**The economy has changed, the official statistics also change: the new business statistics system**

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**Abstract**

*Changes that happened in the last decades to economic level have changed the economies of the single countries, included in a single globalized economic system. The globalization and the role of multinationals highlighted the fragility of the measuring systems of the main economic variables about official statistics.The system of legal units as analysis unit shows its limits. The economic process splitting of business groups, based on the structure of the legal units, highlights conceptual inconsistencies, measurement problems, linked to the duplications of flows and to the ancillary and vertically integrated units.*

*The new system, implemented since 2019, requires the aggregation of the legal units of the same group, when they don’t have decision autonomy. This will impact significantly on the production system measurement. There will be a reduction in the number of companies, an increase in the size of the same and the reduction of some economic aggregates, because of the consolidation of the intra-flows. There is also a reshaping of value added and productivity per activity economic.*

*The new plant will have a lot of implications and will invest all the areas that deal with economic statistics. In this perspective, the process foreseen a strong integration among administrative sources, business survey, business register and EGR. In this frame is strongly used a profiling approach.*

*These changes will impact on territorial statistics. Starting from the national data, micro-level information must be obtained. The income approach is used to calculate value added.*

*With this work we want to explain the whole process undertaken to define new estimation in the area of business statistics in Italy to implement new BS system.*

**Keywords:** Profiling, globalization, Business Register, statistical unit, implementation, consolidation

**1. Introduction**

At the European level the discussion on the new statistical units of the production system is started many years ago. At the basis there was the awareness of an incorrect application of the Regulation (EEC) n. 696/93. In many countries the erroneous equation "enterprise = legal unit" is invaded, in clear contrast with the definition of '93, which reads: " The enterprise is 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.” The correct application of the rules provides for the aggregation of several legal units, if these do not have sufficient autonomy in the decision-making process. It follows that the new complex unit may correspond to only one legal unit (not controlled by another legal entity) or one group of legal units under common control. This paradigm shift significantly impacts system observation production, leading to a reduction in the number of companies, an increase in the average size of the same and the reduction of some economic aggregates, due to the consolidation of the intra-group flows. There is also a reshaping of value added and therefore of productivity per economic activity. Eurostat in 2012, funded a grant "Analysis of the impact of the changes in the definition of the statistical enterprise unit on SBS[[1]](#footnote-1) ", to which ISTAT and INSEE, assessed the impact of such change. The most evident result was a significant transfer of value added and employment from services to manufacturing activities. In the following years, ISTAT continued to invest in this methodology, and undertook to achieve certain objectives with the SBS action plan. This paper, after a brief description of the overall Italian action plan to be consistent with the definition of enterprise, focus on the methodology implemented by ISTAT for the automatic treatment of simple groups, investigating also the correct method to collect information on interflows. In particular paragraph 2 describes the Italian SBS (Structural Business Statistics) action plan, Paragraph 3 describes the method to delineate automatically the new enterprises,paragraph 4 is describes the new survey to collect information on interflows of large groups, paragraph 5 and 6 focus on the main results obtained in the context of the structural business statistics with particular regard to the application of the automatic algorithm for simple groups. Finally, some conclusions are drawn in paragraph 7.

**2. The action plan SBS of Italy**

In November 2014, Eurostat collected and processed all the available information from the quality reports, the annual inquiry of the business registers as well as it looked at the outcomes of the ESSnet on Consistency in business statistics. As a result, Eurostat concluded that the compliance fell short of the requirements of the SBS Regulation No. 295/2008 in several Member States. To clarify the situation, Eurostat launched a written consultation on 15 December 2014. During this consultation, all Member States received a letter signed by the Director General of Eurostat asking them for an explanation how the definition of an enterprise in the current Council Regulation (EEC) No 696/93 on the statistical units for the observation and analysis of the production system in the Community had been implemented in the domain of Structural Business Statistics. In many cases was been confirmed that the Member State was not fully compliant. Then Eurostat asked the Member State to take appropriate measures in order to guarantee that the correct implementation of the statistical unit "enterprise" in the domain of SBS was applied. In particular, in case a Member State was not able to ensure the full compliance within two months (by 13 July 2015), Eurostat encouraged it to set up an action plan, explaining how the full compliance could be reached in the near future. In this way many countries defined an action plan to be compliance with the Council Regulation – N. 696/93. The italian action plan sent to Eurostat in June 2016 (table 1) provided basic and analytical information for the production of SBS estimates with reference year 2017 by June 2019.

**Table 1. Action Plan SBS of Italy, to the correct implementation of statistical units**

|  |  |  |
| --- | --- | --- |
| **Activity** | **Description** | **Indicative time** |
|  1  | Identification of appropriate methods how to delineate enterprises consisting of several legal units | January 2016- June 2017 |
|  2a | Identification of LARGE enterprise groups active in your country from the EuroGroup Register and extraction of the list of legal units (List 1) active on your territory and belonging to these LARGE enterprise groups | July 2016 – April 2017 |
|  2b  | Identification of MEDIUM enterprise groups active in your country from the EuroGroup Register and extraction of the list of legal units (List 2) active on your territory and belonging to these MEDIUM enterprise groups | January 2017 – June 2017 |
|  2c | Identifying the list of legal units belonging to large domestic enterprises from your national Business Register | March 2017 – September 2017 |
|  3a | Combining legal units available in List 1 into enterprises at your national level | September 2017 - October 2017 |
|  3b | Combining legal units available in List 2 into enterprises at your national level | October 2017 – November 2017 |
|  3c | Combining legal units into large domestic enterprises | November 2017 – December 2017 |
|  4 | Consolidation of the variables | January 2018 – June 2018 |
|  5 | Revision of questionnaires and identification of consistency controls | January 2018 – July 2018 |
|  6 | Computer programming of new processes deriving information of statistical enterprises from reporting units | September 2018 – June 2019 |
|  7 | First delivery of data which are fully compliant with the definition of a statistical unit (reference tear 2017) | June 2019 |

Source: ISTAT-SBS action plan

**3. The method to delineate the new enterprises**

The Business Registers Recommendations Manual defines profiling as "a method to analyse the legal, operational and accounting structure of an enterprise group at national and world level, in order to establish the statistical units within that group, their links, and the most efficient structures for the collection of statistical data”.

The ISTAT automatic methodology, improved in 2015, introduces a new approach to identify better ancillary and vertical integrated units inside the automatic procedure. Generally, manuals and regulations include definitions and lists of examples of ancillary and integrated activities but an exhaustive and standard list is not available. The effort has been addressed to build the correspondence matrices available to link the potential ancillary and integrated activities to the principal activity at 4 digit NACE code. The automatic profiling methodology described in this document, limiting itself to the "national" border of the group and as its objective the automatic identification of the enterprise institutional unit (ENT) seen as a set of legal units under common control.

The main steps of the automatic delineation can be considered three: 3.1 - Define the SBS target population, 3.2 - Mappyng the SBS population by size, complexity and global breakdowns; 3.3 - Apply the algorithm for the ENTs delineation in case of simple groups.

*3.1. SBS target population*

The SBS target population has been selected by choosing the groups and units that belong to groups, considering the two dimension (groups and legal units) and their classifications based on the combination of the classifications by Institutional Sector and by NACE Rev. 2 sectors of economic activities. In accordance with the Nace rev.2 the target population includes all enterprise groups whose activities were consistent with the SBS target population which covers for the sections B to S, excluding financial and insurance activities, investigated by the National Bank (Section K ), the public administration and social security (section O) and division 94.

In accordance with the institutional Sector, the target population includes non-financial corporations (S11), financial corporations (S12) except monetary financial institutions (S121, S122, S123), and households (S141+S142).

In particular those legal units belonging to groups out of the scope of SBS, but in the target population SBS, will be considered as single enterprises (1 legal unit=1 ENT).

*3.2 Mappyng the SBS population by size and complexity*

The mapping of the SBS population has the purpose to divide the population of groups in homogeneous sub-populations to better adapt the algorithm. Considering the size dimension, are used the criteria suggested in the UE Regulation 2013/34/UE Article 3, according to which groups will be classified through the creation of multiple flags, based on employment, turnover and asset into Small/Medium/Large. The classification considers only legal units resident in National territory. In addition, the classification on “size” has been integrated with an indicators on “complexity” of a group that classify groups in:

• Simple groups - if the total number of SBS legal units <= 3.

• Complex groups - if the total number of legal units is >3

The automatic methodology described in this paper focus on simple groups.

*3.2 Apply the algorithm for the ENTs delineation in case of simple groups*.

The basic assumptions of the automatic algorithm was that for simple groups, (more than 80% of the enterprises Groups in Italy: have an elementary structure with max 3 resident legal units in the SBS target population) it’s not relevant the internal structure of groups in terms of relationships and control level, instead this element could be relevant in case of complex groups.

The first step of the methodology consists in the identification of those groups that can be considered as 1 single SBS enterprise, called ‘mono-activity groups’, considering for the identification, the first economic activity of the group at NACE 4-digit level. This methodology, called Hierarchical multi-step methodology, use three economic variables for the estimation of the principal economic activity at group level, in order : Value added (VA),Turnover and Persons employed. The choice of VA as first variable instead of turnover avoid the overestimation of some classes of economic activities, such as trade activities. The Turnover variable is used only if value added is missing (at group level) or negative at least for one legal unit; lastly when the turnover at group level is missing the main economic activity at group level is estimated using the variable persons employed. In general, a group is considered as a mono-activity (1 Groups=1 SBS ENT) if at least 90% of the value of the chosen economic variable (in order VA, turnover, persons employed) is concentrated in one economic activity at NACE four digit level. To move from potential mono activity group to real mono activity group, when the threshold is lower than 90%, is necessary to consider ancillary or vertical integrated activities. If the sum of the principal activity, the ancillary or/and the integrated activity is >=90% the groups can be considered a mono-activity group. Some legal units perform activities exclusively for other legal units within the same enterprise group; the outputs of this legal units have to be considered as inputs for the other units belonging to the same enterprise group and its data have to be consolidated .The list of these ancillary and support units defined by Eurostat has been modified at national level taking into account the needs of the Italian production system. The rule of belonging to the list is necessary but not sufficient, since the potential ancillary activity must be tested with respect to the group to which it belongs and becomes effective only if it satisfies certain conditions that determine the transition from potentially ancillary units to real ancillary unit for the group. In order to map the legal units as real ancillary units, three conditions must be met:

* condition 1: if the NACE code of the ancillary unit (A) is included in the national correspondence matrices of ancillary units respect to the principal activity of the group;
* condition 2: if the weight of A in the group is lower than 10%;
* condition 3: if Turnover (A) ≤K\* purchases of services (Production unit) ; where P is the unit or units carry out the main economic activity at 4 digit level linked to the ancillary unit; K is a threshold.

A vertically integrated enterprise is one in which different stages of production, are carried out in succession by different legal units of the same enterprise. The output of one stage becomes an input into the next stage, only the output from the final stage is actually sold on the market. Also for vertically integrated activities, a study was conducted at national level which led to the development of several correspondence tables for integrated activities that follow the following main directions: Vertically integration within the same sector of economic activity and vertically integration between different economic sectors.

In order to map legal units as vertical integrated units, two conditions must be met:

* condition 1: if there is a relationship among the Upstream (UP) NACE code and the Downstream (DW) NACE code in the correspondence matrices ;
* condition 2: if the weight of the integrated legal unit in the group is lower than a threshold (30%).

**4. New survey to collect information on large groups**

At the moment the legal unit is the basis for the compilation of national accounts. For these units, administrative data and statistical surveys are available (Survey on Small and Medium-Sized Enterprises – SMEs and Survey on Larger UnitsSCI ).

The correct implementation of the new statistical unit (ENT) involves the planning of a new data collection process and the consequent production of final estimates. In fact, once the new ENT has been identified, the economic variables should be consolidated. To do this, if the data are available at the legal unit level, the variables must be distinguished into two different groups: additive and non-additive. Additive variables are those that can be added without changes when different legal units are assembled; instead in case of non-additive variables the main task is to eliminate the interflows between the legal units belonging to the same ENT, .that in most cases are not available in any administrative data or detected in any survey.

For testing and collecting data at ENT level, a new survey has been planned which will start for the first year as pilot survey in September 2018. A new questionnaire will be implemented and will be addressed to around 80 larger groups (both simple and complex). The questionnaire consists of several sections; in a first part, each group will validate the business lines (ENT), identified by Istat through desk or t automatic profiling. In this section the group will be able to identify new ENT and modify those identified by ISTAT. The second part will require internal transactions between the legal units belonging to the same ENT. The variables collected are non-additive variables and in particular Revenues from sales and services, changes in inventories, changes in contract work in progress and other revenues and income, costs for the purchase of raw materials, accessories, consumables and goods , costs for services, costs for the use of third party assets, changes in stocks. The last part of the questionnaire focus on variables not available from administrative sources. such as tangible and intangible assets (investments) with the details of the sub-items. The results of these surveys, together with those of the surveys on SMEs and the SCI, will help to build the accounts based on the new statistical unit.

**5. Method to consolidate economic variables of simple groups**

In the current business statistics the key statistical unit used is the legal unit; a more consistent approach to reflect the real economic organization is based on the new definition, starting from the business line of the groups. A characteristic of the compilation methods proposed is that the main reporting unit for collecting the information can remain the legal unit. Legal unit is in fact the unit on which administrative data is available and that is most easily addressed in surveys at national level. This way it can, in addition, be ensured that the data on legal units which seems to be a satisfactory starting point for compiling national accounts remains available at the national level

This paragraph focus on the automatic algorithm for consolidation in case of groups of 2 legal units; this method can be generalized because all groups can be obtained as a specific case of groups with 2 legal units.

*5.1. Typical cases of groups with 2 legal units*

In a group with 2 legal units, different combinations between legal units can occur with different impact on consolidation of data. This approach individuates seven different combination (Case A-G), based on the activity carried out by legal units:

*Case A*: group of 2 legal units, one with a production activity (P) and one with an ancillary/support activity (A). This is the general case when there is an ancillary unit.

*Case B*: group of 2 legal units, one with a production activity (P) and one with an ancillary (A). The NACE code of (A) belongs to { 68, 77}.

*Case C*: group of 2 legal units, one performing a production activity (P) and one with a sale activity (S).

*Case D*: group of 2 legal units, one performing a production activity (P) and one with a sale activity (S). When the sales unit is classified in NACE 46.1, its activity is wholesale on a fee or contract basis (agents working for the production unit).

*Case E*: group of 2 legal units with vertical integration between the activities of the legal units. The upstream unit (UP) sells its production to the downstream unit (DW) which sells its production on the market

*Case F*: group of 2 legal units made of one wholesale trade legal unit and one retail trade legal unit

*Case G*: group of two legal unit with the same activity

*5.2 Consolidation method of groups with 2 legal units*

The consolidation method of main variables of production (turnover in all cases and other operating income in case B) as typical example of non-additive variables follows different schemes considering the different cases (Cases A-F) detailed above

*Case A*

A1. If turnover A) ≤ purchases of services (P) then turnover ENT = turnover (P)

A2. If turnover (A) > purchases of services (P) then turnover ENT = turnover (P) + (turnover (A) - purchases of services (P))

*Case B*

B1. If other operating income (A) <= other operating charges (P) then other operating income ENT = other operating income (P)

B2. If other operating income (A) > other operating charges (P) then other operating income ENT = other operating income (P) + (If other operating income (A) + other operating charges (P))

*Case D*

D1. If turnover (A) ≤ purchases of services (P) then turnover ENT = turnover (P)

D2. If turnover (A) > purchases of services (P) then turnover ENT = turnover (P) + (turnover (A) - purchases of services (P))

*Case E/F/C*

*E/F/C1.* If turnover (P) ≤ purchases of goods (DW) then turnover ENT = turnover (DW)

*E/F/C2.* If turnover (P) > purchases of goods (DW) then turnover ENT = turnover (DW) + turnover (P) – purchases of goods (DW)

*Case G*

Turnover ENT = Turnover (P1) + Turnover (P2)

**6.** **Empirical analysis: the impact in term of main economic variables in Italian data for groups with 2 legal units**

In the Italian BR of Enterprises Groups there are 45,665 groups with two legal units in the SBS target population. These groups was linked to the SBS Frame population, by national id of the legal units, to obtain a complete set of information and to calculate Turnover, Value added, production value, number of employees and wages and salaries, at groups’ level. After this merge, groups with two legal units stored in SBS FRAME were reduced at 29,353:

 - 5,181 had an ancillary unit, 391 had a vertically integrated unit, 11.715 were mono-activity;

- 12.076 groups were non mono-activity, without ancillary or integrated unit. It means that each of these groups had two independent ENT ( legal unit = ENT).

As we can see (table 2), production value and value added of industry is increased (+0,05% and +0,1%), while trade and services decrease, because ancillary units and vertically integrated units are often in service sector and trade sector. For the same reason even number of employees of industry increase (+0,06%).

**Table 2- Percentage change of key economic variables of the estimate with the new ENT (only groups with two legal unit)compared to the estimate for legal unit**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Economic sector** | **N. enterprises** | **N. employed** | **N. employees** | **Wages and salaries** | **Turnover** | **Purchases of goods** | **Purchases of services** | **Production value** | **Value added** |
| Industry | -0.42 | 0.06 | 0.04 | 0.06 | -1.38 | -1.58 | -0.05 | 0.05 | 0.10 |
| Trade | -0.27 | -0.01 | -0.04 | -0.07 | -2.07 | -1.32 | -0.26 | -0.18 | -0.04 |
| Services | -0.44 | -0.04 | -0.02 | -0.03 | -1.66 | -1.29 | -0.11 | -0.09 | -0.09 |
| Total economy | -0.39 | 0.00 | 0.00 | 0.00 | -1.66 | -1.44 | -0.10 | -0.05 | 0.00 |

Source: Italy BR of EG and –Frame SBS

**7. Conclusion**

The current Italian modernisation programme is based on a strong and structured governance and production lines modelled on registers, where the BR will have an enhanced central role. In order to enhance compliance with Council Regulation (EEC) No 696/93 and to reach the full implementation of the SBS Regulation No 295/2008, a close cooperation between BR and SBS organizational structures is necessary. The “identification”, “mapping” and “consolidation” activities, that will lead to the profiling of the new ENTs, are charged to the BR structure and henceforth the fully operational ENT Register will support SBS activities. The main effort to reach a full implementation of the Structural Business Statistics with regards to the Statistical Unit Regulation is to redefine the framework of the business statistics, to take into account the review of the sample strategy and the estimation process, new questionnaires and new software programming activities for the statistical processes deriving information of statistical enterprises from the reporting units.The automatic profiling is essential for Italy to reach the full implementation of the SBS Regulation, due to the structure of the Italian BR of Groups, composed also of many complex groups. For this reason ISTAT is testing an automatic iterative methodology also for complex groups, groups with more than 3 SBS Legal units, whose implementation follows the SBS Action Plan deadlines.

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