

**Eighteenth Meeting of the
IMF Committee on Balance of Payments Statistics
Washington, D.C., June 27–July 1, 2005**

Measurement of the Activities of Multinational Enterprises

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Session Number:
Session Title:
Paper Number:
Session Organizer:
Discussant:

*Paper Prepared for the 28th General Conference of
The International Association for Research in Income and Wealth*

Cork, Ireland, August 22 – 28, 2004

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Introduction

In recent years Statistic Netherlands (SN) has been confronted with problems surrounding measuring 'complex enterprises'. This leads to major inconsistencies between source data on *multinational enterprises (MNEs)*, firms that have productive capacity in a number of countries. There is a great need for guidelines on how to classify and assess such enterprises, in particular on referring to the limits of units and the registration of transactions. The aim of this paper is to contribute to a more consistent description of the enterprises with a complex structure in the source statistics of the National Accounts (NA)¹. While this paper will not solve all problems, it does contain guidelines for the description of many 'complex enterprises' (difficult ones). Some practical examples illustrating major problems will clarify how corrections can be carried out on existing observations. We follow letter and spirit of SNA and ESA.

- The first section of this paper elaborates the problem. This is followed by detailing the relevant international guidelines, and the demand for consistency between the various statistics.
- The second section addresses MNEs characteristics. We describe several frequently occurring cases including industrial services and processing to order, foreign affiliates and trading companies that co-ordinate sales in a large region. We show how such enterprises can be recognised and how their registration might be changed.
- The third section shows some practical examples.
- The fourth section follows with conclusions and a summary.

Section 1.1 Formulation of a problem

'The System of NA (SNA)² consists of a coherent, consistent and integrated set of macroeconomic accounts, balance sheets and tables based on a set of internationally agreed concepts, definitions, classifications and accounting rules'. The NA describe the domestic economy and give 'an external account that displays the links between an economy and the rest of the world' (SNA section 1.1). An external account is necessary for a fully consistent description of the economy. Apart from the SNA the paper addresses the ESA³, the European version of the SNA.

¹ In this paper National Accounts are the National Accounts in the way they are produced by Statistics Netherlands on the Dutch economy.

² UN, System of National Accounts, 1993

³ Eurostat, European System of Accounts 1995, June 1996

The flows of goods and services between national economies and the rest of the world as well as between the units of one enterprise have increased dramatically due to *globalization*. This is related to the growing importance of MNEs in recent years. As a consequence of a more open, outward oriented approach to international economic developments and the deregulation and liberalization of local markets, Dutch enterprises developed into (international) enterprises with one or more foreign affiliates. Foreign firms seek production locations in countries with cost advantages, such as cheaper labour or inputs, preferential government regulations (for instance, subsidies and taxes), good location close to 'main ports' (such as Rotterdam Harbour and Schiphol Airport) and connections with the hinterland. The advantages for the country are also clear: direct and indirect employment and taxes.

Another consequence of *globalisation* is the disappearance of the borders within the European Union (EU) so that imports for the EU as a whole increasingly take place in one country. This greatly increases the transit flows of goods. In the Netherlands the development of the national economy has always depended greatly on the relationship with other countries, due to the open character of the national economy. This means that the (statistical) problem of *the limits of the national economy* has become even greater.

These developments have led to *problems in observations and evaluation*. Describing the national economy has become more difficult. It is harder to observe and classify commodity flows. The process of mapping the contribution to production by the MNEs to the various national economies is more complicated. '*Old fashioned*' criteria such as the *ownership of goods* and the *steering of production processes* are viewed differently now. The legal ownership of goods can now simply pass from a resident unit to a non-resident unit because of the internationalisation. What does the steering of production processes mean when a subsidiary of a multinational can switch the entire production process to another country in less than no time. This has consequences for the concept of 'resident production unit' and for the attribution of gross value added to the various countries. The flows between the Netherlands and other countries are expressed in several source statistics for the NA, such as the *Statistic of Finances of Non-financial Enterprises*, *International Trade Statistics in Goods and Services*, the *Balance of Payments* and *Production Statistics*. Internal SN reports show that the outcomes of these statistics may be problematic, because the source statistics use different units and different definitions.

In the framework of a Eurostat pilot study, SN started a study on the influence of foreign enterprises on the Dutch economy. So far the pilot was limited to inward-FATS (Foreign Affiliate Trade Statistics). The consequences of Dutch multinationals abroad or outward-FATS have not yet been established. Currently the results on the influence of the Dutch economy are available for the year 2000⁴. This shows that the influence of foreign enterprises, i.e. enterprises with their head quarters abroad, cannot be unambiguously expressed in one figure. There are different results per economic indicator. Only 0.5% of all business units (about 2760 out of more than 550 thousand) are managed by a foreign multinational. Foreign enterprises generate about 13.6% of the value added. The USA, UK, Germany and France dominate the foreign enterprises with activities in the Netherlands.

Section 1.2 International guidelines

⁴ SN, De Nederlandse conjunctuur 2003, issue 4, page 33 etc

In this section we explain several guidelines and definitions from the SNA and ESA that are useful in determining units and the registration of transactions of 'complex enterprises'. We won't refer to all relevant texts. For further information see SNA or ESA. These guidelines cannot offer solutions for all problems, so in practice there are a number of grey areas for which tailor-made solutions have to be devised.

The SNA pays more attention to *the limits of the national economy* than the ESA (2.04-2.11). For example SNA section 14 explains when units are considered resident units of a country. Sub-section 14.22 says the following about residence: 'Corporations and quasi-corporations are said to have a centre of economic interest and to be resident units of a country (economic territory) when they are engaged in a significant amount of production of goods or services there, or own land or buildings located there. They must maintain at least one production establishment there which they plan to operate indefinitely or over a long period of time – a guideline of one year of more is suggested, to be applied flexibility'... Sub-section 14.23 provides extra criteria. Sub-section 14.24 addresses assembly activities (see section 2.4 of this paper) while the next sub-sections deal with specific problems such as the residency of ships, airplanes etc. Apart from the limits of residence Chapter 14 also deals with the limits of imports and exports of goods and services⁵. It provides examples of commodities that cross boundaries without being registered as imports or exports (sub-section 14.91). Sub-sections 14.94 through 14.99 concern imports and exports of services, dealing with the greater mobility of service producers. Employees can easily be stationed in another country or company, temporarily or otherwise, in order to perform a service.

The ESA has guidelines on the registration of border crossing transactions. Article 3.132 states that the imports and exports of goods occur when there are changes of ownership. Article 3.133 gives four instances of modification in recording imports and exports of goods. For this paper *deliveries between affiliated enterprises* (3.133 b) are of importance, setting aside financial lease (3.133 a), goods for significant processing to order or repair (3.133 c) and transit trade (3.133 d). The text concerning the exception in article 3.133 b) states that in case of 'deliveries between affiliated enterprises: a change of ownership is to be imputed whenever goods are delivered between affiliated enterprises'. In this case there is no legal transfer but there is a fictional transfer for the description of the national economy. As discussed earlier, due to the increase of scale among the MNEs deliveries between affiliated enterprises without legal transfer of ownership increased strongly. The increase in scale resulted for instance in the fact that producers increasingly purchase their raw materials centrally. One central sales office may suffice for the producer of raw materials at a given point. Their head quarters determine where the raw materials are actually produced. One logical consequence is that the producer also concentrates the purchase of inputs in one unit. These changes mean that the administration of the local production unit no longer records the commodity flows and prices, while the administration of the central buying and selling agency may not attribute them to the different production units.

Section 1.3 Internal and mutual consistency of statistics

⁵ There is sufficient agreement about the concepts transit, re-export, imports and exports and the relationship between them and the type of activity (incl. Distribution centres) that they need not be discussed in this paper.

Consistency is one of the major features of the NA. In this context the *transaction identity* is a keystone in the national accounting practice. This means for each commodity or service that the resource side of the account should be equal to the use side:

Production + Imports = Exports + Intermediate consumption + Final consumption (including change in stocks)

Consistency must be taken into account when decisions are made about the registration of transactions of international enterprises that are difficult to interpret. We distinguish the following types of consistency:

- A. Consistency between supply and use in the NA: the transaction identity (see above). It is important to know that the different types of transactions are partly estimated from various sources. NA is characterised by integrating these sources into a consistent description of the Dutch economy. The production of the various goods and services are usually observed at the producer's. The imports and exports of goods are partly measured through importers and exporters. Investments by enterprises are described in yet another statistic. This means that it is crucial to check what the consequences are for different transactions when corrections are made.
- B. Consistency between production account and the rest of the sector accounts. The outcomes of the production account are related to the rest of the sector accounts. A major correction in the production process may have consequences for other transactions in the sector accounts. The dividend paid to the parent company of the unit may have to be raised or lowered to avoid that the balance of the current transactions does not match the balance of the financial transactions.
- C. Consistency between the descriptions in the NA and the sources. Consistency here is a *key aim of this paper*. Under ideal circumstances the differences between the NA and the source statistics are minimal. The data presentation on the chemical industry in the source statistic and the NA must be identical. Agreement on how to treat specific situations will improve chances to create consistency.
- D. Consistency between the registration in the Dutch and international accounts. Virtually all transactions of major multinationals have a mirror image abroad. Dividends paid by a Dutch daughter to a foreign parent company must be received there. In practice this consistency will only occur when SN and foreign statistical bureaus exchange information and agree on how to register certain transactions. However, there is not much international discussion yet about the cases discussed in this paper.

It is important for a consistent description of the economy to include as much information as possible in the *business observations* for the source statistics. In practice this is also necessary because the responding enterprise uses its own administrative sources for filling out the questionnaire. In processing SN will see part of this information as "quasi" transactions, on which the corrections are made to the original response. The quasi-transactions can be included in the next step of the integration process of the NA. Because the NA are derived on the basis of many sources it is difficult get a fully consistent registration of all transactions in practice.

Section 2.1 Introduction

This section details the characteristics of complex enterprises. The problems in classifying transactions may be great in terms of the sheer volume of transactions but the number of different problems is limited. In practice almost all cases show one or a combination of the four problem situations discussed below, and often resemble one another quite a bit.

1. When there is *a single foreign affiliate*. How should the transactions of a foreign affiliate and the parent company be registered (**sub-section 2.2**)?
2. Is the valuation of the usually large flows of goods and money between the various MNE units realistic? By paying *intercompany deliveries* at cost instead of market prices the entire profit on production and sales can be booked to one establishment, often the sales department (**sub-section 2.3**)
3. When do we have *industrial services* and when something else (**sub-section 2.4**).
4. How should we deal with cases where the physical flow of goods is different from the legal ownership transfer? Such cases are in part already described in other sections. **Sub-section 2.5** describes units characterised by kinds of *wholesale activities*.

It is essential that the respondent is not overburdened, so when making choices in the *observations* respondents should not be burdened with requests for extra information if at all possible. So from the respondent's point of view the criteria of *measurability* of a unit applies. Because the available information differs per unit, it may often be necessary to come up with tailor-made solutions. The examples in section 2 should therefore not be interpreted as rules but as instances of how to deal with the available data.

Section 2.2 Demarcation of a foreign affiliate

According to ESA (art. 2.04 etc.) *the economy of the Netherlands is the outcome of activities from units established in the Netherlands for a year or more*. Conversely establishments abroad are not a part of the Dutch economy. *The definition implies that a unit does not need to come to a separate legal entity*. If this is the case such establishments are called notional resident units in the ESA. Notional resident units are treated as institutional units, even if they keep only partial accounts and may not always enjoy autonomy of decision (ESA art. 2.15). The Dutch legal unit may consist of a Dutch and a foreign affiliate. In the latter, according to ESA the foreign part of the legal unit should be counted as part of a foreign economy. In practice the foreign activities (production, consumption etc.) should be deconsolidated from the Dutch bookkeeping.

A foreign affiliate that is part of a Dutch legal unit can be distinguished two ways:

- A. *The legal unit largely consists of the foreign affiliate*. In such cases observation problems can usually be solved simply and pragmatically. The legal unit is not seen as a Dutch active unit, therefore is not part of a business unit or group of enterprises. The other income of the legal unit must be booked as (quasi) dividend from the rest of the world to the Netherlands. The intrinsic value of the foreign affiliate must be booked as share holdings on the balance of the Dutch parent.
- B. *The legal unit contains a foreign affiliate and a Dutch establishment*. Here too we have two types of situations:

- a. The Dutch activities are *measurable* for the respondent by deconsolidation of the foreign affiliate from the books. The respondents must be informed clearly about the units on which they report. The other income generated in the foreign affiliate must be paid as quasi-dividend to the Dutch unit. On the balance the intrinsic value of the foreign affiliate must be booked as share holdings in the Dutch unit (foreign participation).
- b. There are *measurability problems*. The Dutch activities and the foreign affiliate cannot be separated easily in the administration. This means foreign production will have to be estimated.
 - When the Dutch unit and the foreign affiliate have different activities, the value added can be attributed over the two establishments on the basis of the volume and the type of product. A unit with wholesale trade as its activity can base its estimate on the average margin in the Dutch economy. In practice the attribution will usually be discussed with the respondent. An estimate of employee compensation is usually possible on the basis of the wage records.
 - When the activities of the Dutch and the foreign part of the legal unit are hard to separate, we have to use a different method. The respondent usually knows how many people work in the foreign affiliate and what the wage sum is. On the basis of this we can attribute a minimum volume of the gross value added to the foreign country. The gross value added after all is usually more than the remuneration of the workforce. It is also possible to assign other income on the ration of the number of people working in the two establishments.

We will have to derive other income on the basis of limited information and presuppositions. The other income will be registered as a quasi-dividend to the parent company. The production process as well as the balance and income transactions will have to be deconsolidated when possible. At the very least we have to make an effort to separate the tangible fixed assets of the foreign unit and their current account. The tangible fixed assets (or debt) must serve to determine the intrinsic value of the foreign affiliate. The amount can be included as share holdings for the Dutch unit. **For an example see sub-section 3.2.**

It is crucial that the situations in ad A. and B. for the enterprise are also recorded in the Business Register (ABR). Splitting a company can also have consequences for the characterisation of the activity of the Dutch unit of the enterprise. In practice the Dutch part of the legal unit will then be characterised as wholesale trade, whereas the foreign affiliate generally has manufacturing as its activity. Moreover the adaptations must be included in such a way that the link between the various statistics is guaranteed (see consistency in section 1.3 ad C). For instance, a correction on cross border flows of dividends requires an adjustment of the Balance of Payments, the International Trade Statistics in Goods and Services and the NA.

Section 2.3 Cost calculations within the enterprise

In practice the various units of international enterprises charge costs to one another. In principle this should be recorded as delivery of goods and services at market prices according to the ESA guidelines. It is often hard to check whether this is really the case, especially for support activities such as holding or research services. If such costs form only a small part of the total

costs of international enterprises there will be a limited effect on the estimate of the gross value added in a given economy. This means there is no reason to adjust the data the respondent submitted.

Apart from specific costs such as research and holding services, there are also other kinds of costs attributed. There is an example in the Dutch economy where the Dutch daughter of a MNE can be characterised as a wholesale unit. The purchases are valued conform the guidelines of SNA, ESA and the foreign trade against market prices, as are the sales of commodities. Research and holding costs are part of the total cost of the enterprise. The selling costs of foreign units are also charged to the Dutch unit. The value is at cost. This means that the Dutch unit produces a huge gross value added with a minimal workforce because the way holding, research and sales costs are registered makes that the entire margin is attributed to the Netherlands, from the production to the sales of the commodity to its end user. Normally much of the margin would be earned in the foreign units, which employ many more people than the Dutch unit.

The major problem in this example is to determine the scope of the correction and which transactions require correction. In this case the most logical solution is to increase the selling costs charged by the foreign units to the Dutch unit with a profit margin. The profit margin can be determined with a 'normal' wholesale trade margin for the commodity. Such a correction will lower the gross value added and the other income, but there is no reason to change the balance sheet of the Dutch legal unit. The correction on other income will have to enter the Netherlands in a different way. The most logical construction is to record the amount as fictitious dividend.

In another situation the daughter or parent can charge costs that are too high. In that case the profit of the activity will go abroad. There are no examples of such a situation involving major amounts of money at hand. If there were, we would have to make the same correction as in the previous example, but then the other way around. **For an example see sub-section 3.3**

Section 2.4 Industrial services, processing to order

This section describes the difference between producers of industrial services and the production units of multinationals. In industrial services and processing to order there is a converter unit that contracts the production process out to a specialised producer of industrial services. The legal ownership of the inputs and the products remain in the hands of the original owner. One example is the production of clothes by a producer of industrial services based on specifications and designs supplied by the converter. Producers of industrial services also work in agriculture, buying services to harvest the crops. Sometimes the work is farmed out in part, for instance to independent assembly plants where computers of various brands are put together. Whether a service must be counted as an industrial service or as processing to order depends on the degree of processing. If there is *processing to order abroad* the flow abroad must be entered as exports, and the flow back from the converter as imports. In *industrial services abroad* the flows of goods between the converter and the producer of the industrial services are not registered on the balance of payments, but only the industrial service rendered is entered on the balance of payments. This means that the registration problems mainly occur with the production of industrial services.

Some frequently asked questions about the difference between the production of goods and industrial services or processing to order are about:

- *Steering the production process* and/or the influence on the specifications of the product. Because these aspects are not included in ESA or SNA as criteria for the existence of a 'local kind-of-activity unit' or 'establishment' these aspects will not play a role in delimiting industrial services and processing to order.
- *The legal ownership of the inputs and the finished product.* Suppose this is the **only** criterion to differentiate between production and industrial services. Then the steel industry could disappear from the Netherlands immediately, namely when the British part of Corus gets the legal ownership of the inputs and the finished products. Then again the Netherlands could be one of the world's biggest computer manufacturers in the world, the minute Cisco Systems in the Netherlands or IBM in the Netherlands get legal ownership of all parts and the finished products of the worldwide company. This would make for a very dynamic production structure of the Dutch economy without changing the stock of capital goods within the Netherlands. The conclusion is that this could not possibly be right.

The answers to the questions do not provide an answer to the difference between production and the services contracted. The relationship between the converter and the producer of industrial services is a key aspect, though, which leads us to formulate the following *criteria*:

1. The goods are produced as ordered by a converter, where the converter influences the product specifications and runs risk.
2. In principle the producer of industrial services should be able to render services to several converters.
3. *The converter and the producer of the industrial services are not part of the same company.* This criteria is conform the definitions used in ESA 3.133 and in international trade, where deliveries between affiliates are instances of imports and exports without the transfer of legal ownership. This does not go together with the net registration of industrial services on the balance of payments (see above).

The application of these criteria would prevent changes in the way a MNE has organised legal ownership of commodities, leading to another production structure of a national economy. Changes in the organisation of a multinational (in divisions/products by a geographically organised organisation) have no consequences for the value added for the units concerned. Of course the changes caused by internationalisation and the concentration of products and buyers in which production is increasingly directed from abroad will not be neglected. However, such changes cannot have consequences for the production structure of the countries involved.

The registration of the producer and buyer of industrial services is relatively easy. Industrial services have to be registered net, that is, only the production of industrial services. So there are only imports or exports of industrial services. Since there is always a party outside the multinational, the converter usually includes the necessary information in the administration. This is also the case in processing to order where there is gross registration. For registration in the production statistics and NA processing to order or industrial services does not have to be a problem when the definition provided in this paper is used.

In summary we distinguished four types of units:

1. The converter: purchases industrial services in a company that is not part of the worldwide multinational.
2. The producer of industrial services: sells industrial services to units that are not part of the worldwide multinational. Normally there are several clients, but in extreme situations there can be just one client.
3. An establishment of a MNE, where a unit abroad has legal ownership of raw materials, supplies and the end products.
4. An establishment of a MNE that buys inputs and orders a foreign unit to produce end products out of them, after which it sells the product to a user outside the multinational.

We address ad. 3 and 4 in section 2.5

Section 2.5 Legal ownership via Netherlands, commodity flows around Netherlands or vice versa

Section 2.4 made the distinction between industrial services and production. The number of cases where the legal ownership of the inputs and products in the hands of a central purchasing and sales agency rather than a production establishment is growing strongly. This means that the returns by the production units say that only industrial services are being produced. The returns of purchasing and sales agency show increased turnover and much increased selling costs. According to the criteria in section 2.4 this registration is incorrect. **For examples see sub-section 3.4**

For the unit with legal ownership of the goods it will not always be easy to split the purchase of inputs used by the unit itself for its production, and the purchase of inputs for the foreign production unit. The same is true for sales. The records show how much is sold, while it is irrelevant for the unit where production took place. Although many units start out by saying that they have little or no information available, they may supply useful information when asked again. Many enterprises have in-company prices used to see which establishments make the most profit.

When the bookkeeping leaves something to be desired we can use company data such as the physical flow of goods. Such data may be recorded for tax purposes or for the returns for the International trade statistics. When the information is not available we can use a key based on the number of people employed in the various establishments. We must distinguish production itself and trade. The margin must be attributed to the unit that manages the various production units (see section 2.2).

Attributing part of the 'profit' of the purchasing and sales agency to the production unit means a change in the other income for both units. This must be compensated by fictitious dividend paid by the production unit to purchasing and sales.

The purchasing and sales agency may not always have its own production units. They may just have trade or wholesale as their activity. Valuing the flow of goods requires extra attention when it comes to trade between the different units of a MNE. The enterprise must not get an exceptional margin with its activity. The normal margin depends in part on the costs charged to the Dutch unit. If transport and insurance are charged to the Dutch unit the margin can be higher than when transport and insurance are paid by the foreign supplier/buyer (see section 2.3).

Section 3.1 Introduction

In this section we give some practical examples. The main goal of adjustments is make the best possible distribution of value added over the countries where units of the multinational are located. There are more options than the examples show. To keep things simple the adjustments are not classified by type of statistic or type of unit. Because the flows of goods and money don't run parallel, adjustments can take place at different levels. The balance of the income account (Statistics of Finances of Enterprises) is adjusted at company level whereas adjustments in the production accounts (Production Statistics) are made at the business unit level.

3.2 Example 1

Example of a unit with a foreign affiliate. It concerns a legal entity without a separate financial account of the foreign affiliate. However, some information is available (figures are imaginary).

The balance sheet and profit-and-loss-account belong to a Dutch legal entity with a foreign production plant. The Dutch part of the Dutch unit (X) takes care of the purchase of inputs and the sales of the products of the foreign affiliate. In all probability the activities of X will be classified as wholesale.

Profit-and-loss-account (abbreviated)	
Total sales	1000
Cost of sales	600
Wages	200
Depreciation	100
Operating income	100
Financial income ⁶	-50
Income before taxes	50

Balance sheet			
Tangible fixed assets	1000	Net worth	200
Financial assets	200	Current liabilities	200
		Non-current liabilities	800
Total assets	1200	Total liabilities and net worth	1200

Available data of the foreign affiliate: value of the plant and equipment = 850; remuneration employees = 100; balance of a foreign bank-account = 50.

The adjusted profit-and-loss account differs in some details from the profit-and-loss account of the Dutch legal entity. The cost of sales increases with 185, that is expenses by the foreign affiliate (depreciation 85 + wages 100). Depreciation is calculated in proportion with the magnitude of the tangible fixed assets. In this example the operating income of the foreign affiliate is supposed to be 0.

⁶ Financial income = result of group companies resident and non-resident and other participating interests, interest received or paid, other financial profits and losses and incidental profits and losses

Otherwise, attribution of the operating income to the Netherlands and abroad would be preferable. This can be done on the basis of an average income of similar production units, 'standard' margins on the trade of these commodities or in proportion with the employed employees. For example, an attribution of 50 to the foreign unit increases cost of sales with 50 to 835. Operating income eases to 50, but financial income improves with 50 ('quasi dividend' of the foreign affiliate). Obviously income before taxes of X does not change.

In the adjusted balance sheet the value of plant and equipment has been deducted from the tangible fixed assets. Besides, the bank account has been attributed to the foreign affiliate. The value of the foreign affiliate (850 + 50) is recorded on the balance sheet as participating interests in foreign affiliates.

Profit-and-loss-account (adjusted)	
Total sales	1000
Cost of sales	785
Wages	100
Depreciation	15
Operating income	100
Financial income	-50
Income before taxes	50

Balance sheet (adjusted)			
Tangible fixed assets	150	Net worth	200
Financial assets	1050	Current liabilities	200
of which participating interests in foreign affiliates	900	Non-current liabilities	800
Total assets	1200	Total liabilities and net worth	1200

3.3 Example 2

Example of a concern with substantial expenses recharged (transfer prices)

This is an example of a Dutch enterprise. The profit-and-loss account (abbreviated) of year t is shown below.

Indication of the economic relevance: operating income/value added share of GDP amounts to 0.3%-point.

Profit-and-loss account (abbreviated)	
Turnover	7501
Cost and expenses	4821
Gross profit	2681
Expenses for development and research	615
Selling expenses	844
Administrative expenses	83
Operating income	1138
Financial income	-23

Income before taxes	1115

According to additional information the selling expenses consist of wages (66) and expenses recharged of group companies (782) at cost price. The Dutch enterprise claims a supporting role of the group companies. They maintain contacts with customers and draw up the contracts of sale. The Dutch enterprise has the final responsibility for sales and after sales services such as warranties. From the Dutch side the group companies receive a compensation for expenses. In practice the (foreign) group companies are non profitable.

Some options for adjustments on the figures:

1. Attribution of operating income (value added) to the Netherlands and abroad in proportion to the number of employees, for example 10% of value added to the Netherlands and 90% abroad. This implies an upward correction with $1024 = 90\%$ of 1138 (operating income) on selling expenses to 1868. Subsequently, operating income of the Dutch enterprise is reduced by the same amount. The operating income of the (foreign) group companies will be paid to the Dutch enterprise as 'quasi dividend'. As a result the adjustments do not change income before taxes (see table below).

Profit-and-loss account (abbreviated)		Adjustment	Adjusted
Turnover	7501	0	7501
Cost and expenses	4821	0	4821
Gross profit	2681	0	2681
Expenses for development and research	615	0	615
Selling expenses	844	1024	1868
Administrative expenses	83	0	83
Operating income	1138	-1024	114
Financial income	-23	1024	1001
Income before taxes	1115	0	1115

2. Option 1 was impossible because of insufficient data on the number of people employed at (foreign) group companies. However, additional information is available on the share of the sales for transit abroad. This share is about 99% of total turnover. This implies that the selling expenses, related to 99% of the sales, will be raised with the help of a 'standard margin' on the sales of this kind of products. Selling expenses in relation to 1% of the sales will be adjusted upwardly on the basis of the total margin between production and sales. In this example operating income as a percentage of the transit margin that can be attributed to the Dutch enterprise has been fixed at 5. Operating income as a share on the domestic sales margin is supposed to be 40% (equals margin on total sales).

Calculation of the corrections in the table below:

Gross profit = 2681 of which:

99% on goods outside the Netherlands = 2654 (A)

1% on goods in the Netherlands = 27 (B)

Operating income on (A) is 5% = 133

Operating income on (B) is 40% = 11

Operating income on (A) + (B) attributed to the Dutch enterprise = 144.

Total adjustment on the operating income of the unit in the Netherlands: $1138 - 144 = 995$ (see table below).

Profit-and-loss account (abbreviated)		Adjustment	Adjusted
Turnover	7501	0	7501
Cost and expenses	4821	0	4821

Gross profit	2681	0	2681
Expenses for development and research	615	0	615
Selling expenses	844	995	1839
Administrative expenses	83	0	83
Operating income	1138	-995	143
Financial income	-23	995	972
Income before taxes	1115	0	1115

Résumé:

- A substantial downward adjustment on the production account (operating income/ value added: -995)
- The (foreign) group companies pay 995 as 'quasi dividend' to the Dutch enterprise. This correction does not affect income before taxes.

Are the adjustments relevant to:

- The production structure of the Dutch economy: yes
- Inconsistencies between statistics: no
- GDP (value added): yes

There is a rapid increase in the number of respondents in industrial statistics who claims to have changed their regular production processes to industrial services as a result of the reorganisation of a multinational. Usually it concerns combinations of several production plants and one central purchasing and sales unit. The legal ownership of inputs and products rests with the (foreign) parent company or central purchasing and sales unit. Problems arise in regard to the *measurability* of the production unit. Below are some examples concerning the registration of production versus industrial services.

3.4 Example 3

A multinational owns a production plant **X** in the Netherlands producing basic chemicals. The respondent X claims per year t a change from regular production to industrial services. In the opinion of SN X remains a manufacturer of chemical products.

Indication of the economic relevance: the value added share in the total value added of Dutch manufacture in basic chemicals of X amounts to 10% and the share of employed persons to 6%.

Motivation of X: Introducing year t the purchase of inputs and sales of products are in hands of the (foreign) parent company. This also applies on the ownership of the goods and the steering of the production process. As a result the bookkeeping will be not be able to provide data on production, intermediate consumption and so on (data are consolidated with the parent). X has suspended the provision of the usual information to SN.

Motivation of SN: The production process of X has not changed, only the ownership of the inputs and products. This legal modification may not lead to a different classification or registration of the production unit. Especially because the legal modifications take place between affiliated enterprises. Also the registration of the imports and exports of goods did not change. Assume the motivation of X would lead to a different registration of X in the economic statistics. In that case the economic statistics would generate an unrealistic view of the economy in the long run. Recording the production process as industrial services instead of a 'normal' production process in the chemical industries would result in a 'strange' input-output structure of industries. Actually, in this way the manufacture of chemicals would disappear in the statistics of the Netherlands (see sub-section 2.4).

Solution: the desirable information is reconstructed on the basis of incomplete information from X, in particular imports and exports of goods and number of employed persons. Almost 100% of the production is sold outside the Netherlands.

Are the adjustments relevant to:

- The production structure of the Dutch economy: yes
- Inconsistencies between statistics: yes (Production and International Trade Statistics)
- GDP (value added): yes

3.5 Example 4

ABC International BV. This is the case of a holding company of computer activities including a call centre for Europe located in the Netherlands and with foreign affiliates (production plants of computers) in two European countries. A Japanese multinational controls about 96% of the shares of ABC. Invoicing of the products and the inputs (computer components) takes place via the Dutch holding. According to the information of the respondent, the ‘power of control’ of the production plants is delegated to the local management. The respondent only claims activities with an administrative and fiscal background. The BV is classified in the industry manufacturing of computers.

This example is in contrast with example 3. The respondent asked SN: ‘why should we provide data about production processes that take place outside the Netherlands’.

In this case the registration in the Production Statistic is based on the assumption of a Dutch unit instructing a production plant outside the Netherlands. The value of the inputs includes an amount of 136 for the industrial services. Motivation: the Dutch unit has the ownership of the inputs and the products and steers the production process.

On the other hand NA claims a negligible value added (with the exception for wages concerning some staff and administration) because the production process takes place outside the Netherlands. Moreover the construction of the holding with foreign affiliates excludes the possibility of industrial services. Finally, exports (600) and imports (300) of ABC are not consistent with the production data in the Production Statistic. Not being a part of production, the goods will be recorded as re-export.

Indication of the economic relevance: recording ABC in the National Accounts would raise the production value of the manufacture of office machinery and computers with 80% and the value added with 15%.

The adjustments are based on ESA art. 2.04: the limits of the national economy are defined in terms of resident production units; gross domestic product is the result of activities of resident production units. Besides the separate units of the holding are measurable. This implies that value added can be attributed to foreign affiliates. Aspects like ‘power of control’, an adequate accounting system, or corporate capacity have no relevance. ESA art. 2.15 about notional resident units applies: ‘notional resident units, even if they keep only partial accounts and may not always enjoy autonomy, are treated as institutional units’.

Another adjustment concerns the change in the activity classification: from industry to other commercial services. The adjusted value added of the BV consists of:

- wages paid by resident units as a compensation for activities in the Netherlands.
- operating surplus, the remuneration for capital that can be attributed to the Netherlands by deconsolidation.

Reconstruction ABC	Original		Adjustments	Adjusted	
	Profit-and-loss account	National Accounts	Profit-and-loss account	Profit-and-loss account	National Accounts ⁷
Total sales (production)	3272	0	-3051	221	0
Cost and expenses	3149 ⁸	0	-2958	191	0

⁷ Adjustments will be implemented in the next revision of the NA

⁸ Of which industrial services by units outside the Netherlands: 176

(inputs)					
Gross profit (value added)	123	0	-93	30	0
Wages	43	0	-27	16	0
Operating income	80	0	-66	14	0
Financial income	6	0	66	72	0
Income before taxes ⁹	86	0	0	86	0

Are the adjustments relevant to:

- The production structure of the Dutch economy: yes
- Inconsistencies between statistics: yes (Production and International Trade Statistics)
- GDP (value added): yes

3.6 Example 5

In year t , a **producer of trucks Y**, established in the Netherlands, was taken over by a foreign (parent) company. Since that moment invoicing has been in the hands of the parent company. The production process in the Netherlands does not undergo any changes. This also applies to the registration of the import of truck components via the non-resident parent company to the resident group company, and the export of trucks in International Trade Statistics. However, the Dutch respondent is unable to continue data on production and input and confines the specifications to industrial services and related inputs (energy and other expenses). The imported components (input) and the sales of trucks inside and outside the Netherlands (production) are not recorded anymore in the Production Statistic. This is contrary to ESA article 3.133 that deals with the deliveries between affiliated enterprises. For the time being NA reconstructs data on production and inputs with the help of international trade data and the production structure of Y in year $t-1$.

Indication of the economic relevance: Share of Y in national motor vehicle production amounts to 20%, export share amounts to 14%.

Year	$t - 1$	t	t (adjusted by National Accounts)
Total sales (production)	2016 (of which export 1595)		1969 (of which export 1544)
Cost and expenses (inputs)	1709 (of which import components 1617)		1674 (of which import components 1583)
Gross profit (value added)	306		295
Wages	147		155
Operating income	159		140
Compensation by parent company for industrial services		250	

Are the adjustments relevant to:

- The production structure of the Dutch economy: yes
- Inconsistencies between statistics: yes (Production and International Trade Statistics)
- GDP (value added): no

⁹ See résumé example 2

Section 4 Summary and conclusions

The aim of this paper is to give a rough but clear picture of the consequences of growing globalisation of trade and industry while measuring a national economy. For several frequently occurring cases of 'complex enterprises' we discuss criteria used to limit the units and the registration of transactions. The *'territorial principle'* is the basic assumption used; where the gross domestic product is the result of production activities of resident units. In order to estimate gross domestic product correctly, it is important to attribute value added to the territory where it was generated. An exhaustive description of international trade flows of goods and services is also essential.

The main conclusions are:

- SNA and ESA do not offer solutions for all problems. In practice there are a number of borderline cases for which tailor-made solutions have to be devised. Also SN is dependent upon what the respondents have to offer.
- To satisfy the demand of internal and mutual consistency of statistics, it is important to carefully consider the wider implications of any adjustments. The key aim of this paper is consistency in observation and description.
- SN's strategy should focus on following actual developments. Because of rapid changes in international relations, statisticians run the risk of being overtaken by developments.