



**Economic and Social  
Council**

Distr.  
GENERAL

ECE/CES/GE.20/2006/20  
7 April 2006

Original: ENGLISH

**ECONOMIC COMMISSION FOR EUROPE**

**STATISTICAL COMMISSION**

**CONFERENCE OF EUROPEAN STATISTICIANS**

Group of Experts on National Accounts

Eighth Meeting  
Geneva, 25-28 April 2006  
Item 6 of the provisional agenda

GLOBALISATION AND THE EFFECT ON NATIONAL ACCOUNTS: PRACTICAL  
ISSUES<sup>1</sup>

Submitted by Statistics Netherlands

The meeting is organised jointly with Eurostat and the Organization for Economic  
Co-operation and Development

**INTRODUCTION**

1. The System of National Accounts (NA) aims to describe a national economy. This includes a set of coherent, consistent and integrated macroeconomic accounts, balance sheets and tables. The description also comprises an external account displaying links between the national economy and the rest of the world. In the Netherlands (worldwide), the development of the national economy (economies) is reliant on international relations. Due to rapid changes in the international business community over the last decades Dutch – and foreign – enterprises developed more and more to internationally operating units. As a result, production tends to be

<sup>1</sup> This paper has been prepared by Nico van Stokrom, Frank Bonger, Leslie Nootenboom and Wim Tebbens at the invitation of the secretariat. The views expressed in this paper represent those of the authors and are not necessarily those of Statistics Netherlands.

concentrated in larger establishments or to be moved to so-called 'low wage countries'. This increases the flow of goods and services between units of an international enterprise. The disappearance of inner frontiers of the EU and the introduction of the Euro enhanced the transit of goods to a large extent as well. These internationalisation and globalisation trends have a large impact on the description of a national economy. It has become more and more complex to observe flows of goods and services and to classify them properly. 'Old fashioned' criteria such as the ownership of goods and the steering of production processes within multinational enterprises hamper a proper observation. Also, the valuation of flows of goods and services between branches within large enterprises complicates the attribution of output to different national economies involved. Potential solutions to handle the inconsistencies between different data sources in case of multinational enterprises (MNE's) are needed, taking into account the intentions of the SNA and ESA systems.

2. The heart of the problem, as described above, was discussed in an internal document of Statistics Netherlands (SN)<sup>2</sup>. This document was elaborated in a paper, that was presented at the IARIW conference in 2004<sup>3</sup>. The paper discusses aspects of the economic theory and practical statistical problems. Summarizing: this paper (1) elaborates the problems surrounding measuring 'complex enterprises', by detailing the relevant international guidelines, and the demand for consistency between the various statistics; (2) addresses MNE's characteristics by describing several frequently occurring cases including industrial services and processing to order, foreign affiliates and trading companies that co-ordinate sales in a large region, showing how such enterprises can be recognised and how their registration might be changed, criteria used to limit the units and the registration of transactions are discussed; (3) shows some practical examples; (4) follows with conclusions and a summary.

3. The summary of the paper emphasizes the 'territorial principle'. It is a basic assumption underlying gross domestic product being 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. Essential is an exhaustive description of international trade flows of goods and services. The main conclusions were:

- (a) 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. Doing so, one is dependent upon the information that respondents are willing to provide;
- (b) to satisfy the demand of internal and mutual consistency of source statistics, it is important to carefully consider the wider implications of any adjustments. The key aim is consistency in observation and description;
- (c) the strategy should focus on following actual developments as closely as possible. Because of rapid changes in international relations, statisticians run the risk of being overtaken by developments.

4. This paper focuses on SN's devised tailor-made solutions. It describes briefly some experiences with a more than one year practice in improving the measurement of multinational enterprises under the supervision of a working group 'Mothers & Daughters'.

## **AN INITIATIVE TO TRY TO COPE WITH GLOBALISATION**

5. Ever increasing globalisation poses a threat to the internal and mutual consistency of several source statistics for the NA. And consistency is one of the major features of the NA. There is a wide range of underlying reasons for this. Here we are concerned with the organisational approach to the problem, focusing on the design of a system which makes it possible to identify and solve statistical problems caused by globalisation. This is more difficult than it seems, because the relevant data often are derived from quite different sources and collection systems. The relevant statistics such as Statistics of Finances of Non-financial Enterprises, International Trade Statistics, Statistics on Production and Capital Formation are not consistent with each other at micro-level ('measurement coordination'), making it difficult to compile consistent NA.

6. Within SN a number of steps have recently been taken in the direction of improving the consistency on a micro-level. These are described briefly below.

7. It had been known for quite a long time at SN that there were difficulties with the registration of transactions of 'complex enterprises' (multinational enterprises), with all the related problems for the limits of the national economy and the consistency of statistics. However, what was lacking was a central view on how to tackle this, and it was difficult to intervene in the statistical process given the many actors involved. By way of a stopgap, at the level of the NA, i.e. at the very end of the statistical process, adjustments were made for a small number of cases, in order to reach consistency.

8. In 2003, a project group comprising specialists in the area of measurement coordination and the NA was charged with solving these problems: the Working Group 'Mothers & Daughters' ('M&D'). The central objective was to design and elaborate a theoretical framework, develop a database and a procedure to chart the possible distortions in the source statistics and the NA, and subsequently to conceive solutions and implement these at the beginning of the statistical process. Naturally, in the process, a wide range of definitions from the SNA and the ESA came up for discussion. After a period of discussions and internal research, this resulted in the internal SN document (2003). In addition a decision diagram was drafted, which made it easier to detect and solve the problems.

9. Once the methodological framework was completed, support had to be obtained within the two divisions at SN most involved, i.e. the Division of Business Statistics (measurement) and the Division of Macro-economic Statistics and Dissemination (including NA). Subsequently, concrete steps for the implementation in practice were discussed.

10. An important first step was the development of a course for all staff involved in measurement. In this course the methodological framework was explained in popular terms to around 300 staff. The explanation centred on coordination of statistics and the importance of such coordination for the NA. The importance was due to the fact that detection of 'suspected' enterprises could only be realised via staff 'on the job', such as processors, smoothers and managers. All statistical staff were instructed to report possible cases of measurement problems to one central point.

11. A database supports the 'M&D' project. Among other things it serves as an instrument to

report progress to management. All documents relating to the treatment of a case are stored in the database. The database corresponds with three stages that each case of 'M&D' must go through. The three stages are described briefly below.

A. Stage 1: Intake

12. All suspect enterprises are subjected to an intake. This is done by a project coordinator on the basis of a number of objective criteria, such as the economic relevance of an enterprise. The project coordinator also collects supplementary information from (obligatory) surveys in which the enterprise participates. He also links up with the organisational unit. Stage 1 concludes with the appointment of a sub-project manager, who is responsible for solving the problem.

B. Stage 2: Preparation

13. The sub-project manager draws up a time schedule and, via management, appoints members to the project group. The group starts by analysing the statistical state of affairs, with the linking variables of the various statistics as the main item. A small number of key variables is sufficient. Sometimes the enterprise is visited in this stage. If it turns out that the basic statistics are not consistent, solutions must be conceived along the lines of the basic methodology. If there are any doubts or problems, the 'M&D' project group is called for assistance.

C. Stage 3: Implementation

14. The proposed solutions are discussed with the enterprise and measurement agreements are laid down. The policy then is to start the new measurement as soon as possible in a coordinated fashion. In spite of the fact that sometimes the adjusted measurement may result in a break in time series. It is certainly not the intention to start a collection of cases and to wait for the next benchmark revision of the NA before implementing. All organisational units involved must act in accordance with each other.

15. So the motto is: repair all cases which, as a result of increasing globalisation, lead to distortion as soon as possible

16. After the first operational year 2005, we have the impression that progress within the sub-projects is accelerating. Staff are getting more and more used to the solutions chosen. The support for quality projects within SN is as good as it can be. The name given to the project, 'Mothers & Daughters', contributed to this.

17. The solution to one problem, the consistency between the registration in the Dutch and international accounts has not yet been conceived at SN. How are the countries involved going to coordinate globalisation in statistical-technical terms?

## **EXAMPLES OF TAILOR-MADE SOLUTIONS**

18. In this section some practical examples are given. The main goal of adjustments is to make the best possible distribution of value added over the countries where the units of the multinational enterprise 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. The examples given below are based on actual cases of the 'M&D' project. Nevertheless names and figures are fictitious for reasons of confidentiality.

A. Example 1

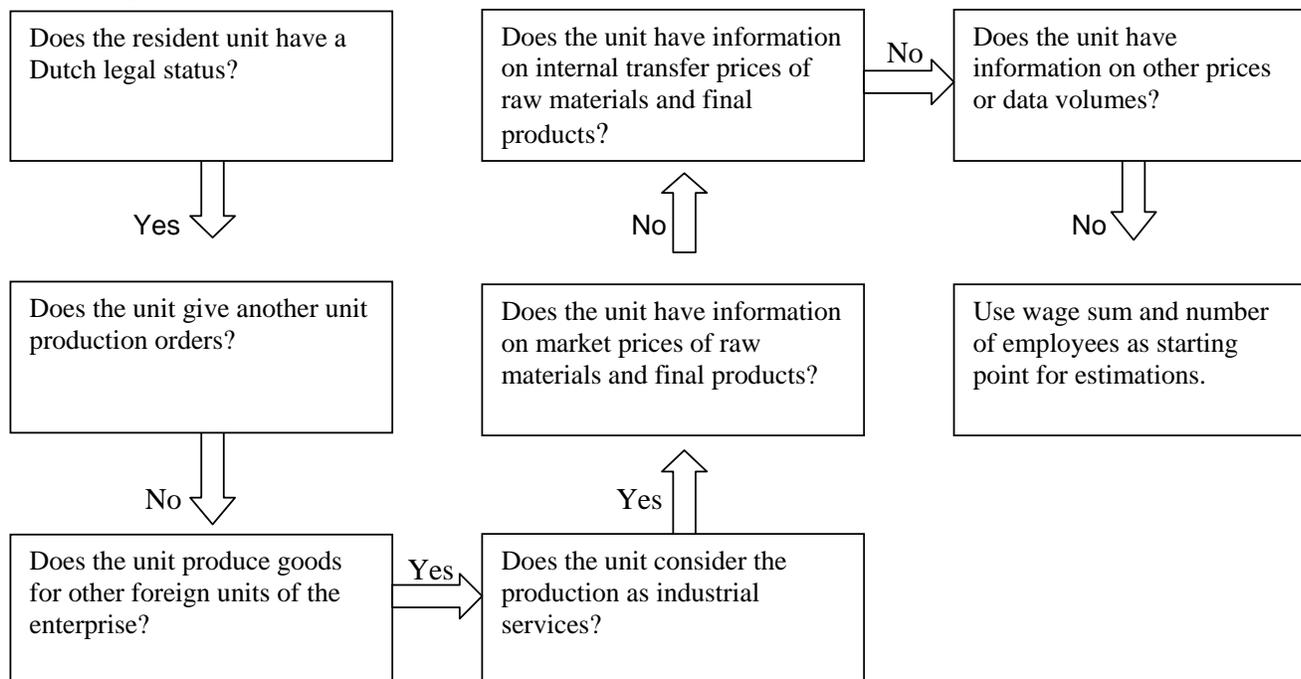
19. A multinational, 'Chempion', with headquarters in the Netherlands, owns a manufacturing unit in the Netherlands which produces chemicals, polymers etc. for a wide range of industries. The manufacturing unit was not able to provide specified data on output and raw materials.

20. Indication of economic relevance: the value added share of 'Chempion' in the total value added of Dutch manufacture in chemicals etc. amounts to 5%; the share of employees to 3%.

21. In the survey for the Production Statistics, the Dutch manufacturing unit is not able to provide specified data on output and raw materials. Specifications of industrial services and related inputs (energy and other expenses) are provided instead. The Dutch manufacturing unit considers the production of industrial services as its main activity. In this case the ownership of goods and the steering of the production process are in hands of the parent company. It provides the manufacturing unit with raw materials and is responsible for the sales of the final products. The parent company controls all activities in Europe and owns manufacturing units in other European countries as well. According to this form of organization the parent company considers itself a converter. The converter (unit) contracts the production process out to a producer of specialised industrial services. However, the converter and the producer of industrial services can not be part of the same company (reference: 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 is incompatible with the net registration of industrial services in the balance of payments. Criteria such as steering the production process or the legal ownership of the inputs and the finished product are not relevant in the distinction between producers of industrial services and the production units of multinationals<sup>4</sup>. With help of the 'decision diagram', the desirable solution in gathering information for estimating gross value added can be found. Figure 1 shows the 'decision diagram' for this case.

22. As shown in Figure 1, the preferred recording has to be reconstructed based on incomplete information from the manufacturer. This information consists of wage sum and the number of employed persons. The gross value added of the manufacturer can be estimated using these indicators. Table 1 shows the statistics submitted by the Dutch manufacturing unit.

Figure 1: 'Decision diagram' applied to Chempion's Dutch manufacturing unit



23. If the manufacturing unit had information on imports and exports, these data could have been used for the estimation of output. However, the manufacturer is not engaged in foreign trade since the parent company is located in the Netherlands. In addition, the parent company established a wholesale unit in the Netherlands that operates separately from the manufacturing unit. This wholesale unit submits data to the survey for International Trade Statistics. Table 2 shows the statistics of the wholesale unit.

Table 1: Statistics of the Dutch manufacturing unit

<b>Manufacturing unit</b>	
<i>Production Statistics</i>	
Industrial services	50
Intermediate consumption	10
Gross value added	40
- wages	35
- other income	5
Number of persons employed	750

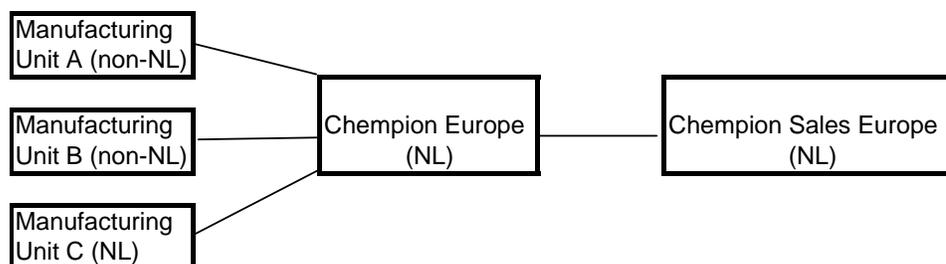
Table 2: Statistics of the wholesale unit

<b>Wholesale unit</b>	
<i>Production Statistics</i>	
Sales	400
Purchases for resale	350
Intermediate consumption	10
Gross value added	40
- wages	10
- other income	30
Number of persons employed	200
<i>International Trade Statistics</i>	
Imports	100
Exports	300

24. The wholesale unit operates in the European market. The parent company sells final products to this unit whenever there are customers for the final products. The problem of internal transfer pricing at non market prices (cost prices) might occur in this case. It can be concluded that a part of the exports is produced in the Netherlands. It should be possible to link this with the data of the manufacturing unit.

25. Figure 2 shows the organisational structure of the multinational enterprise.

Figure 2: The organizational structure of “Chempion”



26. SN found out that it makes sense to ask Chempion Europe for data on the manufacturing unit. In SN’s Business Register the parent company is considered a small unit as the number of persons employed is small. Usually, small companies are required to submit data on a sample basis. The wholesale unit and the manufacturing unit are required to submit data.

27. In cooperation with the parent company (Chempion Europe) SN managed to obtain data on raw materials and output of the manufacturing unit at market prices. Since the parent company owns manufacturing units in other countries as well, the problem of the demarcation of foreign units arises here. This problem is discussed with the parent and it can provide the necessary data. Information on the Dutch activities can be provided by the respondent by deconsolidating the foreign affiliates from the books. The problem with internal transfer pricing between the parent company and the wholesale unit does not occur. The data from the wholesale unit (Chempion Sales Europe) show a normal trade margin. The unit does not produce a high gross value added

and does not have a high operating surplus. Based on additional information, SN was able to adjust the figures of the manufacturing unit in the NA. Table 3 shows the adjusted figures.

Table 3: Statistical reconstruction of the Dutch manufacturing unit of 'Chempion'

	Original	Adjustments	Adjusted
<b>Parent company</b>			
Sales to wholesale unit	-	250	250
Industrial services	-	50	50
Purchases of raw materials	-	200	200
Gross Value Added	-	0	0
<b>Manufacturing unit</b>			
<i>Production Statistics</i>			
Production	50	200	250
Intermediate consumption	10	200	210
Gross Value Added	40		40
- wages	35		35
- operating surplus	5		5
Number of persons employed	750		750
<b>Wholesale unit</b>			
<i>Production Statistics</i>			
Sales	400		400
Purchases for resale	350		350
Intermediate consumption	10		10
Gross value added	40		40
- wages	10		10
- other income	30		30
Number of persons employed	200		200

	Manufacturing unit	Parent company	Wholesale unit
Observation before adjustment	Yes, incorrect	Not applicable	Yes, correct
Observation after adjustment	Yes, correct	Yes *)	Yes, correct

\*) This unit is too small for direct measurement and provides only additional information on the manufacturing unit.

28. The adjustments are relevant to the production structure of the Dutch economy. Due to the adjustments SN has complete information on intermediate consumption and production of the Dutch manufacturing unit. The adjustment also leads to the consistency between Production Statistics and International Trade Statistics. Without the adjustments the link between imports and exports of Chempion Europe and the production of the manufacturing unit could not be made.

29. Are the adjustments relevant to:

- (a) the production structure of the Dutch economy: yes
- (b) inconsistencies between statistics: yes (Production and International Trade Statistics)
- (c) GDP (value added): no

B. Example 2

30. 'Fiasco System International Ltd' is a producer of hardware and software and supports computer networks. The central sales office is established in the Netherlands, while assembly plants are located abroad. Problems arise with cost calculations within the enterprise (transfer prices).

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

32. A summary of the profit-and-loss account for year T is shown below.

Table 4: Profit-and-loss account of 'Fiasco'

Turnover	7500
Cost and expenses	4800
Gross profit	2700
Expenses for development and research	600
Selling expenses	850
Administrative expenses	80
Operating income	1170
Net property income received	-30
Income before taxes	1140

33. According to additional information the selling expenses consist of wages (70) and expenses charged of group companies (780) at cost price. 'Fiasco' 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. The group companies receive a compensation for expenses from the Dutch unit. In practice the (foreign) group companies do not have any profits.

34. Some options for adjustments on the figures:

(a) Allocation of operating income (value added) to the Netherlands and to the non-resident units in proportion to the number of employees, for example 10% of value added to the Netherlands and 90% to the rest of the world. This implies an upward adjustment of  $1050 = 90\%$  of 1170 (operating income) on selling expenses to 1900. Subsequently, operating income of 'Fiasco' 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).

Table 5: Profit-and-loss account of 'Fiasco' (adjusted, option 1)

	Original	Adjustments	Adjusted
Turnover	7500	0	7500
Cost and expenses	4800	0	4800
Gross profit	2700	0	2700
Expenses for development and research	600	0	600
Selling expenses	850	1050	1900
Administrative expenses	80	0	80
Operating income	1170	-1050	120
Net property income received	-30	1050	1020
Income before taxes	1140	0	1140

(b) 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. Only 1% is related to the sales of goods in the Netherlands. Using assumptions on the trade margins for sales in the rest of the world (via non-resident group companies) and trade margins on domestic sales, the operating income of the resident company has been estimated. In this example operating income as a percentage of the transit margin that can be attributed to 'Fiasco' 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).

35. Calculation of the corrections in the table below:

Gross profit = 2700 of which:

99% on goods outside the Netherlands = 2670 (A)

1% on goods in the Netherlands = 30 (B)

Operating income on (A) is 5% = 133

Operating income on (B) is 40% = 12

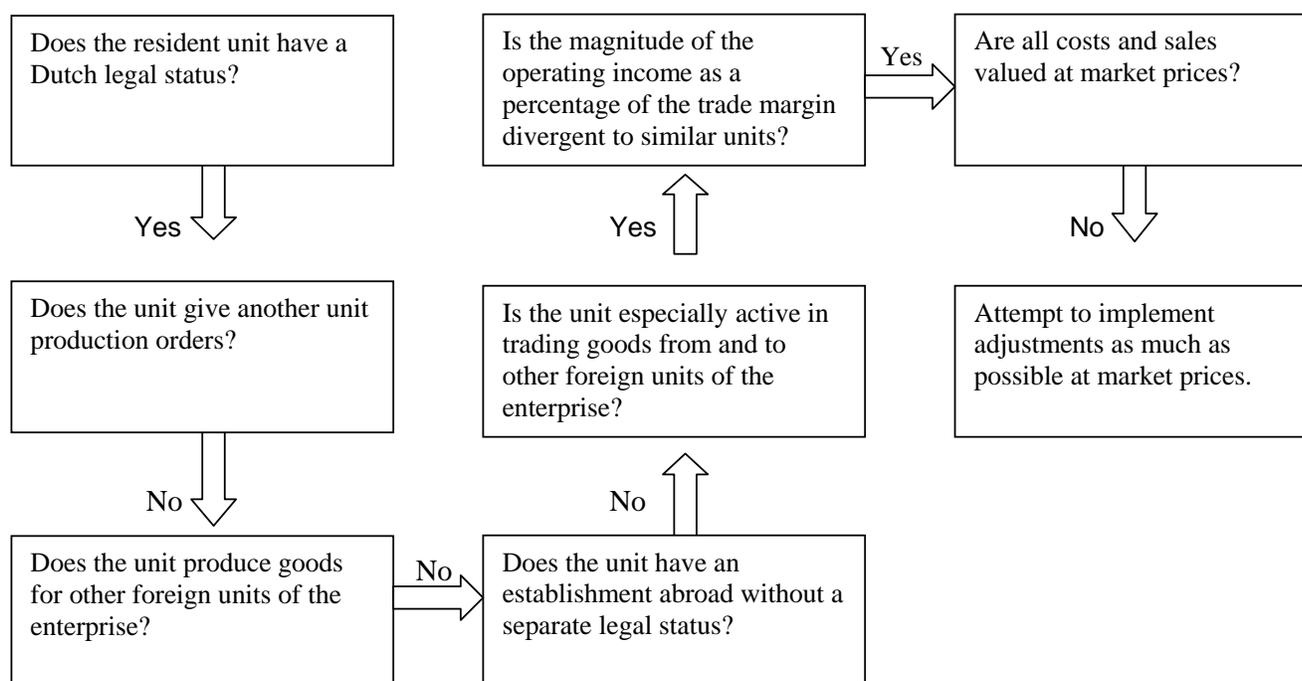
Operating income on (A) + (B) attributed to 'Fiasco' = 145.

Total adjustment on the operating income of the unit in the Netherlands:  $1170 - 145 = 1025$  (see table below).

Table 6: Profit-and-loss account of 'Fiasco' (adjusted, option 2)

	Original	Adjustments	Adjusted
Turnover	7500	0	7500
Cost and expenses	4800	0	4800
Gross profit	2700	0	2700
Expenses for development and research	600	0	600
Selling expenses	850	1025	1875
Administrative expenses	80	0	80
Operating income	1170	-1025	145
Net property income received	-30	1025	995
Income before taxes	1140	0	1140

Figure 3: 'Decision diagram' applied to Fiasco System International Ltd.



36. To conclude, a substantial downward adjustment on the production account (i.e. the operating income and value added) of 1025 must be applied. The (foreign) group companies pay 1025 as 'quasi dividend' to 'Fiasco'. This correction does not affect income before taxes.

37. Are the adjustments relevant to:
- The production structure of the Dutch economy: yes
  - Inconsistencies between statistics: no
  - GDP (value added): yes

## C. Example 3

38. A producer of trucks, 'The Model T-Ford Company Ltd', has a large-scale production plant in the Netherlands. The parent company is established abroad. The Dutch respondent is not able to provide data on outputs and inputs and confines the specifications to industrial services.

39. Indication of the economic relevance: Share of 'T-Ford' in national motor vehicle production amounts to 20%, export share amounts to 14%.

40. In year T, a producer of trucks, 'The Model T-Ford Company Ltd', established in the Netherlands, was taken over by a foreign (parent) company. From that moment onwards, 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 recording 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 the provision of data on gross output and inputs, 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 (gross output) 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 gross output and inputs with the help of international trade data and the production structure of 'T-Ford' in year T-1.

Figure 4: 'Decision diagram' applied to The Model T-Ford Company Ltd

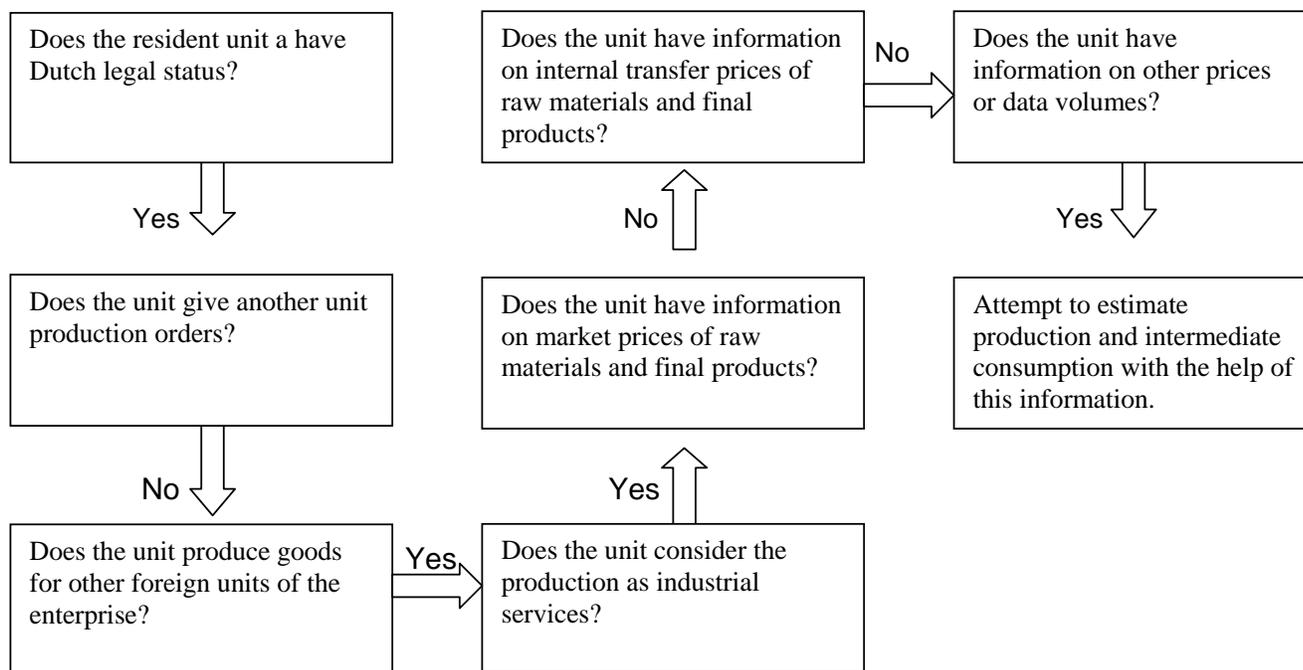


Table 7: Statistical reconstruction of the Dutch manufacturing unit of 'T-Ford'

Year	T - 1	T	T (Adjusted by National Accounts)
Total sales (production)	1400 (of which export 1220)		1440 (of which export 1280)
Cost and expenses (inputs)	1340 (of which import components 1100)	95	1380 (of which import components 1130)
Gross profit (value added)	60	60	60
Wages	55	55	55
Operating income	5	5	5
Compensation by parent company for industrial services		155	

41. Are the adjustments relevant to:
- (a) the production structure of the Dutch economy: yes
  - (b) inconsistencies between statistics: yes (Production and International Trade Statistics)
  - (c) GDP (value added): no

D. Example 4

42. 'Logic International Ltd.' is a producer of computers with manufacturing units abroad and call centre activities in the Netherlands. The industrial activities abroad are unjustly recorded as resident activities in the source statistics.

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

44. 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. 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, i.e. non-resident, management. The resident respondent only claims activities with an administrative and fiscal background. The unit is classified in the industry manufacturing of computers.

45. In this case the gross registration of 'Logic' in the Production Statistic is not based on the territory principle. The recording of the industrial activities is motivated by the Dutch ownership of the inputs and the products and steering of the production processes. The value of the inputs includes a certain amount for the industrial services.

46. On the other hand NA claims a smaller value added (i.e. wages concerning some staff and administration plus attributed operating income to the resident unit) because the production process takes place outside the Netherlands. Moreover the construction of the holding with foreign affiliates excludes the possibility of industrial services. Furthermore, because the resident unit is considered as a 'trading company' and not as a producer of computers, exports

(500) and imports (400) of Logic are recorded as re-export.

47. 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 (territory principle).

48. To conclude, the adjustment on the value added of the resident unit relates to the operating income, that is the remuneration for capital that can be attributed to the Netherlands by deconsolidation.

Table 8: Statistical reconstruction of 'Logic International Ltd'

Reconstruction Logic Int. Ltd	Original	Adjustments	Adjusted
	Profit-and-loss account	Profit-and-loss account	Profit-and-loss account
Total sales (gross outputs)	3300	-3255	45
Cost and expenses (inputs)	3200*	-3190	10
Gross profit (value added)	100	-65	35
Wages	30	0	30
Operating income	70	-65	5
Not property income received	10	65	75
Income before taxes	80	0	80

\* Of which industrial services by units outside the Netherlands: 200

49. Are the adjustments relevant to:
- (a) the production structure of the Dutch economy: yes
  - (b) inconsistencies between statistics: yes (Production and International Trade Statistics)
  - (c) GDP (value added): yes

## SUMMARY AND SOME CONCLUSIONS

50. This paper discussed the problems related to the registration of multinational enterprises in the National Accounts of Statistics Netherlands (SN). Many problems in regard to consistency of data of source statistics are related to large multinational enterprises. The guidelines of SNA and ESA do not offer solutions to all problems. SN devised some tailor-made solutions. This paper focuses on a number of these solutions. Where adjustments are necessary they may have substantial implications for the production structure of the national economy and GDP. A major objective is the consistency between statistics. Noticeable is the rapid increase in the number of respondents in industrial statistics that claim to have changed their regular production processes to industrial services as a result of the reorganization 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. It should be

noted that SN in principle relies on what the respondents have to offer. However, specifications sent by respondents that stand in the way of an adequate description of the national economy should be subordinate to the interests of good statistics. This requires persistence and creativity of the statistician. At this moment a number of cases are treated in the 'M&D' project of SN in an incidental and individual manner. SN's challenge is if the necessity for methodological reform must coincide with changes in the organization. One can think of a new organization unit focused on micro integration of MNE's (= consistency in the relevant statistics on the level of enterprises). Concurrently to the 'M&D' project, a new project, Top XXX (the largest enterprises with resident units in the Netherlands) has been started. This in time will lead to another statistical production process, where the treatment of larger enterprises will differ from smaller enterprises. Finally, the big challenge is international coordination on the level of enterprises (MNE's). This consistency will only occur when national statistical offices involved exchange information and agree on how to register certain transactions. Possibly international organizations, such as the OECD, can play a coordinating role.

<sup>2</sup> Leen Roosendaal, 2003, 'Multinationale ondernemingen', Internal SN document.

<sup>3</sup> 'Measurement of the activities of multinational enterprises', Paper prepared for the 28<sup>th</sup> General Conference of The International Association for Research in Income and Wealth (IARIW), Cork, Ireland, August 2004.

<sup>4</sup> See 'IARIW-paper', August 2004, section 2.4.

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