Name of Session: “Measurement of the Quality of Statistical Business Registers – Practical experience”

Title: Quality of Statistical Business Register in Statistical Office of Montenegro – measurement and practice experience with quality reports
I. Statistical business register quality and quality indicators

Statistical Business Register of Statistical Office of Montenegro was created in early year 2007. A few years ago, Statistical Business Register has served only as directory for finding a list of legal and statistical units and their addresses. Its main function was to provide identity numbers and contact details for the implementation of statistical surveys.

Today Statistical Business Register is the main source for selection process of observation units for most statistical surveys. It is the basis and framework for statistics which provides information on a country’s economy and contributes to the description of the situation and development of the economy by providing a basis for the delineation and definition of the population. It covers all active business entities carrying out activity in the territory of Montenegro. An important area of Statistical Business Register application is that it provides a data comparison between countries due to standardization of definitions, variables, units, etc.

Statistical business register is composed of two parts: the administrative and statistical part.

The administrative section consists of:

• legal units, and

Statistical section consists of statistical units such as:

• Enterprise (the biggest number of cases in BR are where is legal unit = enterprise but lately we had more cases where is more than one legal unit create an enterprise).

• Local units and

• Group of enterprises.

There is always a consistency between these two parts of the registry. Administrative sources and different statistical surveys are used for updating this register. Statistical Business Register provides the link between administrative data input and statistical data output.

There are variables for each of these units in the statistical business register, as follows:

• identification;
• stratification;
• demographic;
• relational.

For legal unit there are only identification and relational variables, as follows:

- Identification

• identity number;
• the name of the unit;
• address;
• the name of the responsible person;
• form of organization;
• type of ownership;
• capital;
- Relational

• the registration number which is associated with other registers and
• identity number of the enterprise that is controlled by the legal unit.

The data for all these variables are taken from administrative sources. Beside each name is a source of information and the date to which data refers. Also, in order to enable tracking of demographic changes, there is a field which checks every kind of change occurred during the "life" of the unit.

Identity number of the legal unit has 8 digits and is taken from administrative sources. It was produced by the module 11 and used by all administrative bodies, which greatly facilitates linking data from different sources.

For the statistical unit enterprise - includes the following variables:

- Identification

• identity number;
• the name of the unit;
• address;
• number of local units;
• number of units KAU;
• name of the executive director;
• name of the owner;
• status of activity.

- Stratification

• identification code of the primary activity;
• description of the primary activity;
• identification of first secondary activity;
• description of first secondary activity;
• identification code of ancillary activity;
• description of ancillary activity;
• the activity sector;
• the institutional sector;
• number of employees;
• financial exchange;
• VAT paid;
• assets;
• class size enterprises;
• % stake.

Also, in addition to any data for these variables is the source and the date on which the data refers.

- Demographic

• The date of legal registration;
• The date of commencement of the activity;
• the date of end of some or all activities;
- Relational - identification number of the legal unit

• Relation of belonging

The relationship between legal units and enterprises which unit manages and the relationships between the enterprise and certain statistical units where enterprise carries out activities must be time marked and accurately described. (relationship commencement date, relationships end date, a description of the relationship).

Description of the relationship between legal units and enterprises - these relations can be described in one of the following ways:

- The owner - manager;
- Manager who is not the owner;
- Owner who is not the manager;
- Additional legal intermediary company.

The first two modes correspond closely to relationship where one legal unit is the main legal representative of the company. It is necessary to check whether the company has such a close relationship with only one legal unit.

• Relation of control

Although the statistical business register mainly focuses on enterprises and their local units, the fact that companies are parts of the group must also be taken into account. Belonging to a group is an important criterion for analyzing stratification enterprise performance. Group has a number of enterprises that are directly or indirectly controlled by the same legal unit, control hereby means the power to setup managers of legal unit which operates the activity of enterprise.

Group dimensions are marked with the relationship between legal units rather than the relationship between enterprises. However, this solution has its drawbacks in terms of time monitoring of the group since legal unit at the forefront of the group may change over time. Therefore, it is more useful, which is done in our case, to introduce the Group in the statistical business register as an explicit unit with its own identity number.

Each enterprise in the statistical business register has one "fictitious" local unit which is the headquarters of company - enterprise. Other local units are the actual units. For the statistical local unit in the statistical business register there are following variables:

- Identification

  • identity number of the local unit;
  • the name of the local unit (if needed);
  • municipal - code and the name of the municipality;
  • settlement - code and name of the settlement;
  • registered office of the enterprise - street and number;
  • the address for receipt of mail - street and number;
  • telephone number;
  • fax number;
  • e-mail address;
  • web address;
  • activity status.
Also, in addition to any data for these variables there is the source and the date to which data refers.

- Stratification
  - Number of employees
  - Activity codes of activities carried out.

- Demographic
  - date when the local unit was founded;
  - date of termination of the unit.

- Relational
  - registration number of the enterprise to which the unit belongs

A statistical unit - Group of enterprises in the statistical business register includes the following variables:

- Identification
  - identity number of the group;
  - identity number of the head of the group;…(if in Montenegro and if abroad)
  - The name of the group;
  - type of group (National/foreign)
  - address;
  - e-mail address;
  - Web address;
  - activity status.

- Stratification
  - Primary activity at the group classification level
  - Secondary activity at the group classification level;
  - Number of employees;
  - Consolidated exchange;

- Demographic
  - date of the establishment of the group;
  - date of termination of the group.

- Relational
  - the country in which enterprises that belong to the group are located;
  - identity number of the enterprise that is the direct owner of the enterprise in the country;
  - identity of the enterprises belonging to the group ;
  - names of enterprises belonging to the group ;

Following this review there are 71 variables in statistical business register.

Statistical business register is largely different from statistical survey because it is something that is continually reworked and updated.
Statistical business register lists all units and variables set by the European Commission Regulation no. 177/2008.

All data changes along with the date changes and data sources are stored in the historical database tables in the statistical business register.

II. Quality

There are many definitions of quality, but maybe in this case the best to define quality as "the degree to which a set of inherent characteristics fulfills requirements."

Considering business register's specifications, just defining and measuring quality is different. At start, it can be told that statistical business register is a quality register when it satisfies user's needs. It is known that there are numerous and various users of statistical business register, thus, their needs are also different.

Users can be:

- internal and
- external.

Internal users refer to statistical surveys which use statistical business register as a framework, while external users refer to numerous state institutions, non-governmental organizations, business associations and natural persons who use aggregates data.

The fact that this register is mostly updated from administrative sources tells that its quality very much depends on the quality of administrative sources themselves and the coherence of their variable definitions with the statistical definitions; therefore, quality of statistical surveys depends on the quality of business register.

Irregular update of data obtained from administrative sources reduces the quality of statistical business register in the sense that in the register required, for conducting statistical surveys, accurate and precise data, especially data related to the following address and activity code.

Before the initial talk about quality indicators, it is necessary to make an overview of sources used for updating statistical business register during different time periods. An analysis of administrative sources, suitable for use regarding specific variables, was performed at the beginning of statistical business register implementation process.

Four leading administrative sources were recognized:

- Department of Public Revenues,
- Health Insurance Fund,
- Central Register of Business Entities and
- Central Bank of Montenegro.

The situation is slightly different today. Aiming to reduce the load of statistical units and, therefore, their lack of response, we have established cooperation with business associations which maintain data regarding the population of entrepreneurs in Montenegro. Beside administrative sources, feedback gained from different statistical surveys is also used for statistical business register update.
Table 1. The most commonly used sources for update

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<th>The most commonly used sources</th>
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<tr>
<td><strong>Primary source</strong></td>
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<td>Legal unit</td>
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<td>Enterprise</td>
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<td>Local unit</td>
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<td>Enterprise group</td>
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Quality of statistical business register is determined by three factors:

- administrative systems used as a register ground base;
- system offering options to prove the quality in coverage, variable content and consistency;
- data processing performed within the register;

Statistics gained from registers has high quality only if the system has good coverage, contains great number of important variables and main relations which exist between them. If register has good content, well defined units and almost complete coverage, then it represents very good ground base for producing statistics.

Third factor which determines the quality of register is data process defined at the beginning of register creation. The way population within register is defined, the way variables are defined and the way data are entered and/or processed.

III. Statistical Business Register quality components

1) Relevance

**Definition:** The relevance of statistical business register shows a degree to which data fulfill requirements of different statistical surveys and other users. Relevance can be measured by observing to what extent this register contains the relevant units and variables.

List the key statistical surveys which use statistical business register and name the purpose of using the register, per survey.

- National accounts – statistical business register’s database (captured state) for the needs of conducting PRZ surveys (Income, Expenditure and Stocks) and calculating BDP.
- Structural business statistics (SBS) – sample
- Wages and employment – sample for conducting the survey used for calculating an average wage.
Short-term statistics – sample for conducting different surveys (construction, tourism, etc.)

Lack of statistical business register is, considering the prospective of different statistical surveys, quality of address data for a class of small enterprises.

Comparison was undertaken to review the situation in terms of contact information for a class of small businesses in the frozen state for year 2012 and the current state of statistical business register taken on 10 April 2013.

- The frozen state for year 2012 for 31.4% of business entities that belong to the class of small enterprises, we owned correct contact details i.e. telephone and fax numbers. Currently, the data we have is for 32.76%.

- When it comes to the e-mail address, the percentage of business entities that belong to the class of small enterprises, which generally have an e-mail address, is really low. In 2012 we owned the e-mail address for 10.8% of subjects, and currently that percentage is slightly higher than 12.6%.

As for the class of medium and large enterprises in the statistical business register, there is 100% correct contact information; we own e-mail address for the entire population.

2) Accuracy

**Definition:** This variable shows the proximity of register data to real values.

Speaking of this quality component, we should state several possibilities which contribute to lower quality:

- Shortage of statistical units i.e. inadequacy regarding transformation from administrative units to statistical units;
- Over-coverage – problem may represent even bigger coverage i.e. to exist in the register where units, based on information obtained from statistical surveys, no longer qualify for statistical purposes.
- Classification errors – in most registers, variables’ values are determined according to NACE Rev. 2 along with other classifications used in the register. Inaccurate classification of units, in accordance to the standards introduced, often appears as a result of register’s lower quality. This kind of errors happens because data are taken over from administrative sources and an error can be detected by reviewing statistical surveys. It is very important to detect error as well as the reason of its occurrence.

What is the advantage of statistical business register is the possibility of writing the activity which business entity actually does, and which can be reached by examining the financial reports and feedback from statistical surveys. Otherwise, this would be a copy of the register of administrative sources.

Issues related to errors in classification occurred at the time when the Statistical office of Montenegro introduced a new classification of activities. Then all business entities got a new four-digit activity code. Until then, the statistical business register used classification activity that corresponded to NACE Rev. 1, in all statistical surveys. The error occurred only in those business entities which activity code belonged to the group (in new classification) of those that had passed from 1 to n.

2.2 % business entities, during transcoding, received some of the varieties of activities that did not match reality, but those mistakes were corrected through constant communication with business entities.
Wrong location (address) – Data concerning the address of the unit is very important for register, thus, it plays a vital role especially during the units selection process phase. In most cases, this data is taken over from administrative source so we can’t affect its quality. The way we eliminate these faults is to use feedback from different statistical surveys, to correct detected error in statistical business register so we can have accurate information for statistical requirements. It can be said that, as to the accuracy of address data for the class of medium and large enterprises, we have accuracy of 100%, while for the class of small enterprises data accuracy is much lower because of frequent changes in enterprise’s address. The right reason is that small entities like crafts often change their address.

3) Timeliness

Definition: Timeliness describes time latency between specific variable’s reference period and period i.e. the moment when variables are in disposal to be used for statistical surveys.

It is necessary to indicate that:

Different variables, in statistical business register, are updated in different time periods and they reflect different dates so timeliness must be observed separately for specific variables.

Timeliness of data in the register is one of quality’s key aspects.

Timeliness in register is expressed by following variables:

- address
- activity code
- organization type

The basic question is what (for specific statistical surveys) about the time gap between moment when a certain change happened and the time when that information is on disposal for use in statistical surveys. In the Business Register are fields with dates of changes for various variables and also fields about source from which we get information. Is there in the BR fields for dates about the various variables??

4) Accessibility and clarity of register’s documentation

Definition: Accessibility (availability) refers to physical conditions in which statistician who conduct surveys can gain necessary information about data in the register.

When referring to clarity, it should be said that the clarity applies to comprehensiveness and usability of documentation in the register, made by the person who maintains the register.

Accessibility of statistical business register ie data access is regulated by the Rules of procedures for maintaining, updating and use of statistical business register which was done by statistical office. Different access rights to the data from this register are governed by this Rules of procedures. It is possible to have access to individual data by username and password. Also, data related to the stratification variables are available only to individuals who maintain statistical business register and to a small number of statisticians who need to conduct survey. The following is important when it comes to this quality indicator:
• Register’s documentation access – All documentation about register, which is available to statisticians who conduct surveys, should be described and explained. There are two types of documentation that should be taken into concern: first one describes the register’s content (variable definitions, key concepts descriptions and reference time periods, etc.) and second describes more of technical aspects (variable names, table titles, physical access). Aspect of easy and user-friendly access which users have to necessary information should especially be processed with regards to this quality component. All documentation developed in Eurostat and MONSTAT is available on Statistical office of Montenegro website www.monstat.org under domain Registers / Business register.

• Register’s documentation clarity – Register documentation content clarity should be critically examined and rated. Focus must be set on possible unclear definitions, concepts and similar disadvantages regarding the clarity of produced information.

All definitions are clear and concised and mentioned just as in the original document. Documentation clarity, developed for statistical business register, and its quality are determined and confirmed on everyday basis through documentation exchange between institutions and statisticians who conduct surveys. Also, every release and analysis, created as a result of processing data from statistical business register, consists of methodological explanations which also confirm the clarity and precision of definitions, units, variables, tables etc.

5 ) Comparability of data over time

Definition: Comparability indicates degree to which register data are compared through time.

— Time length of the register data

For the key register variables it should be explained how long this information is on disposal for statistical surveys. The time length should refer to the time period for which the data could be considered as comparable in the sense of unchanged conceptual methodology used.

Main changes introduced which can lead to reduced degree of comparability of data over time, should be listed in this report, so we mention address as register variable often subjected to changes and revisions.

6 ) Coherence

Definition: Coherence indicates the degree of coherence of register data with similar data from other sources.

• Coherence with the reference data source – For certain key register variables, alternative sources should be found in order to provide effective and useful comparative analysis. Reference data source can be data from statistical surveys, administrative sources or data from other secondary sources. Therefore, before the implementation of statistical business register, we performed detail analysis of possible sources for each variable. These comparisons also included the comparison of definitions and contents. We setup priorities, and now we know exactly from which source to take variable and the reason for that.

• The degree of coherence of statistical business register with statistical surveys need to be addressed. Previously, all statistical surveys had and used their contact lists until now, so all statistical surveys, which have enterprise as a reporting unit or its part, use statistical business register as a framework. Sample is taken from this register if the statistical surveys are carried out on a sample basis or on the basis of the total coverage.
IV. **Survey results from Quality improvement survey**

Medium and large sized enterprises activity in Montenegro, year 2012 survey

Survey regarding business activity of medium and large enterprises in 2012 was conducted for a period of 1 - 15 April 2013. This was done on the total coverage of the population belonging to both these size classes.

• Classification of enterprises by size is based on the existing Law on Accounting and Auditing of Montenegro. By using the combination of three criteria: number of employees, exchange and assets, we obtain class identification by size.

This study included 263 business entities precisely 225 to the class of medium enterprises and 38 in the class of a large enterprises.

Questionnaire designed for this study and the methodology were sent electronically to the e-mail address of 260 business entities, while for three business entities we owned only addresses for mail receipt. All e-mail addresses were correct and we received the confirmations receipt of the questionnaire.

We got answer from the 242 business entities which indicates that the response rate for this study was 92.02%.

The questionnaire sought information for the 37 most important variables. Among other things, it was important for us to get the survey data regarding the percentage of ownership, number of employees and the number of employees actually employed along with the owners, number of employees and exchange by activities. Also, this created high-quality database that relates to secondary and auxiliary activities which provides information on KAU units.

We confirmed that 9 business entities, according to the latest financial reports, were classified as small businesses.

This survey gave very important information that we were missing, which is related to the unit-group of enterprises.

We have information that 53 enterprises operate as a part of a group of enterprises. Mostly, 79.25% were part of a group of enterprises and their group head is located in a foreign country.

Also, this study presents a step forward when it comes to compliance with the EU Regulations as we got the data for the variables that we have not been able to procure so far, that data is mostly related to the structure of these group enterprises.