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***Business registers and national accounts***

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\*Views expressed in this paper represent those of the authors and are not necessarily those of Statistics Netherlands

1. Within a Statistical office, national accounts (NA) has a dual position. On the one hand it produces statistical data on macro economic variables like gross domestic product, household consumption, national income and savings. On the other hand it uses a broad variety of statistics produced elsewhere in the office in order to populate the NA with data. Many of these “source” statistics are directly or indirectly linked to Business Registers. This paper discusses a number of issues affecting NA and points at possible consequences for business registers.

2. Key features of national accounts are exhaustiveness and consistency. Exhaustiveness is linked to the definitions of territory, population and variables in the System of National Accounts (SNA) and its EU counterpart, the European System of Accounts (ESA). From the point of view of the NA the population to be covered is defined as those units, whether institutional or local kind-of-activity, which have a centre of economic interest on the economic territory of the concerning country. In the assessment of exhaustiveness of the population, Business Registers play an important role, as they describe the “economic” units on the territory of a country in terms of Kind of Activity Units (KAU’s), establishments, enterprises, etc.

Exhaustiveness also concerns level estimates of variables of the NA like production and value added. Business Registers play here a role as a sampling and grossing up framework.

3. The core of national accounts consists of the supply and use tables (SUT) giving a description of production and use of goods and services in great detail, the institutional sector accounts (ISA) describing the generation and distribution income and finally the labour accounts (LA) showing various aspects of labour both in monetary and “physical” terms. Each of these subsystems has its own consistency relations of which a number is strict in the sense that they are identities; others are used as plausibility checks (a.o. labour productivity). In addition there are also (strict) consistency relations between the three subsystems. Value added in the ISA must equal value added in the SUT. Wages in the LA must be the same as wages in the SUT and ISA. Most important examples are of course the three ways of estimating Gross Domestic Product (GDP). In a simplified version:

- a.  $GDP = \text{Final consumption (C)} + \text{Capital formation (I)} + \text{Exports (E)} - \text{Imports (M)}$
- b.  $GDP = \text{Output (P)} - \text{Intermediate Consumption (IC)}$
- c.  $GDP = \text{Wages (W)} + \text{Operating Surplus/Mixed Income (OS/MI)}$

of which a. and b. can be combined to the identity:

- d.  $\text{Output (P)} + \text{Imports (M)} = \text{Intermediate Consumption (IC)} + \text{Final consumption (C)} + \text{Capital formation (I)} + \text{Exports (E)}$

in which we recognize the commodity balance of the supply and use tables.

The supply and use tables are in fact a breakdown of the above mentioned basic identities of the NA in two dimensions. Vertically a breakdown into commodities, horizontally a breakdown into industries as far as output and intermediate consumption are concerned and final expenditure categories. The columns of the SUT provide data on production related to intermediate consumption and value added and are classified according to NACE. The rows show markets for goods and services in terms of who is selling, who is buying and what is the amount of the transaction. Goods and services are classified according to CPA.

**Supply and use table**

| Supply      |            |         |        | Use             |             |           |         |                |
|-------------|------------|---------|--------|-----------------|-------------|-----------|---------|----------------|
|             | Industries | Imports | Total  | Industries      | Consumption | Capital   | Exports | Total          |
|             |            |         | Supply |                 |             | formation |         | use            |
| Commodities |            |         | P + M  |                 |             |           |         | IC + C + I + E |
|             | P          | M       |        | IC              | C           | I         | E       |                |
|             |            |         |        | Value added = Y |             |           |         |                |
|             |            |         |        | IC + Y = P      |             |           |         |                |

Populating the supply and use tables with data on production, foreign trade, investment, etc. reveals inconsistencies in the source statistics. Several causes are at the bottom of discrepancies between demand and supply. Related to exhaustiveness missing units and hidden economy are typical examples. Also globalisation is a cause of large discrepancies between demand and supply.

4. Due to rapid changes in the international business activities over the last decades Dutch – and foreign – enterprises developed more and more to internationally operating units. As a result, production tends to be concentrated in larger business units or moved to so-called ‘low wage countries’. These developments increase the flow of goods and services between units of an international enterprise. Internationalisation and globalisation trends have a large impact on the description of a national economy. It has become more and more complex to observe the right flows of goods and services and 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 business units within large enterprises complicates the attribution of output to different national economies involved.

Internationally active enterprises and multinational enterprises (MNE) are therefore an important cause of inconsistencies in source statistics with as a consequence problematic balancing of the NA. For example: a resident unit active in merchanting will report high amounts for turnover, while foreign trade statistics do not record the concerning imports and exports, because the goods do not cross the border. Comparable inconsistencies arise in case of manufacturing abroad.

Matters become more complicated if intercompany or transfer pricing is at stake. Then adjustments can also result in changes in value added and therefore affects the sector accounts too. For the economy as a whole there is a reduction of gross domestic product (GDP) and a rise in primary income received, implying that gross national income (GNI) is the same. Due to globalisation the delineation between GDP and GNI is fading.

Tailor made solutions for observation, classification of transactions, starting on the enterprise(group) level, are necessary in order to solve these kind of problems.

In annex 1 an example is presented of a multinational enterprise for which source data are highly inconsistent. Because there is no change in ownership of the goods processed in the Netherlands, only processing fees are reported as output. However, foreign trade statistics report substantial flows of imports and exports for the concerning company. The result is an imbalance on the commodity level in the SUT. In this case the discrepancy between demand and supply is resolved by a imputing additional output and intermediate consumption fitting in foreign trade data to this company, without changing value added.

This solution is in conformity with the current <sup>1</sup>guidelines of SNA/ESA which say that deliveries between affiliate enterprises must be recorded as if there was a change of ownership of the concerning goods. A case in which also value added is adjusted, is presented in annex 2. The change in value added (i.c. operating income) has a counterpart in property income, which is a transaction in the ISA.

5. Although SNA and ESA are set up with international comparability and international consistency in mind, the focus in the consistency relations is on a national level. Within the EU and especially in the Euro-area the need is felt for European accounts directly derived from the national accounts of the member states. International consistency is then a “must”. In compiling European accounts various inconsistencies appear between the member state tables. A major cause are inconsistencies in foreign trade in goods and services (so called asymmetries) between EU-countries. A recent data exchange between Belgium and the Netherlands of data on production and foreign trade on a unit level, showed that internationally operating enterprises are an important cause of these inconsistencies. MNE’s are thinking on a European (or even a global level), while statistics are focussed on the national level. The solutions shown in the examples in annexes 1 and 2, do not guarantee international consistency. Adjustments made in the Dutch national accounts need not to have an opposite adjustment in the “mirror” country. In order to frame the description of expanding globalisation, there is a growing need for international consistency in cross border transactions of multinational enterprises, manufacturing abroad, etc.. A step forward in could be to adopt MNE’s “global” way of thinking by taking the “global unit” as the starting point for the delineation of “national units” and the collection of internationally consistent data. An International Business Register with internationally profiled enterprises would be a very useful point of departure.

6 In the supply use tables an activity is characterised by an input of products, a production process and an output of products. Activities are determined by reference to a specific level of NACE. Aim is to describe the economy in a breakdown to (as) homogeneous (as possible) activities, based on (as) homogeneous (as possible) kind of activity units, made operational as the 4 digit level of NACE. However, outsourcing (within a country or abroad), processing and global manufacturing cause input structure to be more volatile, making it hard interpret industry data.

**Table 1. Input structure for car producers.**

|                                 | <b>Do-it-yourselfer</b> | <b>Assembler</b> | <b>Outsourcer</b> |
|---------------------------------|-------------------------|------------------|-------------------|
| <b>Output</b>                   |                         |                  |                   |
| Cars                            | 100                     | 100              | 100               |
|                                 |                         |                  |                   |
| <b>Intermediate consumption</b> |                         |                  |                   |
| Basic materials metal           | 25                      | 2                | 2                 |
| Basic materials plastic         | 20                      | 2                | 2                 |
| Basic material glass            | 2                       | 1                | 1                 |
| Parts of metal                  |                         | 55               | 55                |
| Parts of plastic                |                         | 5                | 5                 |
| Parts of glass                  |                         | 5                | 5                 |
| Services                        |                         |                  | 20                |
| <b>Total</b>                    | <b>47</b>               | <b>70</b>        | <b>90</b>         |
|                                 |                         |                  |                   |
| <b>Value added</b>              | <b>53</b>               | <b>30</b>        | <b>10</b>         |

<sup>1</sup> This recording is not consistent with the proposals for the revised SNA (see par. 6).

Table 1 gives an example of the input structure for three types of car producers. The first is a traditional producer starting from scratch and manufacturing all parts himself and finally assembles the car. The second buys ready-made parts and only assembles the cars. The third only has a desk and a telephone, buys all ready-made parts and outsourced the assembly of the cars. All three are classified as car producers, but show a very different input structure. For the industry “Production of cars” one can put question marks to the homogeneity and the right interpretation of supply and use data. As Business Registers are via the KAU the vehicle to arrive at an industry classification. Confronted with the non homogeneous industries a strict application of the KAU as unit of observation for the SUT is not a first priority.

Proposed changes in the SNA point to stronger focus on the monetary flows in the economy, implying for example a more strict application of change in ownership as a criterion for transactions. For example: the present SNA prescribes that a change in ownership must be imputed in case of cross border deliveries between affiliate units, although there is no actual change in ownership and therefore no monetary flows. This way of recording improves the description of production processes. The same holds for processing abroad. Taking the change of ownership as leading, there will be no longer be imputed transactions, causing the input-output structure to be more volatile and blurred. Drifting away from production structure allows a less strict use of KAU’s as unit of observation for the SUT.

7. In the Netherlands the reduction of the administrative burden for companies has a high priority in politics. This leads to an increasing use of fiscal data and other so called register information. As a consequence the role of Business Registers change from being an instrument for sampling and grossing up to an instrument for linking administrative data. Specific for the Netherlands is that each (fiscal) register has its own units. In order to consistently combine the data from the various registers, GBR-units must make it possible to link the various register units. Recent research in the Netherlands lead to the conclusion that the enterprise-group (EG), including units with controlled interest fulfils the requirements of the linking pin. Classification of industries in the SUT and LA according to NACE will be based on the enterprise-group. The price to be paid is less homogeneous industries. Whether or not the EG can also be used as a unit of observation for additional (non-register) information has not been assessed yet .

#### 8. Concluding remarks

From the point of view of the NA, the focus of units and the GBR should/can move.

- As the GBR is now important for the level estimates in the NA via sampling and grossing up, the use of (exhaustive) register data (a.o. tax) reduces that role
- As the focus on production structure is fading due to outsourcing, globalisation and the way of recording in the new SNA, the (strict) use of KAU’s as units of observation for SUT is no longer a must
- With the use of administrative data the units of the GBR have to be the linking pin between the various register units
- Internationally comparable and consistent data require more and more international coordination in profiling, observation and recording of MNE’s. A supranational business registers could be an instrument making a step in that direction.

## Annex 1. Treatment of multiterritory enterprises: example 1

**From: Treatment of multiterritory enterprises; Frank Bonger, Leslie Nootenboom, Wim Tebbens and Nico van Stokrom, Statistics Netherlands, June 2007**

*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 unable to provide specified data on output and raw materials.*

***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%.***

In the survey for the Production Statistics, the Dutch manufacturing unit was unable 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.

In this example foreign trade statistics show imports and exports of goods, despite they are not reported in production statistics. The NA recording has to be constructed 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.

***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  |
| - operating surplus          | 5   |
| Number of persons employed   | 750 |

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.

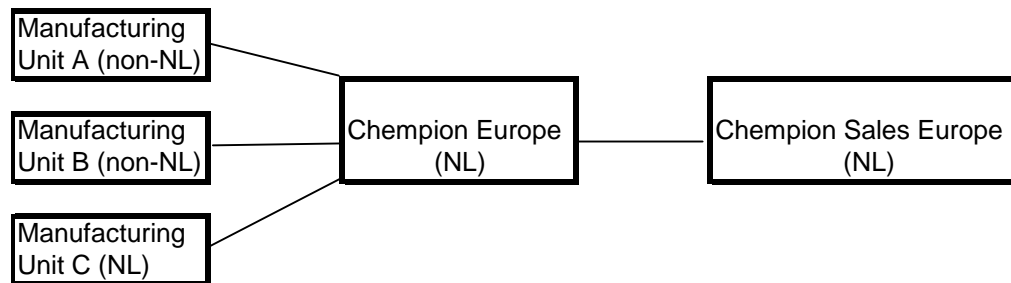
**Table 2: Statistics of the wholesale unit**

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

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.

Figure 2 shows the organisational structure of the multinational enterprise.

**Figure 2: The organisational structure of ‘Chempion’**



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.

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 could provide the necessary data. Information on the Dutch activities could be provided by the respondent by deconsolidating the foreign affiliates from the bookkeeping. 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'**

|                              | <b>Original</b> | <b>Adjustments</b> | <b>Adjusted</b> |
|------------------------------|-----------------|--------------------|-----------------|
| <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              |
| - operating surplus          | 30              |                    | 30              |
| Number of persons employed   | 200             |                    | 200             |

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.

## Annex 2. Treatment of multiterritory enterprises: example 2

**From: Treatment of multiterritory enterprises; Frank Bonger, Leslie Nootenboom, Wim Tebbens and Nico van Stokrom, Statistics Netherlands, June 2007**

*'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).*

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

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 |

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.

Some options for adjustments on the figures:

1. 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     |

2. Option 1 appeared to be practically impossible because of insufficient data on the number of people employed at (foreign) group companies. However, additional information was available on the share of the sales for transit abroad. This share was about 99% of total turnover. Only 1% was 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).

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     |