merchanting, here the parent MNE pays a processing fee to the manufacturing affiliate or other enterprise abroad.

8.10 The key then seems to be whether the parent MNE owns the goods throughout the processing abroad, or buys them in the finished state. This is indeed the ownership principle that distinguishes goods for processing from merchanting, as described in Chapters 5 and 6. In recording the activities of MNEs, however, it may be very difficult for statisticians to distinguish between these cases, particularly since the goods in neither case cross the border of the country in

which the parent MNE is resident. Consider the case in which the parent MNE resident in country A buys raw materials in country B which are used to manufacture goods by an affiliate in country C. The parent MNE then arranges the sale of the finished product to country D. Following the ownership principle, country A should record an import of raw materials from B, followed by an export of finished goods to D, and in between an import of processing services from C. This may be difficult in practice. No doubt in reality the same parent MNE sometimes owns the goods at all stages in the manufacturing, sometimes buys the finished products for resale elsewhere, and sometimes buys them at an intermediate stage. The appropriate treatment may be best decided on a case-by-case basis, following investigation by a unit charged with dealing with the complex activities of MNEs, as described in annexes to Chapter 2 and mentioned also in this chapter. It might be noted however that the statistical outcome in the country in which the parent MNE is resident is not so different: the merchanting treatment records negative, then positive, exports of finished goods, with various types of value added implicit in the margin; the processing treatment records an import of raw materials, etc., followed by an export of manufactured goods, with a payment for processing services, and, again, various types of value added implicit in the margin accruing to the parent MNE.

8.11 This point about the allocation of value added in the country in which the parent MNE is resident perhaps deserves a further brief explanation. BPM6 (paragraph 10.42) notes that, particularly for high-technology goods, the non-physical contributions provided by the parent MNE (the management, patents and other know-how, etc.) may be large in relation to the value of materials and assembly. Under the merchanting treatment, the value added provided by the parent MNE in the form of these services is implicit in the merchanting margin – that is, in the difference between the negative exports which the country in which the parent is resident records when the parent MNE buys the goods manufactured abroad, and the positive exports which the country records when it sells them. Under the processing treatment, it is implicit in the difference between what the parent MNE pays for the inputs which are worked up abroad and what it receives when the finished product is sold, minus the processing fee paid to the manufacturing affiliate or other enterprise abroad. A consequence may be that the value added in the country in which the parent MNE is resident is misallocated - hidden in one or

other of these margins, whereas in reality some of it is services associated with the use of IPPs, etc. (Similar issues relating to recording intellectual property are discussed further in Chapter 7.) In connection with the merchanting treatment, it might be further added that the fact that the entity abroad produces to the order of and using intellectual property developed by the parent MNE, and may have no option but to sell the final product to the parent, makes this case different from more traditional merchanting.

8.12 The examples below illustrate the treatment of global manufacturing, highlighting the implications of moving from the present to the new statistical standards. In these examples the parent MNE is assumed to own the inputs and the product throughout. To avoid complicating the examples, all the activities illustrated are assumed to fall within a single recording period; it should be noted, however, that if they fall over two or more periods, the need will arise to identify and properly record changes in inventories held abroad. The second part of annex 8.1 describes the treatment of “factoryless” (or what are called in Israel “fabless”) producers, which are usually companies undertaking R&D in Israel but outsourcing all production abroad, the manufacturer abroad using its own inputs. Statistically factoryless producers are treated in Israel (or will be when the new standards are implemented) as engaging in merchanting. Statistics Sweden also treats this activity as merchanting, in the belief that the enterprise in Sweden (which, like its counterparts in Israel, also owns all the intellectual property) buys the finished product from the manufacturer abroad (see Svensson, 2010).

Types of producer

8.13 Recent recommendations by the OMB concerning the 2012 update of the North American Industry Classification System suggest three broad categories of producer, namely (a) integrated manufacturers, (b) manufacturing service providers, and (c) “factoryless” goods producers.

8.14 The **traditional or integrated manufacturer** uses capital, labour, and energy to transform material inputs into a product to be sold. Integrated manufacturers typically:

- Own rights to the intellectual property or design (whether independently developed or otherwise acquired) of the final manufactured product.
- Own the production facilities and input materials.

- Own the product they manufacture, and sell it.

8.15 An integrated manufacturer can fully account for input costs and output values.

8.16 The **manufacturing service provider** (MSP) provides contract manufacturing services, transforming material inputs to contract specifications. MSPs typically:

- Do not own or control the intellectual property or design of the final product manufactured.
- May or may not own input materials.
- Own production facilities.
- Do not own the manufactured products they are contracted to produce.
- Do not sell the final product.

8.17 The MSP can provide information on the value of the contract work, the types of transformation activities performed, and the value of the labour, plant and equipment used. However, it cannot report the market value of the final product.

8.18 The **factoryless goods producer** (FGP) outsources the manufacturing process, but undertakes all of the entrepreneurial steps and arranges the availability of the capital, labour, and material inputs required to make a good. FGPs typically:

- Own rights to the intellectual property or design (whether independently developed or otherwise acquired) of the final manufactured product.
- May or may not own the input materials.
- Do not own production facilities.
- Own the final product of their MSP partner.
- Sell the final product.

8.19 The FGP can provide data on the number of units produced and the market value of the final product, and information on the purchase of the manufacturing service (the cost of the contract), but would not necessarily have data on the production worker payroll or capital expenditures on plant and equipment. FGPs are the subject of the second part of annex 8.1, and of annex 8.2.

Some examples of global manufacturing

8.20 The examples of global manufacturing discussed here concern a relatively simple case of oil refining, and a more complicated example of

goods for processing. The examples suggest that the change in international statistical standards may result in practice in a reallocation of value added and GDP between the countries whose enterprises are involved.

A simple example of global manufacturing

8.21 The new SNA guidelines will lead to changes in the recording of global manufacturing. The 1993 SNA required a change of ownership to be imputed in case of international deliveries of goods between affiliated establishments of the same enterprises.

“[An exception] to the change in ownership principally concerns goods shipped by an enterprise to a branch or subsidiary which it owns in a foreign country or to a foreign affiliate which belongs to the same group of enterprises as the exporter. Legally, the ownership of the goods may remain unchanged in such circumstances, but a de facto change of ownership is imputed between the exporting enterprise and the foreign branch or subsidiary whenever goods are shipped between affiliated enterprises. The rationale for this treatment is similar to that for financial leasing, namely that from an economic point of view ownership rights and responsibilities are effectively exercised by the enterprise which receives the goods. The time of recording is when entries are made in the books or accounts of the enterprise concerned” (1993 SNA, paragraph 14.59).

8.22 The 2008 SNA no longer requires this imputation. Thus annex (3) setting out changes to the 1993 SNA (A3.155) explains that:

“The 2008 SNA recommends that imports and exports should be recorded on a strict change of ownership basis. That is, flows of goods between the country owning the goods and the country providing the processing services should not be recorded as imports and exports of goods. Instead the fee paid to the processing unit should be recorded as the import of processing services by the country owning the goods and an export of processing services by the country providing it” (2008 SNA, A3.155).

8.23 This seems to suggest that in the case of global manufacturing two different situations can be distinguished. In the case considered here, the parent company has full control over production abroad, determining production quantities, output prices, purchasing of raw materials and sales of final products. In these cases the activities abroad are usually paid for by fees representing the reward for the industrial service delivered to the parent. This may be contrasted with an alternative

Table 8.1 Global manufacturing: as shown in the accounts of the processing country

According to 1993 SNA		
Output of petrol	150	
Intermediate use of crude oil		100
Value added		50
Import of crude oil	100	
Export of petrol		150
According to 2008 SNA		
Output of industrial services	40	
Value added		40
Export of industrial services		40

arrangement where the parent is fully charged for the (final) products obtained from (foreign) affiliates, the latter taking full risk and responsibility for their own operations. Here the parent seems to take on the role of merchant.

8.24 The accounting implications of the first situation, where the global manufacturer is the economic owner of products manufactured abroad, are further explored below.

8.25 These hypothetical examples illustrate the complexities of industrial manufacturing and show the possible effects of corresponding SNA changes.

8.26 An oil refinery plant (the processor) converts 100 of crude oil into petrol worth 150. The crude oil is owned by a foreign parent company and shipped from abroad. The foreign parent sells the petrol abroad. The oil refinery plant receives processing fees from the parent company to cover its operating costs.

8.27 The 1993 SNA and 2008 SNA recommendations for recording this economic activity are illustrated in table 8.1. The 1993 SNA requires the imputation of a transfer of ownership. In this way the output of petrol and intermediate consumption of crude oil are explicitly covered in the production account of the oil refinery plant. The new national accounting guidelines no longer require this imputation. The output of the processor represents only a fee for the industrial service delivered to the owner of the manufactured product. It makes no difference if the processor (the refiner) is a separate company owned by a third party.

8.28 Although conceptually the new accounting conventions do not lead to different value added or trade balance totals, a different way of measurement (not based on imputed values for product flows) of these activities may nevertheless change the outcome. Where the production value and intermediate consumption are based on

imputed market values, the reward for undertaking and managing the whole activity is likely to be wrongly captured in the gross operating surplus of the processor. This is explicitly shown in the example (see the 1993 section of table 8.1). When, as under the 2008 SNA, the processor's output is based on the actual industrial service provided, this measurement error will probably not occur. As a consequence, the value of the industrial processing service is expected to be reduced and under the new recording approach part of the profit generated will emerge in the gross operating surplus of the foreign parent or owner. Thus in table 8.1 value added in the processing country under the 2008 SNA is 40, not 50 as under the 1993 SNA. (It might be added that amounts imputed for the production of petrol and intermediate consumption of crude oil under the 1993 SNA may also have been incorrect – it would be difficult to know.)

8.29 The 2008 SNA recording of output in the processing country is based on the processing fee obtained from the principal. One complicating factor in this case is the possible effect of transfer pricing on reported service fees.

8.30 Regardless of the method applied, GNI will probably not be affected if these downward adjustments of value added coincide with reductions in dividend payments and/or retained profits. In practice, however, this is not at all certain, especially since the two transactions (value added versus dividends) may be based on different data sources.

8.31 Table 8.2 shows how the operation is recorded in the accounts of the economy in which the parent is resident. The parent owns the crude oil and petrol and the oil refinery affiliate (the processor) is abroad. In addition, it is assumed that all crude oil is purchased from a non-resident unit and all petrol is sold in the rest of the world.

Table 8.2 Global manufacturing: as shown in the accounts of the parent's country

According to 1993 SNA		
Output of (traded) services	10	
Value added		10
Export of services		10
According to 2008 SNA		
Output of petrol	150	
Intermediate use of crude oil		100
Intermediate use of industrial services		40
Value added		10
Import of crude oil	100	
Import of industrial services	40	
Export of petrol		150

8.32 Under the 1993 SNA, it is unclear what economic activity will show up in the accounts of the economy in which the parent is resident. Since the parent runs the foreign refinery plant, the national accounts may reflect the company's full turnover including that of production abroad, or may instead reflect no production relating to the foreign refinery plant on its part. Since at least some related economic activity takes place in the country in which the parent is resident, it is however likely that some value added will be reported in connection with related organizational and managerial work. In the example this value added amounts to 10. This is the reported value of output in the economy in which the parent is resident.

8.33 However output and value added are recorded under the 1993 SNA, GNI in the country in which the parent is resident will subsequently reflect the income of the company as a whole as dividend or retained profit earnings (a credit in the property income account) arrive in the parent's accounts.

8.34 By contrast, in the 2008 SNA accounting all the output is reflected in the national accounts of the country in which the parent company is resident.

A more complex example of global manufacturing

8.35 In this example, a multinational company has its headquarters (establishment A) in country A and conducts part of its production activities abroad, in country B. Establishment A (the headquarters) controls the entire business and is responsible for all sales of manufactured goods and purchases of raw materials. The domestic production unit in A produces semi-manufactured goods with a market value of 15. Before the final

products are delivered to domestic and foreign customers, the semi-manufactured goods are further processed abroad by a foreign affiliate (establishment B). The foreign affiliate earns a processing fee of 16 from headquarters. Total turnover of the entire company is 68, of which sales in country A represent 23, sales in country B 10, and sales in other countries 35.

8.36 Operational costs are as follows:

- Intermediate consumption of the entire company amounts to 44, and all intermediate goods are directly purchased by headquarters.
- 11 of intermediate goods are used by establishment A in its production of semi-manufactured goods, 4 of this being imported.
- Establishment B has 33 of intermediate consumption, all obtained from suppliers resident in country B. This amount excludes the delivery of semi-manufactured products by establishment A.
- The 4 of value added recorded by establishment A may include some organization and management services, and a return to R&D.

8.37 Table 8.3 shows the production account of establishment A. Under the 1993 SNA its output is the semi-manufactured goods with a market value of 15. The 1993 SNA requires the imputation of change of ownership, and the semi-manufactured goods sent to B are recorded as an export. Intermediate consumption equals 11 and value added (the parent's contribution to GDP in A) is 4.

8.38 The 2008 SNA recording is different. The MNE's entire output is recorded in the production account of country A. The parent in country A owns the semi-manufactured goods and the final

Table 8.3 Global manufacturing: as shown in the accounts of the parent

Production account of establishment A, 1993 SNA		
Output	15	
Intermediate consumption of goods		11
Value added		4
Production account of establishment A, 2008 SNA		
Output	68	
Intermediate consumption of goods		44
Intermediate consumption of services		16
Value added		8

products until they are sold to customers. Similarly, all purchases of raw materials, in country A (11, including 4 of imports) and country B (33), show up (as intermediate consumption) in the production account of establishment A. In addition a processing fee of 16 paid to the foreign affiliate is recorded as intermediate consumption of services (imported services) in A.

8.39 The difference between the market value of the final products and the market value of the semi-manufactured goods, after allowance for intermediate consumption, may exceed this processing fee of 16, and overstate the market value of the industrial service provided. This is illustrated by the production account of the foreign affiliate in country B. Under the 1993 SNA, the company's total turnover (68) is recorded as output of affiliate B. Its intermediate consumption is 48, representing the 15 of semi-manufactured goods received from A and 33 of intermediate consumption in B. This leaves a value added of 20, which does not correspond to the processing fee of 16 received from headquarters. The transition from the 1993 SNA to the 2008 SNA has the consequence of transferring value added from country B to country A.

8.40 There could be several reasons for this. One possible explanation is that under the 1993 SNA treatment a part of operating surplus representing the reward for "entrepreneurship" (organization and management of the whole

operation, and perhaps some return to R&D) was incorrectly allocated to affiliate B's production account. Since establishment A is in full charge of the company's operations, this income element should show up in the production account of country A. In this case, one may assume that the processing fee of 16 probably approximates to a market-based reward for the service provided by establishment B, indicating that the reward for entrepreneurship is $(20 - 16 =) 4$. Another possibility is that the processing fee is subject to transfer pricing, leading to accumulation of profits in country A. This option is not unlikely if country A has a more favourable tax regime than B. Collecting this kind of background information about the nature of the company's business will help interpretation of survey results. In any case, this example shows that, although from a purely conceptual viewpoint adopting the 2008 SNA will not lead to changes in value added and GDP, in practice it is quite likely that such changes will occur.

8.41 This example also shows that supplementary information may appear quite important in determining the trade balance. Business surveys and statistics of foreign trade in goods and services do not provide a complete picture. One obvious obstacle is that, at least in EU countries, trade in goods statistics will, at least for some time, maintain a cross-border recording principle in line with the 1993 SNA but not necessarily with the 2008 SNA. Following the 1993

Table 8.4 Global manufacturing: as shown in the accounts of the processor

Production account of establishment B, 1993 SNA		
Output	68	
Intermediate consumption of goods		48
Value added		20
Production account of establishment B, 2008 SNA		
Output	16	
Intermediate consumption of goods		-
Intermediate consumption of services		-
Value added		16

SNA, country A exports semi-manufactured goods (15) and imports raw materials (4) and final products (23 – 45 of the final product being sold in countries B and C) which leads to a negative trade balance of 12 (table 8.5).

8.42 Determining the trade balance according to the 2008 SNA is less straightforward. The international trade in goods statistics need to be adjusted for national accounts purposes. Total exports of country A should reflect all sales of final products outside country A, which amount to 45. Imports of country A should include, in addition to the industrial service fee of 16, the purchases of imported raw materials in country A (4) and country B (33). The latter import flow may be less easy for statisticians in country A to trace, since it will probably not show up in the trade in goods statistics of country A. Finally, the 2008 SNA requires the flow of semi-manufactured products (15) to be removed from country A's exports. The difference in A's trade balance (4 – a deficit of 12 recorded under the 1993 SNA being reduced to 8 under the 2008 SNA – see table 8.5) reflects the part of the processing fee which the 1993 SNA accounting principles (incorrectly) recorded as value added generated in country B.

8.43 The processing fee of 16 (an export of manufacturing services) is the only item affecting the balance of trade in goods and services of country B under the 2008 SNA. Under the 1993 SNA, however, B would have recorded a net export of 20.

8.44 The example presented in this section is a clear case of a parent company that fully controls production activities carried out abroad. Since the parent determines production levels and is responsible for the acquisition of all intermediate goods, the parent effectively assumes economic responsibility for all business undertaken by its foreign affiliate. There may be cases in which economic ownership between the various affiliates is less easily identified. The 2008 SNA (paragraph

6.86) provides some guidance on how to identify economic ownership between establishments of the same enterprise. Relevant factors in this context are the discretion in determining output levels, the amount of inputs required and the prices to be charged. In the example above, establishment B would probably be the economic owner if it controlled its own output levels and had some independence in setting its output prices.

8.45 In the example establishment A is responsible for the company-wide purchase of intermediate goods. However, it could be that establishment B is responsible for acquiring all or part of its own inputs without being the economic owner of its outputs, for example because it controls neither output levels nor output prices. In this case the service fees obtained from headquarters must cover establishment B's spending on intermediate consumption, including items such as rental of buildings, electricity, water, local transport, etc.

8.46 A further point illustrated in this example is that processed goods may not return to the resident country of the principal, but may instead be directly shipped to customers worldwide.

Measurement issues arising from implementation of the new standards

8.47 It will be apparent from these examples that the measurement of transactions related to global manufacturing is challenging. The implications of adopting the new standards for statistical measurement are explored next. Source statistics may need to adapt to the new SNA guidelines. However, although the implementation of the 2008 SNA may be made difficult by international trade in goods statistics based on a cross-border registration principle, it is important to stress that the updated SNA and BPM are more closely in line with business accounting practice. Moreover, the 1993 SNA had several shortcomings in a globalizing economy, and presented

Table 8.5 Global manufacturing: effect on the trade balance of the parent's country

Trade balance of country A, 1993 SNA	
Export	15
Import of materials	4
Import of final products	23
Trade balance	-12
Trade balance of country A, 2008 SNA	
Export of final products	45
Import of materials	37
Import of services	16
Trade balance	-8

measurement difficulties of its own. For example, business surveys conducted in country A would probably have had difficulty in measuring properly the output of semi-manufactured products (of 15); instead, they would probably capture (part of) the company's turnover in country A, or even worldwide. If so, this would lead to serious double-counting errors in the accounts of country A and subsequently to difficulties in balancing the goods and services account.

International trade in goods

8.48 In the European Union, as often elsewhere, trade in goods statistics are based on a strict cross-border recording principle. There is so far no plan to adapt the guidelines to the 2008 SNA and BPM6. International trade in goods statistics will accordingly record any cross-border commodity flow irrespective of change of ownership (and omit any transactions in goods where ownership is acquired or relinquished by a resident without the goods crossing the frontier of the country). Sometimes the trade in goods statistics may provide additional information on whether commodity imports or exports are subject to inward or outward industrial processing. This information may be used to remove commodity flows which are not subject to change of ownership from import and export data in the national accounts, thereby avoiding double counting of trade flows and processing fees.

8.49 This adjustment will however often not be possible: later on in this section it is shown that this information will not always account for all aspects of global manufacturing, notably where the global manufacturer is engaged in merchanting-type activity – for this purpose a business survey (see below) is likely to be necessary. In these cases, additional information on the specific characteristics of the MNE's activities abroad is needed to determine its import and export flows.

International trade in services

8.50 In the European Union, the regulation on trade in services statistics will be adapted to the 2008 SNA and BPM6. It is expected that this data source will provide information on the value of industrial services purchased from abroad, and those provided domestically to foreign customers. It is less certain that intra-company services will be covered adequately. As mentioned already, these services may be provided for fees that are not based on comparable market values.²⁷ In the case

of IPPs, companies may not recognize their company-wide use as provision of a service, and consequently their import and export is likely to be underreported in the trade in services statistics.

Business surveys

8.51 Business accounts in the country in which the processor is resident will usually record the charge for the industrial service provided. In this regard the 2008 SNA probably accords more closely with business accounting principles than its predecessor. Similarly, in cases of outward industrial processing under a global manufacturing regime, the business accounts of the parent, or the owner of products subject to global manufacturing, are likely to capture all turnover from these global manufacturing activities. So, under the revised SNA, national accounts in the countries in which the owner of the inputs and products, and the processor, are resident seem to be more in line with business accounting practice.

8.52 However, in most countries the 1993 SNA has determined the design of business surveys and not only the conceptual basis for the national accounts. The recording of turnover in these business surveys should under the 1993 SNA be restricted to production activities carried out in the domestic economy. To conform to the 2008 SNA, this turnover concept must be changed in order to account properly for turnover from global manufacturing. This implies that the definition of turnover in business surveys may need to change.

8.53 The changed coverage of production should be extended to production costs in global manufacturing, i.e. to all raw materials and semi-manufactured products directly purchased by the domestic parent abroad, and payments for related industrial processing.

8.54 Experience with business surveys in Israel is relevant here. In order to improve the measurement of external transactions associated with the activities of MNEs, Israel has largely replaced bank transactions data collected by the central bank with surveys of enterprises conducted by the national statistical office. Two types of relevant survey are conducted currently – annual surveys on exports and imports of services, and six-monthly surveys of MNEs. Because the transactions are complicated, the collection of data in these surveys often involves visits to the enterprises or personal telephone interviews.

²⁷ The proposed ESA 2010 (paragraph 21.23) recognizes the difficulty of dealing with this problem, given the likely lack of

information and the often specialized nature of the products transferred within the MNE, which may mean that there is no established market price.

8.55 The six-monthly surveys of MNEs are conducted in Israel according to the guidelines in the *Handbook on Economic Globalization Indicators* published in 2005 by the OECD. To build a frame for sampling, various data sources are combined and linked to the national statistical office's business register:

- The Registrar of Companies in the Justice Ministry on ownership of enterprises.
- A commercial database for data on international enterprises.
- The Customs Authority for data on imports and exports of goods by importer or exporter.
- Data from the banking system mentioned above on foreign currency transactions by enterprises.

8.56 A stratified survey sample is prepared by breaking down the data from these sources by share of foreign ownership, the size of enterprises, and the extent of their involvement in external trade and other external transactions. The survey covers MNEs the parent enterprises of which are abroad, and MNEs with parent enterprises in Israel. The variables included are relevant for the analysis of production of such enterprises. However, the coverage does not give a full picture of the joint activities, since the data for MNE affiliates in Israel with parents resident abroad cover only the data available from the domestic affiliate. The data also suffer from the deficiencies mentioned elsewhere – use of transfer prices which differ from market prices, and lack of information on the market value of the output of the entity in Israel engaged in joint production. The data for MNEs with parent enterprises in Israel in table 8.6 indicate a significant amount of joint activities.

8.57 As elsewhere (see the annexes to Chapter 2), efforts are being made in Israel to improve the classification of transactions by combining and analysing the data collected in other surveys at the national statistical office and all the available administrative data. For some of the largest MNEs, comparisons with data published in international financial reports are also made. Annex 8.1 contains more on Israel's experience

with global manufacturing and particularly with entities that outsource all production activities (that is, they are factoryless producers as described in paragraph 8.18 above).

Turnkey projects, and recording the activities of the project vendor

8.58 In the following paragraphs the term "project delivery" means any large-scale turnkey project delivered by a project vendor to a foreign principal. Typical examples of such projects are power plants, telecommunication networks, and gas pipeline networks. Large projects are divided into subcontracts involving several MNEs. A project vendor's own contribution may be confined to the production technology and project management, product development, contact with the principal and with public authorities in the country which is host to the project, and sales and marketing. Many or all of the components may be manufactured by contractors, who may be resident in the same country as the project vendor, in the country which has commissioned the project, or in a third country. In many respects the project vendor resembles a factoryless producer.

8.59 Such projects present many statistical challenges. An example of an extremely complex international project delivery is a new nuclear power plant currently under construction in Finland. Typical project vendor company and project delivery characteristics are:

- Most of the project vendor's revenue comes from abroad.
- The project vendor focuses on design and project management.
- Most of the project vendor's own employees serve in a supervisory role.
- The project vendor manufactures at most a part of the equipment required.
- The project lasts from a few months to several years.
- Payments are often made in stages depending on progress.

Table 8.6 Multinational enterprises with a parent company resident in Israel

	<i>\$ billions</i>			
	<i>2002</i>	<i>2003</i>	<i>2004</i>	<i>2005</i>
Total sales	23.0	24.5	28.3	31.7
of which: sales from Israel (not including exports to affiliates)	10.3	11.2	13.2	14.4
Exports from Israel to affiliates abroad	4.1	4.2	4.9	5.4

- The project vendor may establish a subsidiary or branch/affiliate in the country in which the project is being carried out, but equally may only register for liability to pay VAT.

8.60 For many reasons, foreign project deliveries complicate the compiling of national statistics in ways that have much in common with other aspects of globalization described elsewhere in this guide. Positions and transactions among those involved in the project are often difficult to identify.

International guidelines

8.61 International manuals do not specify precisely how foreign project deliveries should be treated in, for example, international trade statistics, the balance of payments or national accounts. There are however many similarities to construction projects, for the treatment of which there are guidelines (in, for example, BPM6, paragraphs 10.101-10.108). There are guidelines also for the installation of equipment. However, the construction work is often carried out, as a subcontract, by an entity or entities in the host country. The project vendor's own export product is usually more akin to engineering services or other business services. Project deliveries may also have characteristics similar to commission trade, particularly if the project vendor owns a foreign company through which the project vendor provides, for example, equipment and engineering services.

8.62 According to international statistical standards, foreign construction projects should be treated in different ways depending on the duration and nature of the project.

8.63 The purpose of a one-year threshold is to distinguish between investment-based construction and renovation work. If the duration of a construction project is less than a year, it should be treated as an export of construction services in the accounts of the country in which the project vendor is resident; local construction costs incurred in the host country are treated as an import of construction services by the country in which the project vendor is resident. Where the project vendor itself delivers goods, care should be taken to avoid counting the transaction twice, in both trade in goods and in services.

8.64 International statistical standards require construction projects lasting longer than one year to be treated as capital formation by an entity resident in the host country: thus a large-scale construction project contracted by a non-

resident enterprise that takes a year or more to complete will usually (but not necessarily) give rise to a resident branch. Project deliveries by the project vendor should be treated as FDI by the project vendor in a branch/affiliate formed in the host country for the purpose of the project. (The branch/affiliate may be notional, and there may be more than one.) This entity is deemed to purchase goods and services from the project vendor and other suppliers, and repatriate to the project vendor profits generated by the project. Flows between the non-resident project vendor and these (possibly notional) resident entities should be recorded as FDI in the financial and investment income accounts in both the project vendor's and the host country's balance of payments.

8.65 As the project progresses, the branch/affiliate acquires real assets (construction works and equipment installed in the host country), the counterpart to the inward direct investment by the project vendor. As stage payments are made to the project vendor, the part relating to project costs should be entered in the financial account (FDI) as return of capital (that is, a disinvestment), and the part exceeding project costs should be recorded as a dividend on FDI. On completion of the project, the branches/affiliates should no longer hold any assets and no further entries for reinvested earnings on direct investments should be necessary.

8.66 In practice, it is difficult even to identify such (often notional) foreign branches/affiliates and to register them. Correct imputation of transactions in the balance of payments to these artificial branches/affiliates requires precise data on, for example, project costs, payments made by the principal and project payment receivables. Companies often find it impossible to report these data regularly (and to do so by project and country where, as often, they are involved in several projects). In practice, FDI statistics primarily cover the incorporated foreign affiliates of domestic companies, and usually fail to capture imputed transactions with notional foreign branches/affiliates.

8.67 Table 8.7 shows a numerical example. It should be noted that adoption of the 2008 SNA and BPM6 does not affect the results.

8.68 If the project duration is less than one year, in accordance with the international standards for construction projects the following items would appear in the balance of payments and national accounts of the country in which the project vendor is resident: export of goods, 10;

Table 8.7 Numerical example of the turnkey project - revenues and costs

Contract value	100
Costs of the project (*)	80
Supply of goods from the country of the project vendor	10
Supply of goods from other countries	20
Supply of services from other countries	10
Local supply of goods (from the host country)	10
Local supply of services (from the host country)	10
Local salaries (earned by residents of the host country)	20
Revenues minus costs	20

* Excluding in-house costs of the project company (e.g. planning, management).

export of services, 100; import of services, 80.²⁸ The country in which the project vendor is resident accordingly records a net surplus on trade in goods of 10, and on services of 20. (International manuals do not say whether such projects should be recorded gross or net, nor under which service item project revenues and costs should be entered. The possibilities seem to be construction services or architectural and engineering services in the category of business service activities.)

8.69 As noted earlier, a project lasting more than one year should be treated as FDI abroad by the country in which the project vendor is resident. In this case a foreign branch/affiliate would purchase 10 of goods from the project vendor's home country, and the project would earn 20 for the project vendor, recorded partly as an export of services (the compensation for engineering work and project management), and partly as FDI income, the proportions depending on the nature of the project and how it is structured.

Some issues related to project deliveries

8.70 Including in the business register branches/affiliates located abroad (and resident branches/affiliates of foreign companies) is a challenge, as a major international project vendor may conduct simultaneously dozens of projects abroad lasting over a year.

8.71 How to define the project vendor's industry for the business register is also not very clear. Even the revised statistical classifications of economic activities, International Standard Industrial Classification of All Economic Activities (ISIC Rev.4) and Statistical Classification of Economic Activities in the European Community (NACE Rev. 2), fail to define clearly how companies which have outsourced part or all of their industrial

production should be classified. Seen from a global standpoint, project vendors are very similar to manufacturing companies, but at the national level their operation may be closer to that of a service provider. Annex 8.2 examines this issue.

8.72 Regardless of their classification, it may be difficult to measure the domestic production and value added of project vendors. It cannot be done from physical production quantities, e.g. tonnes of steel, or number of machines produced. As manufacturing enterprises increasingly provide services, more use of value data may be needed. More comprehensive reporting of engineering and project services often requires statisticians to have a greater understanding of the company's business and to hold informed discussions with the company.

8.73 Any exports or imports of goods related to project deliveries appear in statistics on merchandise trade. Correct measurement may be complicated by re-exports, sending goods for processing abroad, and transfer pricing at variance with market prices, perhaps for tax reasons - all issues discussed elsewhere in this guide.

8.74 Other issues concern price statistics, not least because a project may be unique, making it difficult to identify a homogeneous product and measure its price over time. The specification pricing approach found in Eurostat's *Handbook on Price and Volume Measures in National Accounts* deals with unique products, but to gather the necessary detailed data is usually impossible in practice.

8.75 Problems with labour market statistics in the context of project deliveries relate to measuring the number and labour input of foreign employees (and workers supplied by foreign service providers). International labour movement, of which this is one aspect, is the subject of Chapter 10.

²⁸ Furthermore, according to the MSITS, local salaries should be deducted from service imports and added to the compensation of employees abroad.

8.76 All these problems with source statistics affect compilation of the balance of payments and national accounts, including supply and use (SU) tables. Thus some service exports or imports may be omitted from the balance of payments. Calculation of the current account is also complicated by project delivery salaries paid abroad and received from abroad. The difficulty of capturing the various imputed transactions with (especially notional) branches/affiliates of the project vendor set up in the host country has been described already. All this has implications for the national accounts, where lack of data makes the calculation of the project vendor's intermediate consumption and its domestic value added difficult. Errors in output may lead to incorrect estimates for domestic demand in the balancing of supply and demand for the whole economy. The problem of allocating the project vendor's output in commodity statistics affects product breakdowns in SU tables, while the problems for price statistics affect volume calculations.

8.77 Many of these issues are not confined to turnkey projects but reflect the globalization of business. As described in the annexes to Chapter 2, statisticians have reacted by setting up units to deal with large enterprises as key data suppliers and ensure the quality and consistency of their data in source statistics and national accounts. The EuroGroups Register (EGR) project mentioned in Chapter 3 is also relevant here, at least when a branch/affiliate is formally set up by the project vendor.

Recommended future work on the issue of global manufacturing

8.78 Paragraphs 8.7-8.12 explained the treatment of outsourcing of production by global manufacturers, and the difficulties of applying the correct treatment in practice. Some of these will be apparent from the examples in the text and from the description of Israel's treatment of outsourcing in annex 8.1.

8.79 The new international standards (particularly BPM6) indicate that a global manufacturer who buys goods from an affiliate or other entity abroad and sells them to another affiliate or other entity without significant change in them is engaged in merchanting, in which case the statistical treatment described in Chapter 6 (negative then positive exports to be recorded by the country in which the global manufacturer is resident) applies. This is despite the possibility that the global manufacturer may have substantial input in the form of R&D and other intellectual property

in the goods, and may organize the production process. Thus BPM6, paragraph 10.42 says "*where the merchant is the organizer of a global manufacturing process, the selling price may also cover elements such as providing planning, management, patents and other know-how, marketing, and financing. Particularly for high-technology goods, these nonphysical contributions may be large in relation to the value of materials and assembly*". If on the other hand the global manufacturer owns the raw materials or semi-finished goods being worked up, the foreign affiliate or other entity is deemed to be providing a processing service, and the statistical treatment follows that for goods for processing described in Chapter 5.

8.80 This approach respects the change-of-ownership principle underlying the accounts. Where however the input of R&D and other intellectual property owned by the global manufacturer is a substantial ingredient in the product, it is not so clear that the role of the global manufacturer really is that of a merchant, even if he does not own the raw materials or semi-finished goods and buys the finished product from the outsourced producer for onward sale. At the very least there is the issue of identifying the return on IPPs within the merchanting margin and allocating the related value added correctly (an issue discussed in another context in Chapter 7). Once the return on intellectual property has been identified and correctly allocated, there is a further question of obtaining some indication of the volume of IPP services provided. In practice, there are also likely to be intermediate cases, where the global manufacturer owns some but not all of the physical inputs, or where their ownership changes in the course of the production process. The text earlier suggested that outsourcing should be looked at case by case, but even that may not be adequate. The appropriate treatment in such cases may not be stable. In practice statistical systems may not respond appropriately and the outcome is likely to be some inconsistency across countries and between individual cases of outsourcing by global manufacturers. There may be further questions relating to consistency with other commonly used statistical sources – international trade statistics have been mentioned, but there are issues also for product or commodity statistics. The suggestion here is that the treatment of outsourcing by global manufacturers should be further investigated with the aim of better consistency and appropriate allocation of value added by the process.

Conclusions

8.81 Aside from the reservations expressed above, the 2008 SNA is better aligned with the economic reality of global manufacturing than its predecessor. For example, foreign affiliates engaged in industrial processing will usually be able to report on the compensation received from the principal (headquarters, or the parent MNE) for the industrial services provided. They may have more difficulty in providing information on the market value of their output, as the 1993 SNA required them to do, since in many cases they are not the economic owner and not responsible for selling it. Moving to the new SNA may lead to a reallocation of value added arising from global manufacturing affecting GDP, as explained above.

8.82 Generally, inward processing is easier to observe than outward processing, where it is difficult to determine all production activities abroad carried out under the responsibility of the parent MNE. If such measurement problems are not overcome, they may give rise to biased results in national accounts. A recurrent complicating factor is the possible influence of transfer pricing on processing fees. It may also be difficult in practice to distinguish between cases of processing

and merchanting. The activities of large MNEs must be examined case by case, with close cooperation among statisticians working in relevant areas. Annexes to Chapter 2 describe such initiatives in Ireland, the Netherlands, Finland and Sweden, but they are not confined to these countries – thus the Central Bureau of Statistics in Israel has also established coordination procedures. International cooperation among statisticians may be necessary to capture large cross-border projects in the statistics in an appropriate and consistent way. EU countries have taken important steps in this direction.

8.83 The fact that statistics of international trade in goods continue to measure cross-border movements implies a need to use them with care in the compilation of trade balances and SU tables, given that MNEs may have substantial shares in national accounts aggregates at industry branch and even aggregate level. Finally, as the US paper on the industrial classification of “factoryless” production (annex 8.2) suggests, it seems advisable to be in a position to separate factoryless producers from other manufacturers to avoid distortion to productivity and other derived statistics and to business statistics generally.

Annex 8.1

The measurement of global production in the national accounts of Israel

8.1.1 Rapidly growing globalization of production has brought important problems of measurement and analysis in the national accounts and the balance of payments of Israel in recent years. The production may be organized in different ways, and pose different problems. This annex sets out the treatment of the two most common production patterns. The first part of the annex relates to problems with measurement of joint production by MNEs, and the second part relates to international outsourcing.

Joint production across borders by multinational enterprises

8.1.2 Israel has experienced a fast growth in subsidiaries of foreign corporations or branches of MNEs in Israel that engage in joint production across borders. Thus, for example, most of the major computer hardware MNEs have opened R&D centres in Israel. Similarly, Israeli firms have acquired firms or opened new subsidiaries abroad and engaged in joint production with these enterprises.

8.1.3 An indication of the growth in such links may be seen in data on FDI as shown in table 8.1.1 (although in many cases companies may have only marketing subsidiaries abroad, and may not engage in production across borders).

Table 8.1.1 Direct investment position of Israel

<i>\$ millions</i>		
<i>End year</i>	<i>Direct investment position in Israel</i>	<i>Direct investment position abroad</i>
1996	7,096	983
2000	22,556	9,091
2004	30,689	18,493
2008	63,930	54,382
2009	71,183	56,130

8.1.4 Since important parts of the production of many foreign affiliated units in Israel are R&D, software and support services, which can be transferred abroad over the internet or by telephone, measurement may be difficult. The export of output to parent enterprises abroad may not be recorded, due to its intangible nature. Even if the export of output is recorded, it may be valued

at cost or at low transfer prices and not at market value as required by the SNA (see also the reference to the proposed ESA 2010 in footnote 27 in the main chapter).

8.1.5 As noted in the main text, in the past the source of information in Israel for transactions between the linked enterprises was banking data: foreign currency transactions were subject to exchange control administered by the central bank, and detailed information on them was recorded by banks. Since the end of exchange control, the banking data have become less useful for this purpose – enterprises may choose to leave foreign currency abroad, and the classification of flows may be less reliable, since the data are not needed for the control of currency flows or other administrative purposes. Often the only transactions of foreign affiliated units in Israel which were covered in practice in the balance of payments were transfers of money from the parent enterprise abroad to finance compensation of employees in the domestic enterprise. In the past such transactions have often been registered as income and not as sales of output, and usually did not include a mark-up.

8.1.6 In order to improve the measurement of external transactions, banking data have been replaced by surveys of enterprises. Two types of relevant survey are conducted currently – annual surveys on exports and imports of services, and six-monthly surveys of MNEs as described in the main text. Because the transactions are complicated, the collection of data in these surveys often involves visits to the enterprises or telephone interviews.

8.1.7 A stratified survey sample is prepared by breaking down the data from these sources by share of foreign ownership, the size of enterprises, and the extent of their involvement in external trade and other external transactions. The survey covers both MNEs the parent enterprises of which are abroad, and MNEs with parent enterprises in Israel, and the variables included are relevant for the analysis of production of such enterprises. However, the coverage does not give a full picture of the joint activities, since the data for MNEs with headquarters abroad cover only the data available from the affiliate(s) in Israel. The data also suffer from the deficiencies mentioned above – use of transfer prices which differ from market prices, and lack of information on the market value of the

output of entities in Israel engaged in joint production. The data for MNEs with parent enterprises in Israel in table 8.6 in the main text indicate a significant amount of joint activities.

8.1.8 Efforts are being made to improve the classification of transactions by combining and analysing the data collected in other surveys at the Central Bureau of Statistics and all the available administrative data. For some of the largest MNEs, comparisons with data published in international financial reports are also made.

Outsourcing across borders

8.1.9 Outsourcing across borders has been known in Israel for many years. Textiles and clothing were the first main industries to outsource parts of manufacturing to enterprises abroad. In recent years the use of outsourcing abroad has increased rapidly - the major part of manufacturing of textile and clothing is now outsourced abroad, and outsourcing has also become common in most other industries.

8.1.10 The problems of recording flows of goods across borders for processing (and their return) and analysing production processes have been known for a long time, and in recent years, when outsourcing has become widespread, new methods of measurement have been used. The approach used for full outsourcing described below is also relevant for enterprises with partial outsourcing.

Full outsourcing

8.1.11 The increasing use of outsourcing has led to the establishment of enterprises that are fully-fledged outsourcers – that is, all processing is outsourced. Such outsourcing has been especially common for enterprises engaging in semiconductor development, and consequently the name “fabless” (an enterprise without a “fab” – the short name used by computer enterprises for a fabrication plant) is often used in Israel. Here the term “factoryless” is used as elsewhere in this chapter. Full outsourcing is however by no means confined to the semiconductor or electronics industry.

8.1.12 A typical factoryless enterprise in the semiconductor industry designs and markets finished products, which are produced by non-affiliated enterprises in another country (usually in Asia). The non-affiliated enterprise manufactures the final product using its own raw materials according to the model developed by the factoryless enterprise. The non-affiliated enterprise gets a payment for the final product from the

factoryless enterprise, and there is no change in the final product from the point that it leaves the non-affiliated enterprise to its final destination. In the financial reports of the factoryless enterprise, the whole value of the sales of the final product is recorded as domestic income. The net income of the factoryless enterprise, after deducting the purchases from the non-affiliated enterprise abroad, amounts to a substantial percentage of the value of the product.

8.1.13 The partial data on factoryless enterprises in the semiconductor industry, collected for the balance of payments in Israel, indicate the fast growth of such enterprises (see table 8.1.2).

Table 8.1.2 Exports of factoryless companies in the semiconductor industry in Israel

	<i>\$ millions</i>	
	<i>Gross revenues from sales abroad</i>	<i>Net revenues from sales abroad</i>
2001	380	131.1
2005	897.9	309.7
2006	1074.6	370.7
2007	1130.9	390.1
2008	946.5	326.5

8.1.14 In most cases the final product is sent directly from the subcontractor to customers, and no flows of imports or exports of goods are registered in Israel where the factoryless enterprise is located. Consequently, at first glance the activities of factoryless enterprises resemble those of enterprises engaged in merchanting – they buy products from non-residents and sell them to non-residents, and they may have a relatively large amount of marketing activities. But there are important features not usually present in the traditional form of merchant activity, notably the provision of R&D and management of the production. In fact, the large value added obtained by factoryless enterprises can probably mainly be attributed to those activities. Under BPM6 (paragraphs 10.41-10.49 and box 10.2), their activity is included under merchanting as “global manufacturing”.

8.1.15 In Israel, the discovery that transactions related to such enterprises were not included in the balance of payments first revealed the problem of measuring these activities. Because no cross-border trade takes place, the transactions of these enterprises were not included in the customs records. Banking data on international transactions

did however record the associated flows as exports and imports.

8.1.16 After the problem was discovered, a new measurement method was introduced. A monthly comparison of customs records, banking data, VAT records and data collected in business surveys for individual enterprises is now made in order to identify cases of global manufacturing. VAT records are also used, since they are comprehensive and include data on transactions exempt from VAT, which in most cases are exports. Once a case of global manufacturing is identified, the financial reports of the relevant enterprise are examined, and the transactions are recorded as described below.

8.1.17 The activities of the enterprise are first considered in order to decide how to classify the enterprise and account for its transactions with the rest of the world. The concept of “converter” defined in the NACE 1.1 classification has been adopted as a basis for deciding whether to classify the enterprise’s activities as trade (ISIC G) or manufacturing (ISIC D). According to this definition: *“Converters are units which sell goods and services under their own name, but arrange for their production by others. These units are classified to Sector G (wholesale and retail) except when they own the legal right and the concept of the product, in which case they are classified as if they produce the goods themselves.”* (NACE 1.1, introduction, page 14). An enterprise outsourcing production totally and selling goods without being involved in any production process will be classified in trade. On the other hand, if an enterprise is the owner of patent rights on the products, is engaged in significant R&D activity, and is the owner of the final products, which are being sold under its name, it will be classified as engaged in manufacturing. (This classification issue is explored further in annex 8.2.)

8.1.18 Since the non-affiliated enterprise uses the R&D developed by the factoryless enterprise (although it uses its own tangible raw materials and receives payment for the final product from the factoryless enterprise), it may in a way be seen as a subcontractor abroad selling manufacturing services to the factoryless enterprise. Consequently the value of these services is currently treated as an import of services. But when Israel implements the 2008 SNA and BPM6, the plan is to adopt the treatment recommended for goods under merchanting, namely recording the acquisition of the goods by the factoryless enterprise as a negative export of goods, since the arrangements seem to fit the descriptions given in the new standards (SNA 2008, paragraph A3.158 and BPM6, paragraph 10.42 cited above).²⁹

8.1.19 The factoryless enterprise sells the final manufactured good to a third country (the subcontractor ships the product directly to this country). This transaction is currently not registered, but will be registered as exports of goods when Israel implements the 2008 SNA and BPM6.

8.1.20 In order to facilitate the analysis of such arrangements by the users of the data, it is also planned to register the transactions in a separate subcategory, namely goods/services under outsourced production. This subcategory will be further divided between:

- a. Outsourced to affiliates.
- b. Outsourced to non-affiliated enterprises.

8.1.21 If possible, it is also planned to improve data by comparing the Israeli records of transactions of factoryless enterprises broken down by partner countries with the registration of trade in those partner countries.

²⁹ Paragraph A3.158 of the 2008 SNA reads as follows: *“The 2008 SNA recommends that goods acquired by global manufacturers, wholesalers and retailers and those cases of commodity dealing being settled in the commodity should be recorded as negative exports on acquisition and positive exports on disposal. The difference between the two appears in exports of goods but appears as the production of a service in the merchant’s economy, analogous to trade margins applied to domestically traded goods. In the case where goods are acquired in one period and not disposed of until a subsequent period, they should appear in changes in inventories of the merchant even though these inventories are held abroad.”*

Annex 8.2

The industrial classification of “factoryless” production

Introduction

8.2.1 The background section of the main text of Chapter 8 described three broad classes of producer identified in recent recommendations by the US Office of Management and Budget (OMB) concerning the 2012 update of the North American Industry Classification System (NAICS). These are (a) integrated manufacturers, (b) manufacturing service providers (MSPs), and (c) “factoryless” goods producers (FGPs). This annex is concerned with the industrial classification of the last group, “factoryless” enterprises which outsource all production.

8.2.2 The ISIC Rev. 4, bases classification of units that outsource transformation solely on ownership of input materials. If a unit purchases materials and contracts with another unit to process those materials, it is classified to manufacturing. Thus:

“A principal who completely outsources the transformation process should be classified into manufacturing if and only if it owns the input materials to the production process – and therefore owns the final output” (page 30).

For ISIC, a unit that outsources physical production activities but owns inputs is a manufacturer and a unit that outsources production without owning inputs is treated as being engaged in trade. ISIC applies the ownership of materials criterion to units that outsource production activities to either domestic or foreign manufacturing service providers.

8.2.3 The ISIC classification based on ownership of materials alone is consistent with the proposed procedures for classification of goods sent abroad for processing in the 2008 SNA, which specifies that sending goods abroad for processing should be recorded as the import of a service.

8.2.4 Recommendations from BPM6 are consistent with the treatments recommended in the 2008 SNA. However, BPM6 indicates that the manufacturing service fee could include the cost of materials purchased by the processor.

8.2.5 It might be noted that the IMTS 2010 requires the value of materials sent abroad for processing to be recorded as exports of goods, and the processed goods subsequently returned to be recorded as imports of different goods.

Classification guidance

8.2.6 Following a public consultation, the OMB recommends for the 2012 revision of the NAICS that FGPs should be classified to the same industries as integrated manufacturers and manufacturing service providers (MSPs). However, statisticians should be encouraged to allocate subindustry level identifiers to these three types of producers and to apply methodologies that recognize not only the differences between integrated manufacturers, MSPs and FGPs, but also the different relationships among variables such as employment, shipments, and cost of materials for the three types of manufacturer.

8.2.7 This decision will provide a consistent and stable classification framework regardless of changing outsourcing decisions.

Justification

8.2.8 The main reasons for the recommendation are the following. Goods producers arrange for all the necessary factors of production, accepting the entrepreneurial risk of producing and bringing goods to market. When individual steps in the complete process are outsourced, an establishment should remain classified in the manufacturing sector. For example, a decision to produce or purchase raw materials does not change the classification; nor does a decision to use contractors or a professional employer organization rather than a traditional employment contract, or to outsource marketing and distribution to a wholesaler.

8.2.9 Goods producers will often perform part of the manufacturing work but outsource individual steps. For example, a producer of generators may outsource generator castings to a casting producer, windings to an armature producer, and purchase hardware from yet other producers, without changing the classification. If the final assembly is also outsourced, the establishment is still bringing together all of the factors of production to produce generators and is the only establishment that can fully account for the value of generators produced. The establishment has managed the production process but contracted out the steps to individual goods producers or MSPs.

8.2.10 Over time, changes in the relative cost of factors of production will change the most efficient allocation of work. High wage rates in a country

may provide an incentive to use less costly labour abroad. That relative wage advantage could disappear if transport costs increase. Shifting among input sources based on relative costs is a common practice and should not generally result in a change of industrial classification.

8.2.11 Classification of FGPs within the manufacturing sector is consistent with past practices in other areas, particularly in the construction sector. NAICS subsector 236 (*Construction of buildings*) includes establishments very similar to FGPs. An establishment that is engaged in the construction of buildings is classified to construction if it arranges for all the factors of production necessary to produce the building even if it does not perform any construction work itself. Using specialized contractors or subcontractors does not change the classification.

8.2.12 Classification of FGPs to wholesale trade instead would expand the scope of wholesale trade beyond buying and selling goods. It would not be appropriate to measure the output of FGPs as a trade margin (which should not include the returns to intellectual property and entrepreneurial assumption of risk for the production of goods).

8.2.13 A strict adherence to the international recommendation to classify FGPs solely on ownership of materials is impractical. If the definition of ownership required physical possession, the ability to substitute between different countries to obtain the cheapest inputs could change sector classification in NAICS if the inputs were sent directly from the producer in country B to an MSP in country C. The establishment in country A that arranged for the production would never take physical possession of the materials. If the definition of ownership were based on separate transactions, problems would still arise. Contracts between FGPs and their manufacturing partners change with market

conditions. Payment terms and the allocation of risk can shift with the availability of credit and the market power or capacity of the individual parties. Classification of an establishment should not change simply because it has the market power to shift the timing of payment for the inputs from the front of the process to the end of the process, or because critical shortages of transformation capacity increase the bargaining power of an MSP. The OMB thus focused on the entrepreneurial aspects of the process (and therefore on ownership of the goods being produced) rather than on ownership of materials.

8.2.14 A proposal to base classification on the location of the MSP was rejected. There are practical advantages to classifying in manufacturing FGPs that use domestic MSPs because of the theoretical ability to link the establishments involved, while classifying FGPs that use foreign partners in wholesale trade, because of the practices for recording trade in goods. This approach however has the serious disadvantage that two establishments operating in the same way could be classified differently based on the source of their inputs, which is not consistent with NAICS; the classification of an FGP which switched production between offshore and domestic contractors would change.

8.2.15 Classification of FGPs to manufacturing will expand the traditional definition of manufacturing beyond establishments known as factories, plants or mills. It may be argued that this expansion will artificially increase the importance of manufacturing. Arguments can also be made that a strict requirement for physical, chemical, or mechanical transformation has unreasonably limited the definition of manufacturing in a global economy. Both arguments have merit. There is no single correct solution, and the difficulty of identifying and consistently classifying FGPs is recognized.