

# STATISTICAL BUSINESS REGISTER

## Content, Place and Role in Economic Statistics<sup>1</sup>

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### Abstract

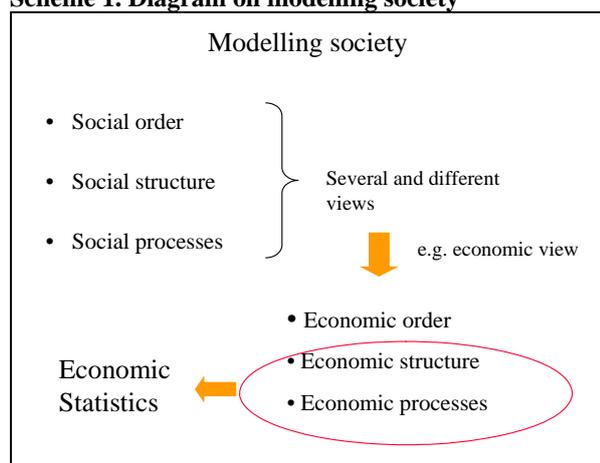
The Statistical Business Register plays a central role in economic statistics describing economic structure and economic processes on production and financing. The register contains the statistically relevant records on enterprise groups and enterprises, including the self-employed and institutions. In the paper an introduction to the statistical business register is described, including the context in which the register operates.

**Keywords:** Business Register, Statistical units

### 1. Introduction

Official statistics describe many kinds of social phenomena within a social order. In the description the emphasis is on structure and on processes. The social order itself is not subject of description in official statistics. Processes are to be seen as actions, interactions or transactions within or between elements that together form the structure as actors. Several and different views on society are subject of statistical programs. An important view is the economic one, represented in economic statistics.

#### Scheme 1. Diagram on modelling society



Both structures and processes are described in economic statistics. Actors determine the structure. If we restrict to the domestic (national) area of a country,

the main elements or actors in the economic structure are:

- Consuming and spending actors, persons and households, but also government;
- Producers of goods and services (including governmental institutions);
- Institutions for financing and income distribution.

The actors must be defined according to the process under consideration, consumption and expenditures, production or financing. A key characteristic of an actor is that this operates autonomous in its relevant domain. It needs to have the necessary power of decision for participation in the process. The domain is determined by the kind of the process under consideration and by the demarcation of the physical area. National statistics are restricted to the boundaries. For describing the processes the abroad is an additional actor. In this paper we restrict to the processes of production and financing. Furthermore we restrict to the national statistics, although international relationships have become very relevant as a consequence of globalization. This aspect may not and can not be ignored.

### 2. The framework of economic statistics

In order to describe the economic processes specific interrelated systems of statistics have been developed. As mentioned such processes are consumption, production, financing and income distribution. The integration of the total economic process is yearly round up in the national accounts. In these the full economic cycle is presented finally. For the full system conceptual frameworks exist. Two important and mutual related ones are:

- UN System of National Accounts (SNA);
  - European System of Accounts (ESA).
- In these frameworks explanation is given on:
- The processes to be distinguished;
  - Types and definitions of the adequate actors (the economic statistical units);
  - Types and definitions of transactions and flows between actors/entities;
  - Classifications to be distinguished and applied.

Although a mutual relationship exists between the two

frameworks, the concepts are not identical. There is difference in wording and in content. Especially for actors or statistical units used for describing the economic production and financing processes this may lead to confusion, what has resulted in many, sometimes academic, discussions.

The two mentioned processes will be the focus of what follows in this paper. Actors involved in these processes are mainly businesses, but at different levels of autonomy for the two types of processes to be distinguished. Statistics describing behavior of businesses as actors we shortly will call Business Economic Statistics (BES-statistics).

According to the ESA-system the appropriate statistical unit for description of the production process is the Enterprise. According to the SNA-system this is the Establishment. For the financing processes the Enterprise Group is the adequate unit according to the ESA-system and the Enterprise is the adequate unit according to the SNA-system. The term Enterprise is differently defined in the two systems. Except for the autonomous actors who serve as main statistical units also other statistical units are defined. These are mainly applied for analytical purposes. If the BES-statistics describe phenomena with the autonomous actors as statistical units, we call these statistics institutional statistics. Data on the processes are collected from the autonomous actors, and only fit these statistical units and not, for example, underlying activities. It is the institutional approach to describing economic aspects. In this paper we will use the concepts as adopted in the European system of economic statistics. These are the concepts of the statistical units, classifications and definitions. Differences in the UN (SNA) and EU (ESA) concepts are analysed more in depth by Peter Struijs (2006).

### 3. Statistical Units, Definitions and Classifications

#### 3.1 Statistical Units and definitions

In the EU-system a set of statistical units is by regulation defined for description and analysis of the economy (EU, 1993a):

- a. **the enterprise (ENT);**
- b. the institutional unit (IU);
- c. **the enterprise group (EG);**
- d. the kind-of-activity unit (KAU);
- e. the unit of homogeneous production (UHP);
- f. **the local unit;**
- g. the local kind-of-activity unit (local KAU);
- h. the local unit of homogeneous production (local UHP).

The units mentioned in bold are to be considered as autonomous actors, although autonomy is very limited for the local unit. It is considered to be so for regional

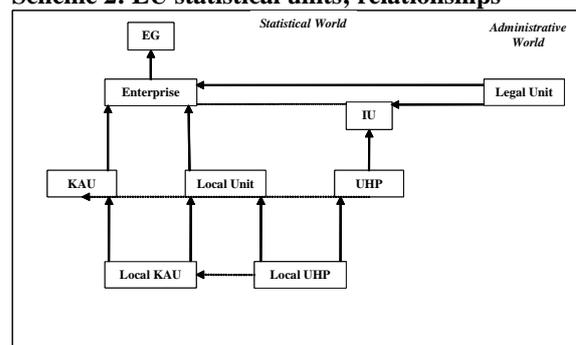
(sub-national) statistics however. All units in bold can be identified, physically or in terms of natural or legal persons. The other units are more adequate for analytical purposes, e.g. to distinguish more homogeneous activities within an enterprise or local unit. All statistical units must be derived and defined from administrative and legal operating units in the society. Many times actual administrative or legal units are equal to one or more statistical units, but these also many times differ. The size of difference depends on the way society is organised legally and administratively. The level of development of society and economy is also contributory.

The legal and/or administrative organisation of a society is represented by the way of creation of entities and rules in order to perform optimally according to goals. Regulatory and executive institutes (e.g. tax-offices) keep lists for own purposes. Focus is on governance and control with orientation on individual persons and/or institutions. The organization is according to national legislation.

Economic/statistical approach results via transformation and standardization into standard concepts of economic statistical units, in principle "independent" of national legislation and/or administration. Information on individual units is only of importance in the context of aggregates or groups. There is no direct repercussion on individual units because of the general accepted confidentiality policy in statistics.

The relationships between the statistical units are given by Peter Struijs (2006) in the next scheme.

**Scheme 2: EU statistical units; relationships**



The main units for data collection and for compilation of statistics in the institutional BES-statistics system are the Enterprise Group, the Enterprise and the Local Unit. The definitions of these are (EU, 1993a):

- Enterprise: the smallest combination of legal units that is an organizational unit producing goods or services, which benefits from a certain degree of autonomy in decision-making, especially for the allocation of its current resources. An enterprise carries

out one or more activities at one or more locations. An enterprise may be a sole legal unit.

- Enterprise group: an association of enterprises bound together by legal and/or financial links. A group of enterprises can have more than one decision-making centre, especially for policy on production, sales and profits. It may centralize certain aspects of financial management and taxation. It constitutes an economic entity which is empowered to make choices, particularly concerning the units which it comprises.

- Local Unit: an enterprise or part thereof (e.g. a workshop, factory, warehouse, office, mine or depot) situated in a geographically identified place. At or from this place economic activity is carried out for which - save for certain exceptions - one or more persons work (even if only part-time) for one and the same enterprise.

Each enterprise group has at least one enterprise and each enterprise has at least one local unit.

The other units mentioned are for analytical purposes. The Kind of Activity Unit is a unit that is very close to the Enterprise. It has a higher degree of homogeneity regarding the economic activity carried out, while the main criterion for the enterprise its degree of autonomy is. Important for all units is that the relevant related information can be obtained, so a meaningful description in figures is important. For autonomous units most figures can be obtained or derived from the bookkeeping systems at enterprises.

Except the number of units for description the economic structure also specifications into subgroups are relevant. These subgroups are defined according characteristics of units. The most important ones are the kind of economic activity carried out, the institutional sector to which the unit belongs, the size of the units in terms of used labour or generated turnover and the region in which the unit operates. Other characteristics are possible. Not all characteristics are meaningful for all units. Using the characteristics it is possible for example to compile a statistical table representing the number of enterprises by economic activity and by size class. Another table could be the number of local units by economic activity, by size class and by region.

### 3.2 Classifications

The actual most used classifications are:

- Institutional sector classification as specified in the SNA and ESA. In this classification different classes are distinguished, especially important for describing the financing processes in the economy. The main categories are: Non-financial corporations, financial corporations, government, households, and non-profit-institutions. The applicable unit types are the

Institutional Unit and the Enterprise Group. The main categories have subdivisions.

- The industrial classification which at several levels of detail specifies the kind of economic activities carried out at enterprises in the economy. The most known is the ISIC of the UN (International Standard Industrial Classification of all economic activities). Many other used classifications are in line with ISIC in principle. In the EU (EU, 1990) the NACE (Nomenclature générale des Activités économique dans les Communautés Européennes) is compulsory used by all member states. The Northern American countries use the NAICS (North American Industry Classification System) and the Oceanian countries use the ANZIC (Australian and New Zealand's Standard Industrial Classification). Many individual countries make adaptations to their own economic situation but keeping the basic structure for comparability. An additional (fifth) digit to the standard four digits in the hierarchical system is mostly used for this. The industrial classification is mainly important for the description of the production processes. The Enterprise and its direct related underlying units are most eligible to be classified according the SIC (Standard Industrial Classification). The SIC must periodically be revised because of the development in the economy. New industries appear and others disappear, at the lower levels of the classification especially. Although it is important for comparison of figures over time to have stable (unchanged as much as possible) classifications, adaptations for real changes and developments are unavoidable. A revised NACE will be introduced in 2008.

- To classify according size of a unit several classifications can be used, depending on the purpose. Examples are classifications according persons employed, according the number of employees and according the realised turnover.

#### Scheme 3: size classifications

Size-code	Number of employees	Size-code	Number of persons employed
0	0	00	0
1	1	10	1
2	2 - 4	21	2
3	5 - 9	22	3 - 4
4	10 - 19	30	5 - 9
5	20 - 49	40	10 - 19
6	50 - 99	50	20 - 49
7	100 - 199	60	50 - 99
8	200 - 499	71	100 - 149
9	500 and more	72	150 - 199
		81	200 - 249
		82	250 - 499
		91	500 - 999
		92	1000 - 1999
		93	2000 and more

In the EU some are obliged by regulation (EU, 1993b). In the above scheme an example of at Statistics

Netherlands (SN) used size classifications is shown. From 2007 the employee based classification is not longer applied in the SN business register.

- For regional specification of statistical figures we need a classification of regions. These are unique for the individual countries of course. Here we also see several levels of detail. In many countries the most detailed code is assigned to the appropriate units from which the higher levels can be derived. In The Netherlands we can derive all administrative regions from the postal code system. This is used as the basic geographic variable (GEO-code) therefore. Other GEO code systems are grid-classifications which are not directly related to administrative regions. These can cross the borders of e.g. municipalities. Regional classifications especially relate local units.

- The last classification to be mentioned for assigning characteristics to units is the classification of changes and events related to units. If we want to compare populations or subpopulations over time, we must know the reasons for the differences or changes. The in The Netherlands developed and used classification of changes was presented at the ICES-I in 1993 (Struijs and Willeboordse, 1993).

### Scheme 3: classification of changes

Change class	Number of units involved*	Unit identity continued
1. change of characteristic	1:1	yes
2. change of existence		
1. birth	0:1	no
2. death	1:0	no
3. change of structure		
1. concentration		
1. merger	x:1	no
2. takeover	x:1	yes
2. deconcentration		
1. break-up	1:y	no
2. split-off	1:y	yes
3. restructuring	x:y	yes or no

\* Number of units before and after the change: x>1, y>1.

Legal or administrative changes do not necessarily influence the identity of a statistical unit. The classification of changes supports the insight in consequences of events on unit identity continuity.

## 4. Knowledge and statistics on populations

A population is defined as the total number of a specified unit-type in a period or at a point in time in reality. Knowledge on populations is also necessary at the level of the individual units for data collection of figures and for compilation of statistics on economic processes (production and financing). Populations can be restricted to the units which have specified characteristics, e.g. belonging to a specific kind of industry, belonging to a specific size-class or region. The combination of unit type and conditions in terms of characteristics determine the population in scope.

Statistics on populations have a long history. These were initially compiled in economic censuses. In these censuses data on structure were collected at all enterprises. The main variables are those for assigning the SIC-code and the size in terms of employment and turnover. Because of the exhaustiveness statistics could be compiled at a much disaggregated level. For detailed regional figures data on the local units were collected too. For data collection lists of enterprises and local units were set up incidentally and only for the purpose of the census. The lists were checked by enumerators, visiting the enterprises. The census was carried out for one point in time and using a single questionnaire. This guaranteed full comparability.

Later on, the lists were also used for data collection on processes. Statistical offices started regular yearly statistics on the production processes, in the beginning mainly for the manufacturing industry, then extending to other industries. Results of the censuses were kept as population figures as a reference and were also used in sample designs. Sectorial censuses in specified industries were carried out, if necessary. Because of the growth of the statistical system and the organisation of the system in several statistics the need has arisen for frames for co-ordination of statistics, heavily influenced by the National Accounts. Also efficiency would be improved in the case of common sample frames. Without regular updates however the data collected in these censuses rapidly become obsolete.

In the late 1960s Statistics Netherlands started to register centrally all actors involved in the production process in a central statistical business register. The aim of this *Business Register* is to produce a common sampling frame for statistics on enterprises. Overlaps and omissions were as much as possible eliminated. It has evolved to an important coordination instrument relating to each other the outcome of various statistics. Nowadays it acts as the crucial backbone in the system of enterprise related economic statistics. Evolution is still going on.

## 5. The Statistical Business Register

### 5.1 Introduction to the Statistical Business Register

A statistical business register can be described as “a full and comprehensive list of all entities, institutionally and formally involved in production and financing processes of the economy to facilitate and support the collection of statistical data and the compilation and dissemination of statistical information.” The entities are standardized according the operational frame of definitions of appropriate units. These units are the Enterprise Group, the Enterprise and the Local Unit, because these operate as

actors in the economy. The business register frame has evolved from a paper list into a complex modelled computerised semi automated system. A business register in a modern and well developed economy is more complex than a register of natural persons and/or households because of the many and dynamic ways of manifestation of units in the real administrative world, e.g. many kinds of legal forms and ways of being organised. The statistical units must unavoidable be expressed in terms of administrative and or legal units, unless special arrangements are made with enterprises. This makes that the administrative units constituting statistical units must be part of the business register for identifying purposes. The legal form of the underlying legal units is also one of the criteria for the assessment of the institutional sector code of the enterprise groups. The setting up and the maintenance were very time consuming because most of the work had to be done manually by staff. The last two decades staff required for maintenance has heavily decreased because of automation. For the setting up and maintenance administrative registrations are available, like taxation administrations, registrations of chambers of commerce, social security administrations and so on. Also private lists as of Dun & Bradstreet can be very useful. A very important issue is the recognising of inactive units who should be avoided to be registered in the statistical area of the business register. The criterion for activeness is in the contribution of the unit to the relevant economic process.

## 5.2 Goals and roles of the Business Register

The statistical business register has become an essential part of the system of official economic statistics at all national statistical offices in the western countries. The main traditional features of the register are:

- to serve as a survey sample frame by providing:
  - information on (sub)population size;
  - tools for selecting samples of units to be surveyed;
  - information on selected statistical units for surveying (address lists etc.)
  - information about trends within subpopulations;
  - sampling and grossing up information and procedures;
  - rules and procedures for co-ordination of statistics;
- to serve as a frame/tool for controlling the response burden.
- to serve as a basic reference frame to administrative registrations from which statistical data on individual units can be collected.
- to serve as a frame/tool for survey management and survey control.

- to serve as a basis for statistics on population size and structure, nowadays also called economic demographic statistics.

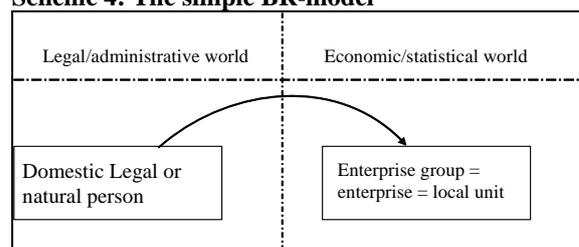
Using the basic characteristics of the units sampling can be optimized by stratification.

Processes of data collection and of compilation of statistics have become complex. We have seen a drastic shift in approaches in recent years. Response burden has come high on the agenda in the programs of statistical offices, not at least influenced by politics. We see high pressure to move from direct data collection at enterprises to the use of data in administrative registrations. This leads to complex mixed mode designs in data collection. In this the business register must serve as the infrastructure along which data get standardised in the desired statistical concepts. The consequence of this is that the legal/administrative enterprise structure has become a more important and essential part of the business register. At many statistical offices business register related infrastructures have been developed and introduced for a reliable data collection out of administrative registrations.

## 5.3 Statistical Business Register, the model

The most simple situation is where no different statistical units need to be distinguished. All statistical units types correspond with each other. So the enterprise group has only one enterprise and this enterprise is located at only one location. In this situation the administrative world has to be mapped into the statistical one as shown in the scheme 4.

**Scheme 4: The simple BR-model**



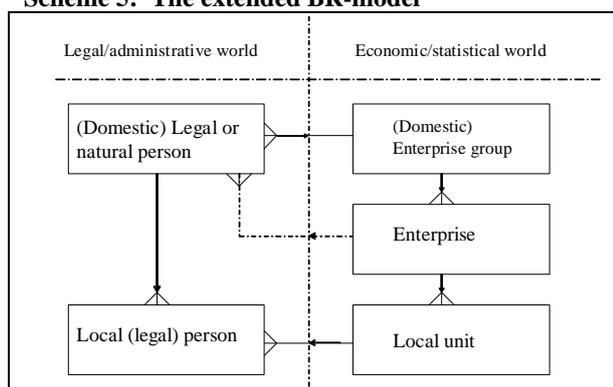
All domestic legal and natural persons are mapped from the legal/administrative world into the economic/statistical one if they contribute to the production process, and if they do this “autonomously”. Inactive units do not reach the economic statistical part.

This model can be the starting position in the case a business register must be set up from scratch in developing countries. Essential is to eliminate the economically inactive units. A small and simple extension is if the enterprise will operate at more

locations, so will have more local units. The introduction of the simple model is proposed by Geoff Mead (2005). Also in this model the basic characteristics should be assigned to the units.

From this simple model the more extended model can be derived as shown in scheme 5. The Enterprise Group unit is still not compulsory from the EU-regulation on business registers in the EU member states (EU, 1993b), but will be soon after adoption of the revised regulation.

**Scheme 5: The extended BR-model**



The model shows the relationships between the basic register units, beginning with mapping from the administrative world into the economic/statistical one.

As the scheme shows, one enterprise group may contain one or more legal units, but a legal unit may belong to only one enterprise-group. The other relationships must be interpreted analogously. The term legal/administrative world indicates that the belonging units are from an external administrative source; these units are not modified, nor is any information added. From the scheme no direct relationship appears between an enterprise and the administrative/legal world. This is because enterprises are the result of the analysis of the enterprise groups into autonomous actors relating the production process. After this analysis the enterprises are also expressed in terms of administrative/legal information. In fact it is very exceptional, if an enterprise does not follow the boundaries of administrative legal units. And if so, it occurs mainly within the large enterprise groups.

The word “domestic” is between brackets. Although the business register is for national statistics we see a growing demand on information on international relationships for analysing globalisation issues. Extension with the other statistical units is possible, but the other units are more analytical ones and can be considered as kind of characteristics too. These can be

represented by registering with the primary units the distinction between primary and secondary activities.

In the scheme 6 the relationships between units and characteristics is restated briefly.

**Scheme 6: Units and characteristics in the BR**

	Legal unit	Local legal unit	Enterprise group	Enterprise	Local Unit	Time stamp
Source key	x	x				
SBR ID Number	x	x	x	x	x	
Control/ownership	x					
Legal form	x					
SNA-sector-code			x			
SIC-code(s)	x	x	x	x	x	x
Size-class-code(s)	x	x	x	x	x	x
Change code			x	x	(x)	x
GEO-code		x			x	
Survey-codes			x	x	x	x
Date of entry	x	x				
Date of birth			x	x	(x)	
Date of death			x	x	(x)	
Date of deregister	x	x				

Some additional explanations are needed.

Names, addresses (incl. e-mail) and other contact information should also be recorded of course at the unit level for identifying in postal or telephone contacts.

The source key indicates the administrative source which has reported the legal or administrative unit. More source keys are possible if the same administrative/legal unit is reported by more sources.

All units need to have a unique identifier in the business register. This is important for identifying but also for combining and matching of data from different data collections with the same unit.

Data on control and ownership is needed to build up and to construct the enterprise group unit. All legal units under common control belong to the same enterprise group. Here institutional sector homogeneity is desired. The SNA-code assigned to the enterprise group is also applicable for the enterprises belonging to the group, if needed for selections.

The legal form classification varies between countries and depends on national legislations. It includes unincorporated firms of natural persons. The legal form is important to assign the SNA-sector-code to the enterprise (group).

Change codes for the local unit are applicable dependent on the way local are considered. If these are considered to be autonomous units change code, including for birth and death, are applicable. One could argue to consider local units as kind of characteristics of enterprises. Then these get time stamps like SIC-codes or size-class -codes. Here we consider local units as potential autonomous units which are used in regional statistics.

Survey codes are stored and updated in the Register in order to keep track of the (kinds of) surveys in which the unit is drawn. They are used in the response burden containment programs too.

The change code stores past enterprise events (birth or death) and changed character (SIC code, size class or geographical location) or structure (merger or take-over and break-up or split-off).

All information on relationships between units and the information on characteristics are time-stamped with four dates: date of event, date of registration, date of validation and date of applicability in sampling. These time-stamps are entered to retain the historic dimension and the proper relationship with sampled units in the register, which in fact is continuously being updated. This procedure makes it possible to select on the base of new analytic criteria specific (sub)populations for previous periods.

## **5.4 Business Register, sources and maintenance**

### *5.4.1 Sources*

To make the register as exhaustive as possible external administrative sources are used. Which administrative data sources are available differs from country to country. It depends on the national legislative organisational structure within the country. In The Netherlands data on changes are e.g. acquired from:

- The registers of the Chambers of Commerce and Industry: the Trade Register, the Register of Associations and the Register of Foundations;
- The registers of the Industrial Insurance Boards (the executive bodies of social insurance in The Netherlands);
- The registers of the taxation administration;
- The Dutch postal organisation (postal code);
- Feedback information from statistical surveys;
- Profiling activities: tailor made analysis of large businesses, using information from the internet, annual reports and calls/visits.

In The Netherlands a unified integrated and exhaustive administrative register is coming up soon. This register is legally based and all units will legally be obliged to register, what means every person or firm who markets products or services or carries out incorporated activities. Also the local legal units will be part of it. It includes farmers and free professions (the office of notary, health care and similar activities in the free professions. The first three sources mentioned will not be used longer separately when this exhaustive source has come in operation. All administrations in The Netherlands will be obliged to use this unified register

what will bring important advantages and benefits. Because of the use of the same identifiers in the decentralised registers/administrations it will be more easy to add information and characteristics that are available in the decentralised administrative registers. Previously no regular external source was available for agricultural units without employees and units without employees which carry out activities in the free professions.

Except the use of official, most governmental, sources also sources of private institutes can be useful for updating and maintenance of the business register, e.g. the lists of Dun & Bradstreet.

To avoid or to reduce overlaps, in the case of more sources procedures must be available to trace and match data. Information on changes are received and processed at a regular basis.

At Statistics Netherlands we have reached a high degree of coverage because the only units that are missing are small. It has higher impact on statistics on the structure of the population of actors than on the statistics describing economic processes because of their marginal contribution to these processes. The undercoverage will be reduced further after the introduction of the new unified administrative register.

It is very important for statistical agencies to have good and easy access to information in administrative registrations because of efficient and effective management of operations in statistics, but also to have a minimum administrative burden at enterprises. Good relationships with administrative sources are important to get optimal fit for purposes. Statistical offices can cooperate with administrative sources in implementing good methodology in assigning the SIC-code for example, because the activity code is also relevant in most administrative registrations.

### *5.4.2 Maintenance and updating*

Maintenance regards the units and their characteristics. Usually small, medium-sized and large enterprises are distinguished. Because of the number size the small units are caught from the administrative sources using criteria on possible inactiveness. Inactive units are prohibited to enter the statistical part of the business register. The involvement of labour or the generating of value added indicates economic activity. Most small units have a simple structure and can be mapped into the statistical part as is shown in scheme 4. The procedures are highly automated.

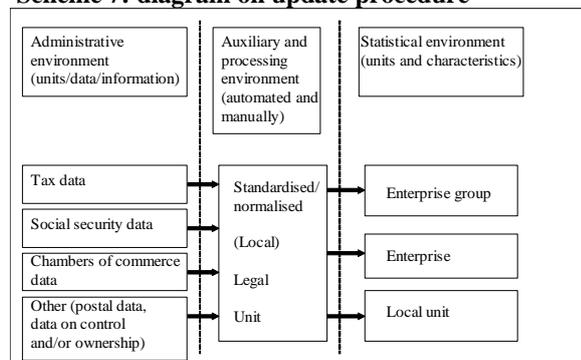
Large enterprises need more attention in the maintenance strategy, because the impact of these units

on the figures in statistics on the production process or financial process. For the largest units the approach of profiling is developed. Here staff is involved in analysing the units structure and assigning characteristics. For the medium sized units a mixed approach is applied, also depending on the impact of the individual units in statistics, e.g. depending on the size of the population the unit belongs to.

The basic functions in updating and maintenance of the business register are to realise the right mapping from the administrative world into the statistical one. This can be done in a statistical way, what means that the statistical consequences of the results in terms of populations and subpopulations are more important than the results for individual units. This seems to be a contradiction in terminis. Insight in statistical impacts contributes to an optimal updating strategy within the restrictions of available budget and staff for updating and maintenance. Not all information can be checked for the individual units. Priorities must be set. Updating is highly done in automated procedures. Here rules have to be defined. These rules must guarantee consistency and optimal quality related to the goals and uses of the register. In the automated tools the rules are build in. Important automated tools in register updating are tools for matching and coding, but also for standardising and normalising the administrative information.

In scheme 7 the way of updating is shown.

**Scheme 7: diagram on update procedure**



In the scheme three parts are distinguished:

- The administrative part of the model;
- The auxiliary and processing part;
- The statistical part.

The administrative part is kept unchanged. Information is imported in the processing area. The necessary information for matching is selected in the statistical part and after processing the updated units with their characteristics, incl. the change codes, are restored in the statistical part. Time stamps are assigned too to the relevant data. In the case of more possible results

priority rules are defined. If these are not satisfying, manual action by staff is necessary at last. Interactive manual actions by staff, including profiling, are done in the auxiliary and processing part.

Additional to the individual unit, oriented maintenance and updating will be needed for groups of units regularly. From analysis it can become clear that in some subpopulations the quality of the assigned SIC is of poor quality. For improvement, register surveys (previously called sectorial economic censuses) can be needed, carried out by the statistical office or by the holder of the source register. The last mentioned is to be preferred for reasons of continuity of the improvement.

Another reason for a group wise update action is if the classification system itself changes or is revised. If no unique relationship exists with the existing classification also a register survey is needed to implement the new classification in the register. With some time intervals this occurs for the activity classification. Also in this case it is preferable if the operation is done by the holder of the source register so also other users of this register will get the updated information then.

Except information becoming available from the administrative sources also feedback information of statistical register based surveys are used for updating and quality improvement.

The intensity of the updating activities reflects and monitors the quality of the Register. The following questions summarize the transformation of an administrative entry into a statistical record:

- Does the unit have an economically active existence?
- Are the statistical characteristics accurate?
- Does the unit have relationships with other units? If so, the administrative units under common control have to be combined and the resulting clusters split up into statistical units according to the appropriate definitions and rules.
- Was the unit previously related to other units? If so, what has changed and which is the present economic status?

To deploy the updating efforts as efficiently as possible explicit quality rules have to be defined. Quality controls are also important on both input and output.

#### 5.4.3 Maintenance, some special issues

a. Not all newly registered legal units in the external administrative registers are also new units in the statistical sense. These new administrative units may be the successor of previous ones or result from

changes in legal status. Vice versa, not all units which are removed from administrative registers have gone out of business. Even a bankruptcy is no proof that an economic activity has been ceased. Therefore procedures have been introduced to trace these cases as much as possible.

Using the classification of changes some years ago Statistics Netherlands did an analysis on the status of new registered legal units as reported by the administrative sources. In scheme 8 the results are presented.

**Scheme 8: Statistical analysis of new legal units**

New legal entries in year x		100%
Not an enterprise because		
not independent	18%	
not active	15%	
	-----	33%
Not a new enterprise because of		
administrative change	17%	
change of characteristics	10%	
change of structure	5%	
	-----	32%
Actual new enterprises		35%

Businesses are frequently organised in parts with an own legal status in order to spread financial risks or because of taxation reason. Operations are not necessarily influenced by such a construction. Possibilities for administrative enterprise organisation are fully dependent on national legislation.

b. The aims of administrative registers are to serve administrative processes. These can be for taxation or to offer the registered units legal security. In the last case units may or can opt for registration although they may be not or not any more economically active and therefore statistically of no importance. Activities have not yet started or have already ceased or are continued marginally, for example in the hobby sphere. The number of such administrative legal units can be quite large. Ideally a statistical business register must recognize such a status. Analysis has shown, however, that a large amount of all administrative units may be regarded as economically dormant. This aspect may be strengthened if an enterprise is considered to be active beyond a specified threshold. At Statistics Netherlands a unit is considered to be an enterprise if at least one person is employed on a regular basis for at least 15 hours a week. If this threshold is not kept in the business register additional statistical methodology must be applied to derive statistics on population

structure from the business register. These real population estimates can be the result of further use of information in administrative registers like taxation or of statistical surveys if adequate registers are missing.

c. The source registers derive the SIC-code from the activities as reported by the units. Their actual activities may deviate from these statements. Reliable statistical description depends on objective and unbiased assignments. If no economic activities are carried out, no SIC-code can be attributed. Assigning codes is statistically a delicate procedure because the decisions taken are only defensible if the units involved do not experience ill effects because them. Consequently the assignment of accurate SIC codes requires a notable effort. Analysis indicates that SIC-codes assigned by Statistics Netherlands can significantly differ from the codes assigned in the source register. This proportion varies depending on the branch of industry and of the level of the SIC. Also differing criteria may prevail when classifying units. It is the strategy of Statistics Netherlands to influence the SIC-assigning method with the sources by providing to them (automatic) coding tools. Because of the strict confidentiality policy Statistics Netherlands is not allowed to give feed back corrective information on individual units to the sources

d. The use of external sources implies also another important constraint, i.e. the time lag between events in reality and the data deposit via an external source in the Business Register. If units end their activity this fact frequently only reaches Statistics Netherlands via the external source years after. The introduction of the new legally based integrated administrative register will hopefully solve this problem to a large extend.

e. The method of profiling the very large enterprises was introduced some years ago and this method is broadly being introduced. In scheme 9 an impression on results of the method is shown.

**Scheme 9: Impression of profiling results at large units**

legal units		enterprise groups		enterprises
20 – 29	←	195	→	717
30 – 39	←	88	→	974
40 – 59	←	64	→	903
60 – 99	←	44	→	833
> 100	←	37	→	970

From the scheme it seems for example that in the 2005 business register at Statistics Netherlands 88 (domestic) enterprise groups are registered who each consist of 30

to 40 (domestic) legal units and these 88 enterprise groups together have 974 enterprises, so an average of more than 11 enterprises per group.

f. Finally, some information may not be available in the used external sources at all or is of insufficient quality. In these cases alternatives must be searched.

It will be clear that the maintenance of a statistical business register requires great effort and care.

### 5.5 Main uses of the Business Register

The main uses of the business register can be derived from the former description of the register and the context of it in the economic statistics. The business register is part of the economic statistics system and has evolved to a business register system with interrelated subsystems. Maintenance of parts of the register can be apart of the core system, e.g. for storage and maintenance of special from the standard deviating lists to contact units for data collection purposes. Also the estimation of the real economic population figures are part of the system but can be organised in a subsystem. The total register system is very important to support statistical processes as a kind of backbone. The main functions are described in 5.2. The uses are in line with these. Here the uses are described briefly.

a. The use as the business survey frame. This use has several components:

- From the register units are selected by stratified sampling. Strata can be defined according the several characteristics assigned to the units, e.g. SIC-code or size class code. People who have responsibility for the compilation of statistics must provide the specifications for sampling. For analytical purposes these people need information on development on and within (sub)populations which are subject of surveying. In combination with the selected units the register also provides information for grossing up the sample results.
- Names and addresses must be provided for survey dispatch.
- The register is used for survey management control and for control and monitoring administrative burden. For this software tools are developed and used in sampling.
- Links between statistical units and the related administrative units are provided in order to collect data on enterprises from administrative files. This use is increasingly important at many statistical offices because of the reduction of (repeated) data collection with enterprises by direct surveying. After data collection from administrative files these data must be consolidated or split for or into the appropriated statistical unit (enterprise or enterprise group). The

register can support standardisation and normalisation of data in administrative files.

b. In a statistical office many economic statistics are separately compiled. The business register is used as an excellent tool and frame for co-ordination of these statistics. If in all economic statistics the same units with the same belonging characteristics are used for the same reference period, the basic condition for comparability of statistical figures is fulfilled. Figures of the several statistics can be compared and related to each other. The use of consistent defined (sub)populations in successive periods ensures comparability in time series. The business register can be seen as an instrument to control continuity in time series. To reach this co-ordination people involved in the processes of the individual statistics may not be allowed to do amendments in the units and characteristics as received from the business register, even if there is knowledge on errors. An exception is if this is done in a co-ordinated way, so the amendments affect all statistics under consideration.

c. The business register itself is used for statistical analysis too. Continuous analysis on shifts in figures on (sub)population is important in the context of the uses described before. The incoming streams from the sources with information for updating must be analysed to recognise possible consequences for undesired effects in continuity of statistics. Depending on the quality of the business register information the content of the register represents the structure of the economy. Statistics on the structure of the economy are an important part of the statistical program. But as said before, quality is heavily dependent on the quality of the information of the sources and of the processing procedures in updating. In nearly all cases statistical business registers are not appropriate for direct compilation of statistics. Additional statistical analysis has to be done for punctuality and timeliness of the information in the register. In this more information out of administrative registers can be used. Additional direct data collection with enterprises is needed in areas for which the necessary information is lacking. This can be done in a statistical way, e.g. by sampling. Using the additional information estimates can be calculated on the real number of units operating in the economy. Figures on these numbers are published in statistical tables. The part of the statistical program on number of units (also by characteristics) is the so-called economic demographic program. Small area analysis belongs to this part. In small area analysis the local unit and its characteristics is the appropriate unit. Economic demographic statistics it selves will not be described further in this paper. A lot of information on this issue, even as on other business related issues, is

available from the yearly International Roundtable on Business Survey Frames (RT, 1986-2005).

d. More and more important is the use of the business register in the international context. A common approach in units (and characteristics) and in registration of these contributes to international comparability of statistics, contemporary and in time series. The European Union adopted regulations for this (EU, 1990, 1993a, 1993b). These are the basis for compilation of aggregated European Statistics already. The process of actual convergence has not finished and will still take a lot of time.

Processes of globalisation accelerated in the last decade. In these processes large units operate internationally or as multinationals more and more. It becomes less realistic to consider a domestic part of a multinational unit operating independent and autonomously. The EU took the initiative to develop a European register of enterprise groups to centrally register the enterprise groups operating as multinational enterprises in the member states of the EU. The demand for analyses from the business register on this aspect is growing strongly. As stated by OECD: "National systems should allow to bridge to the international dimension" (Lindner, 2007). This demand has a world wide focus, what implicitly implies the extension of the concept and definition of the enterprise group beyond the national borders. According a proposal by Richard Barnabé (Barnabé, 2003) a study was done to get insight in problems related to consistency at data nationally collected with multinational enterprise groups. The results of the so-called MNE-project were reported to the UN Conference of European Statisticians in 2005. It was concluded that substantial differences exist between aggregated figures from national data collections and centrally collected data at the enterprise groups for the whole group.

e. Last but not least, some national statistical institutes sell lists from the business register at the market, although in many other countries information from the business register is considered as statistical confidential

### 5.6 Quality aspects related to the Business Register

The fitness for use within limiting conditions is a simple indicator of quality of the business register. The fitness for use is to be optimised. In this all aspects of the business register product and all of the stages of the processes to reach the product are contributory to the quality. At the 14<sup>th</sup> International Roundtable on business Survey Frames a full session was dedicated to the quality of business registers. Among others some

participants presented models that could be used in the quality approach (Ritzen, 2000; Rivière, 2000). Not only the product itself and the belonging processes are to be involved in quality policy, but also the environment of the product. How fits the business register in the system of economic statistics which is served from it? How is management of relationships organised regarding the input side and the output side? In this paper these quality aspects are not further elaborated. We restrict to some concrete quality aspects of the business register product briefly.

- Coverage is an important quality aspect. Overcoverage is manifested in the number of duplications of units in the register. In the matching procedures units are not recognised as identical with other existing ones. It can be caused by wrong information received from the sources or by imperfect matching protocols. Depending on the size of overcoverage efforts are required to correct these statistically by the users of the frame and in estimating the number of units for economic demographic statistics.

The opposite is the undercoverage. This means that units or maybe complete subpopulations are missing. If complete subpopulations are missing from administrative sources, the ultimate remedy is to do an economic census, but a search to additional sources can solve the problem mostly. Missing units in existing subpopulations lead to serious problems, because of the resulting underestimations in statistics. For this reason the use of more sources is desired, although this can lead again to overcoverage. Very important is to have knowledge on the several aspects of coverage. Completeness and exhaustiveness without overcoverage are ideally aimed for.

- Information in the business register must be of good actuality and timeliness. If not, statistics based on it do not reflect the real economic situation. Feedback information from statistical surveys indicates actuality and timeliness as register surveys do. Continuity in time series will be disrupted as result of non-real changes in the register, this means changes that not reflect changes in real economy.

- The importance of knowledge on the data received from the sources, the so called metadata, may be evident. It regards definitions on the units and the belonging characteristics. These must be analysed on beforehand to judge the fitness for use for business register updating.

- Right, consistent and correct assessing of the statistical units is the core of the business register system. Well documented and transparent procedures and instructions contribute to this.

- Another aspect of quality is the error rate of characteristics. Not only knowledge on the rate itself is important, but also procedures to deal with these,

including of course ways to avoid as much as possible. Here again, good relationships with holders of the source are needed. Solving at the source itself is the best solution.

- Transparency of all processes and procedures is of importance for the use of the business register information.

- Business register systems are highly automated. Good and transparent documentation is indivisible part of the automated system. Serious problems arise if the business register system gets confronted with inconsistencies or if system integrity is in danger.

- As last aspect of quality we mention the way the business register is being updated efficiently in combination with the effectiveness of the use of available information of the administrative sources. Optimal access to the sources is necessary for this. Good relationships between statistical offices and national administrations contribute, but it is to be preferred if access to administrative sources is regulated in legislation.

Quality can be elaborated in much more detail and many other aspects can be distinguished like organisational aspects and aspects of staff involvement. For these we refer to the references mentioned before.

### **5.7 Business Register: current issues and challenges**

Business registers need to be adapted according shifts in purposes to be reached and functions to be fulfilled. Although purposes and functions principally remained stable overtime, the ways of operating and approaching business register content strongly differ now compared with fifteen or ten years ago. In the past, problems related to automation and database management systems to be used dominated the discussions. These topics are no longer at the agenda as problematic items of importance. Other topics stayed at the agenda and are still to be discussed. Examples are the system of statistical units, the way these must be derived from administrative units and the classification systems. Relative newly important items came up like the issue of globalisation and the increased used of administrative data for compiling statistics. Picard and Ritzen did a survey among several statistical agencies on goals and functions of the business register and the models used. The results were reported at the Beijing Roundtable on Business Survey Frames (Picard and Ritzen, 2004). There is broad common senses on the role of the business register as an important tool for co-ordination of economic statistics. The last decade this aspect has become very important internationally. Many efforts must be made to reach the goal for this and this will be a process that takes a lot of time.

Some important current issues and challenges, which to a high extend are common for many countries, are described here in more detail.

- Exhaustiveness of the business register is an important quality aspect. In many countries some sectors are missing or are of poor quality. Because of potential additional administrative sources that become available, improvement will be possible.

- Periodically a revised SIC is necessary. This must be introduced in the register and from this in economic statistics. It implies high efforts to introduce it efficiently, but it is even important to provide statistical staff with sufficient information for analysing continuity aspects in time series. Temporal registration of the old and the new SIC-codes is desired. This implies consequences in the technical infrastructure. Business register staff is involved in discussion on methodological aspects. Statistical offices of the EU member states must manage the NACE revision in 2007 and 2008.

- Because of administrative burden reduction at enterprises many statistical offices are obliged to avoid data collection by surveys if the requested data is available in administrative registers kept at administrative agencies. The business register must provide the infrastructure to link the statistical units with the units in the administrations. The development of this infrastructure is high on the agenda of Statistics Netherlands. Additional to and direct related to the business register, infrastructural systems have been developed to store data from administrative registers recalculated according statistical units. The baseline system is an example (Ritzen, 2000).

- Information in the business register for survey burden control is of high importance in coherence with the previous aspect. If administrative sources for statistical information on enterprises is lacking, an optimal spread of the burden is desired, if possible and responsible from a methodological point of view.

- In this paper several times the importance of the business register in the context of globalisation is mentioned. This aspect has an international dimension in further business register development of course. Solutions which meet the problems must be developed internationally co-ordinated. On comparability of statistical units and on the co-ordinated way of assigning characteristics must be decided. Then the business register can operate in sustaining the process. In EU-context initiatives have been taken to develop a harmonised business register for enterprise groups who

operate internationally within the EU, the Eurogroup register.

## 6. Concluding remarks

The importance of the statistical business register in the system of economic statistics may have become clear. The business register has evolved into the backbone in the system. New dimensions have become important. These are the role in the context of the globalisation and the role in the use of administrative data for statistical purposes in order to minimise survey burden at enterprises and to improve the process of compiling statistics. The development relating the use of administrative data has as a consequence that the statistical systems have become part of the total information system within the society. This has led to new requirements related to the management of relationships with administrative agencies (Ritzen, 2001)

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<sup>i</sup> Introductory Overview Lecture presented at the Third International Conference on Establishment Surveys (ICES-III, Montréal June 2007, Session 11). The views expressed are those of the author and do not necessarily reflect the policies of Statistics Netherlands.