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The new role of the SBR within the Italian Business Portal

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1. Introduction

The Italian Business Portal (BP), known as “*Statistica&Imprese*”, is currently the system of statistical services dedicated both to businesses and to Istat statisticians for the collection and return of information of the main surveys of official statistics. This single point of access allows bi-directional communication between Istat and the business world: using this tool all enterprises involved in business surveys can quickly and easily fulfil their information obligations receiving back a number of significant advantages, like customized statistical information feedback.

It was opened in 2013 and starting from 2016 it has been fully operational for all the Istat short-term and structural business surveys. As a result, the central role of the Statistical Business Register (SBR) has been strengthened, thanks to its use as a potential tool to harmonize all the business surveys in the National Statistical System (SISTAN)¹.

In the first part of this document (§2) the peculiar features of the tool and its potentiality will be described briefly, while more space will be given to the description of the back-office functionalities with a focus on the SBR home page (§3). Indeed, the new tool has a big potentiality in view of its integrated system of back-office that permits – and encourages – the exchange of information from the SBR to all business surveys and vice versa. In particular, the integrated management model of respondents notifications will be explained, with all the implications for the validation of the reported changes and their use as updates for the SBR (§4). Then the results of these first years of use by the business respondents will be supported by relevant data and graphs that show how companies interact with the BP, how many and which changes to the main features of the SBR they report, and how their relationship with the BP has changed over time (§5). Finally, particular attention will be paid to the impact of the BP on updating the SBR since 2013, together with the activities carried out by the SBR statisticians for introducing process innovations that substantially modifies the SBR updating methods using statistical sources (§6). As a matter of fact, in this six-years’ experience undeniable benefits were the exchange of information among surveys and between them and the SBR, in this way making the SBR become the physical and logical connector centre for the whole statistical system.

¹ The National Statistical System (SISTAN) is a network of National Statistical Authorities that provides official statistical information. It was established by legislative decree No 322, 6th September 1989, (implementing art. 24 of the delegated Act No.400/1988), that set out principles and guidelines for the reorganisation of public statistics.

2. The Business Portal: the front-office and the back-office systems

For the Italian NSI the Business Portal project and the associated centralization of the Data Collection function represented an essential step towards the new vision that replaced the pre-dominant model, generally referred to as the “stovepipe model” – statistics produced in several parallel processes, domain by domain – with an “integrated model”, in order to develop, produce and disseminate official statistics, based on both horizontal and vertical integration. Actually the BP is a complex information system, which has been the “technological driver” for encouraging organisational change towards this integrated model.

Following a step-wise approach, it was planned to first support the challenging process of integration and standardization of the information held by each business survey along with SBR data, to see the statistical production process as an integrated production chain, from the collection of basic data to dissemination of statistics. The implementation program involved a thorough review of the “operating architecture” of the business statistics in Istat and, above all, a close cooperation among the main Istat divisions involved (SBS, STS and SBR directorates), because it became clear that, to implement the changes, it was really necessary to ensure cooperation at all levels. Indeed, the required changes to be implemented were not only technical, but also organizational. The integration was step by step introduced in the management culture as it required a vision and consequently a multi-year strategic plan for setting up a flexible integrated statistical system. To achieve the goal, to ensure the success and stability of the long-term programme, a high-level management support was crucial.

The implementation of this new system has allowed a more complete sharing of data, reducing the cost and the statistical burden on enterprises, simplifying the procedures by which businesses provide statistical information. It has helped to streamline statistical data collection procedures, increasing the overall information potential of business statistics and providing backward added value by establishing information flows back to businesses.

All this has been achieved thanks to innovative design and new features. As regards this complex architecture, there is a front-office system for the direct relation to enterprises, with five basic functionalities: 1. Authentication; 2. The Business Register home page; 3. The Status of Submission section; 4. Customized information feedback for businesses; 5. (Integrated) Data Collection. Moreover there is a complex back-office system with an integrated monitoring system for surveys and SBR data and the help-desk. Below, just a few words to illustrate the complexity of the system, leaving to the next sections the description of the screen reserved for SBR data in the back-office system.

With a single sign-on and single point of access, the BP has a strong **authentication system**, since it provides certain confidential information relating to the businesses – like their own SBR data, the time series of the survey responses or some customized information regarding businesses – and it also incorporates a system of collecting statistical data. Besides there is a functionality to create “delegates” so that each person in charge (the user “administrator” for the enterprise) can associate an appropriate contact, that is a different respondent, to each questionnaire through a system of permits that restricts the navigation of the portal to the chosen survey for the same enterprises. It may also occur that the person in charge is associated with more than one enterprise, usually when she/he is the accountant or the bookkeeper. When connecting to the portal she/he will have to select the unit to work with and the pair “user-enterprise” will be associated with a role (administrator, person in charge, delegate). It is also possible to delegate outside the compilation and to centralize the requirements at a single office or at a holding company of a group of companies.

Once the portal has authenticated its identity, the company is able to verify its status in relation to all statistical obligations to which it is subject. The “**Status of Submission**” is the basic functionality that users expect from a statistical portal, in order to have a single and comprehensive overview of their tasks in relation to all statistical surveys in which they are currently involved, any pending reminders or any existing administrative sanctions.

In addition to providing a single entry point for viewing their own business data, a further interesting use of the portal is to provide businesses with personalized **feedback of statistical information**. This feature could make the system more attractive to users and in this way could increase “user loyalty” to the institutional website. The most relevant data provided are the economic indicators (production, turnover, exports, consumer and business confidence climate indexes) and the structural indicators (productivity, profitability, labour cost and cost competitiveness, investment intensity) as well as behaviour profiles. While respecting the confidentiality constraints of statistical data, it is possible to provide the company with a picture of its economic position in different borders, regions, economic sectors or size classes, providing a link with customised aggregated data and with appropriate methods of benchmarking the company with respect to the main phenomena (market orientation, economic and financial performance, etc.).² This could be of great help for the analysis of the company's positioning on the market. Such information will be provided by means of interactive graphs and charts, mainly based on the use of web services having access to I.Stat, the warehouse of statistics currently produced by the Italian National Institute of Statistics, therefore they are strictly depending upon the already existing data in the warehouse.

As far as the **Integrated Data Collection** is concerned, this can be considered the central functionality of the system, but it is also the one that has been given the lowest priority in developing an innovative and truly integrated system, as in the first years at a minimum cost it was possible to reuse the current software that each survey use for web-based data collection, with minimal adjustments to work in a short time within the Portal. The following step has been to develop a generalized software for the data collection via web, which in the meantime has been tested and used for the new born surveys that have been added to the Portal in recent times. From a technological point of view it is a single system for the implementation of electronic questionnaires, called GX (Generalised Italian Data Collection System XML), a generalized system, designed and developed entirely by internal Istat resources, based on XML technology, which guarantees compatibility with standards such as SDMX and DDI. The use of a single software undoubtedly facilitates uniformity in terms of layout of the questionnaires but leaves to the statisticians the problems relating to the harmonisation of contents or the design of other aspects to be managed with the questionnaire. The new software ensures a clear separation between survey questionnaire and application engine, a single authentication system, a “standard” graphical interface to be chosen from a catalogue to meet the various needs of the surveys, an integrated data and metadata structure, easily accessible using a metadata management system and a “multilingual” management. It should be noted that the new data acquisition system allowed by the BP substantially modifies the approach based on the single process, the survey, adopting one that focuses on the enterprise. This new model makes it necessary to accelerate the process of rationalization and harmonization of survey questionnaires in order to ensure consistency to the questionnaires design and the related features, to standardize the structure for defining the concepts covered and to reduce the respondent burden due to the fact that the same enterprise may be required to provide the same information several times in the different surveys.

The complex **back-office system** is the most important functionality from the point of view of the internal statisticians, supports all the users participating in the survey network, both the survey managers and the BR staff. It allows integrated, harmonised and centralised management of all survey phases for all production areas, allowing shared access to information and data, acting on a role-based system of user profiles. It is a useful tool to manage the information coming from the enterprises, with an access restricted to Istat internal users and as an help-desk for contact centre, since it is linked to the Centralized Contact Centre (CC) for inbound and outbound services³. For the monitoring operations, it is possible to search for an enterprise by name or

² For example, monitoring of the company's export performance with respect to significant groups of companies operating in the same segment, like the top performing companies, companies more performing than the average, companies less performing than the average, or companies in difficulty of growth.

³ From 2016 the outsourcing of the help desk activity is entrusted to a specialized company in CC services in order to centralize support and assistance services addressed to the units involved in the surveys (inbound) and of telephone alert and reminders addressed to non-respondent units, with a supported access to data capturing systems (outbound). The

identification code and obtain information on the surveys in which it is involved and on the progress of sending questionnaires. It is possible to consult a list of interviewers and persons in charge of providing various types of information within the company. For all the necessary operations requested by the survey managers, it is possible to select a particular survey and to know the status of each questionnaire (completed, not completed, in the process of being filled in, in draft, rejected questionnaire, business cessation) and to have a wide range of in-depth reports, for example by NUTS or by economic activity, which could be easily downloaded. Even the monitoring at interviewer level is available. In addition, it also contains a suitable tool for reminders. Since 2018, a new strategy has been developed for the adoption of personalised reminders and a lot of attention has been paid to the preparation of personalised texts. The main results were the significant increase in medium response rates and the reduction of the data collection periods.

3. The front-office system: the Business Register Form

By entering the BP, the enterprises can access their statistical data stored in the Business Register. The “SBR home page” displays the main variables, such as the identification and contact variables (company name, address, legal form, insolvency and bankruptcy procedures) and the structural and demographic variables (main economic activity, status of activity and events). It is important to underline that, if a company carries out several economic activities, only the main activity is indicated in the SBR form, the one that contributes most to the value added of the unit.

For reasons of transparency of the operations carried out to update the register – but also to make it clear how conceptually different the statistical information contained in the BP and the SBR are from the administrative information – some additional information regarding the SBR updating have been provided, such as the method and the process through which the value for that character was assigned (administrative source, estimation process, corrected by check, profiling activity, etc.), the reference date of each value displayed and the date in which the update process was carried out.

All characters may be subject to change over time, but for the main economic activity the change is more relevant as it has important implications for the dissemination of historical series of structural business data and even for the presence of a unit within the scope of a survey. Surely there may be changes over time either due to seasonal factors or management decisions to change the output pattern; in this case, the company may request its update in the Portal system. In any case, the economic activity code displayed by the company is the last available economic activity code and the time reference data are more up-to-date than the reference year of the last disseminated *SBR frozen frame*. Actually the list of enterprises displayed in the SBR form within the BP corresponds to the *SBR current frame* (the so-called “running file” or “continuous SBR”).

As far as the technical aspects are concerned, this feature was easily developed, as it was only necessary to create a link with the existing SBR information system and few changes to the current database. Every night, an asynchronous update of the BP business information occurs, by means of a batch transmission of updated data from the SBR to the BP.

As better described in §6, the SBR information system is updated daily by the SBR staff following various monitoring operations of medium to large companies, not only following the warnings received by the BP but also as a result of profiling activities of the main Enterprise Groups or in the quality control phase of the SBR

unique and coordinated management of the service guarantees strong standardization not only within each specific thematic sector but also among sectors, due to the increased transfer of the best practices from one sector to the other. Main objective of both services is to facilitate the enterprises approach to the questionnaire, reducing the respondent burden, and to remind statistical duties in order to maintain or increase the overall response rate. Furthermore, for requests that are not solvable by FAQ, the CC use the “*shared agenda*”, a useful tool for managing and sharing the received instances, which also ensures rigorous scheduling for formal and informal communications.

updating process. This operation results in the data being loaded from provisional tables supporting the information entered by the SBR staff to the final tables in the SBR database, using procedures that also carry out information check operations. One of these checks is whether the SBR information system contains new character updates, new connection events or new units, since the date of the last BP update via the SBR database. In this way, the appropriate new information is selected and can flow into the BP information system on a daily basis (every evening at 8 p.m.).

Therefore, the BP is provided not only with updates made following notifications from the Portal, but also with all those deriving from normal activities of updating the register or from extraordinary activities (e.g. as a result of profiling activities of large business groups). The benefits of this operation are considerable, all surveys benefit from updates made by others, with a view to a complete sharing of the available information.

It is the first time that the outside world may possibly look at the SBR micro-data, and it is evidently a risk – even if a chance at the same time – when each enterprise has the possibility to deal with its own figures and can interact with the SBR operators to possibly change them. For this reason, small steps have been taken to increase over time the number of companies on the Portal, starting from the largest units, continuously monitored in the SBR, in order to see the initial reactions of stakeholders and to use their feedback to make any changes, to adjust the target.

When a company receives an information letter to participate in a survey, or when replying to a questionnaire, or at any time for other reasons accesses the site, it is invited (not mandatory, of course, but optional) to verify the accuracy and updating of the information and to send a notification if the data displayed are incorrect or outdated. These are called “*external notifications*”. The same action may be taken by survey managers during the review phase of questionnaires, for example when they become aware of important events in the life of a company, not communicated by the company itself or communicated by other means than through the BP. This information is important to share with all other surveys through their inclusion in the SBR. In this case, they are called “*internal notifications*”.

A special back-office module, for which only the SBR staff is responsible, will take charge of this notification, with the aim of analysing and verifying its correctness and then, after any validation, the new value will be visible as soon as possible on the home page of the BR. This is a process of integrated management of respondent notifications, the steps of which will be explained in detail in the next section, together with the innovations that have been introduced in updating the SBR to take account of the implications of acquiring and managing such updates from statistical sources.

4. The integrated management model of respondents’ notifications and the validation/updating process in the SBR

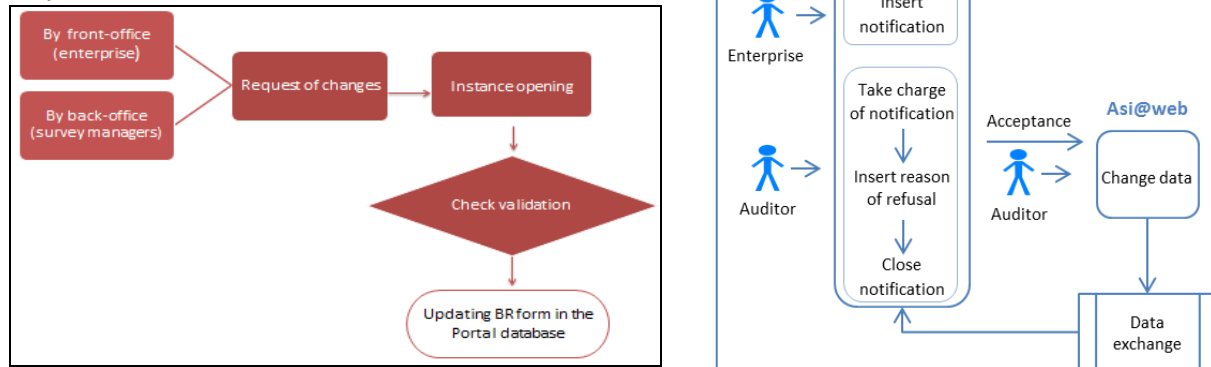
Most of the updates of the SBR due to statistical sources, Structural Business Statistics (SBS) and Short-Term Statistics (STS), are mainly obtained via Business Portal, simplifying not only the procedures by which businesses provide statistical information, but also those collected by SBR experts. The BP has been designed to further rationalize the framework of statistical information to be collected, allowing a more complete sharing of data and minimizing costs for all economic statistics in Istat.

The integrated management model of respondents’ notifications includes phases and actions carried out by the SBR staff, the users “Auditor”, monitored by the user “Supervisor”. Following an internal or an external notification in the front-office, a warning to the back-office is activated. The request may involve changing one or more of the variables displayed in the SBR form, indicating the new values and the date from which each new value refers (the reference time is the month and year of the change). The system inserts a real instance with a specific protocol that the experts of the SBR must analyse in all its characteristics; therefore for each

protocol, it can be required the change of one but also of more variables. Thus each *notification* (the whole instance) may be composed by several *signals* (each changed character).

In short, as in figure 1, the management of notifications requires that an Auditor, connecting to the BP back-office, takes charge of an internal or external notification entered in the SBR form through the front office of the system. The reporting company receives the notification at the time of taking charge of the auditor.

Figure 1 – Management model of Business Portal notifications



After taking over the notification, the auditor has to decide whether to reject or accept the requested changes. In the first case, always through the BP back-office, the auditor must enter the status of refusal in the instance and also the reasons for the refusal, while in case of acceptance, he must enter the changes directly into the SBR information system, through the proper Asi@web software, the web application to browse and update the SBR relational database. The new data will then be acquired by the BP through the batch procedure of data transfer between the SBR relational database and the BP database, scheduled each night. After the closure of the instance, the system will send automatically a note by mail to the user as a feedback, if the user is a survey responsible, or it will display a note in the SBR form if the report comes from an enterprise. In both cases, together with reasons for not acceptance, the metadata will also be displayed, like the source of the information and the date of last update. It is important to underline that in case of refusal the system provides standard reasons, which the auditor can select from a drop-down menu without having to write them, and these are different depending on the reference variable.

As regards the opening of the investigation, the assessment of the accuracy of the information follows a standard practice for verification, which usually begins with the consultation of certain sources of information made available as a result of agreements and arrangements with other bodies, usually administrative sources available online. The attribution of the main economic activity follows its own practice and is, in general, one of the most complex operations during the manual SBR updating, as it is often difficult to obtain information on the distribution of the value added between the various activities carried out by the unit; this is why alternative criteria such as the value of sales or turnover or the number of employees employed in the various economic activities of the unit are often used. They can be used thanks to the availability of the financial statements, consulting in particular the explanatory notes and the report on operations.

In the back-office there are many features that facilitate the work of the SBR staff, however the use of an appropriate efficient organizational model was crucial. Initially it was the supervisor's task to open the portal daily and allocate the notifications received knowing the workloads of the auditors. Currently it is possible to search for notifications using proper filters. It is possible to enter and search for a company, by name or SBR identification code, and obtain information on the surveys in which it is involved and on the progress of the sending of questionnaires, also being able to consult the list of interviewers and persons responsible for

providing information of various types within the company. This function allows auditors to check whether there have been more than one notification on the same unit over time, and also provides information on the variable concerned (the related signals). Carrying out this upstream check is very important in order to reduce possible inconsistencies with the answers already given in the closed notifications, which could have a negative impact, especially on the larger and more complex enterprises.

In the past, this activity has been carried out in an unstructured manner and without a uniform procedure for processing updates. Since the BP became fully operational, a specific group of experts has been created to manage the statistical updating procedure, within the Directorate for Business Statistics - and in particular within the division Statistical registers on economic units, as a direct consequence of the modernisation process that took place in 2016 in Istat. Before the group was formalised, several operational steps had been carried out, including the creation of a specific task force with members from different divisions. This group also included staff from outside the Directorate for Economic Statistics, to ensure that the statistical information received was as complete as possible; for this reason, SBR experts have long been engaged in intensive on-the-job training. Despite considerable efforts, this activity has not produced the expected results. It is not easy for those who are not involved in the aspects of business structure as necessary for the SBR, to acquire full operational autonomy in the steps to be followed in the process of updating the database. Currently this group employs 15 resources with different percentages of activity, 13 within the Directorate for Business Statistics and 2 within the Directorate for Data Collection. All work in collaboration with the Directorate for information and communication technologies, which has developed the technological infrastructure of the BP according to the characteristics provided by the various thematic areas.

At the operational level, the activity is organised in such a way that each SBR expert is fully autonomous in the processing of notifications, follows all the necessary steps from taking charge to the final closure of the request and becomes directly responsible for the final result. An important aspect is that the name of the expert who analysed the request is directly visible from the back-office, so as to make the process of updating completely transparent to the SBR users, the SBS and STS survey managers. In addition, the supervisor, who is at the same time the head of the working group, carries out daily upstream monitoring of the closed requests. The main purpose of the monitoring activity is also to minimize inconsistencies between requests for changes inserted at different times in the BP by the same company on the same variable. In addition, the experts can use a specific section of the “shared agenda” dedicated to them for managing and sharing the received instances, where the enterprises can communicate and ask for all necessary clarifications to the thematic experts. The management of this mailbox is assigned to a qualified SBR expert, whose main job has been to explain that information is collected for statistical purposes and thus the statistical definitions of the characters may differ from those that companies declare in the administrative registers, such as the tax register or the archive of the Chamber of Commerce.

Over time, the Portal functions have been significantly improved from a technological point of view. At the beginning, the main lack for SBR auditors was the possibility to select, with a specific feature of the back-office, the notifications relating to the most important units, so as to be able to work them before the less important or urgent ones. As the number of requests increased, there was a risk of underestimating the most important changes, since the time criterion was the only one followed in the back-office, i.e. the most recent reports were processed first. For this reason, an important innovation, currently fully working, has been the implementation of a *statistical indicator*, as a result of an algorithm able to give a weight to the internal and external notifications in order to establish a hierarchy between them and make the process more fluid. This additional and quantitative indicator is calculated daily after synchronizing the BP with the online updates entered in the SBR and it is therefore visible in the back-office system. Several elements are taken into account in the calculation:

- *type of survey*: SBS is given more weight than STS;

- *survey phase*: the calculation includes a variable useful for measuring the survey phases (launch, conduction, reminder) so as to give priority to those in the reminder phase;
- *sanctionability*: it is very important that the notifications relating to the sanctionable units are treated first, regardless of the variables involved;
- *type of notification*: the ones relating to identification variables (company name, address, legal form) are considered less important than notifications relating to structural and stratification variables. Definitely demographic events, such as merger, takeover, break-up or split-off, need to be analysed in a timely manner to ensure that the SBR and the BP are updated in real time;
- *number of surveys* in which the unit is involved;
- *date of inclusion* of the notification in the BP: requests should not be delayed for a long time in the system.

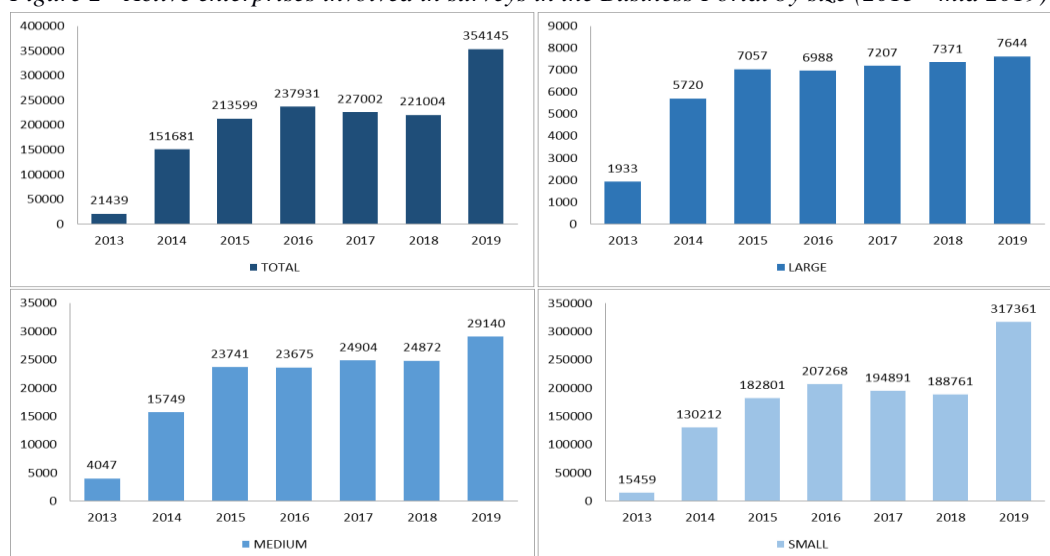
The implementation of the indicator in the back office was a very important innovation and today internal and external users can obtain a very detailed set of information from the system.

The greatest benefit of this system is the sharing of information, both among the survey managers and between them and the SBR. When each SBR auditor completes the work and closes an internal notification, the results are communicated not only to those survey responsible who introduced it into the system, but also to all other involved survey managers. It is clear that the BP has allowed full integration between economic statistics, which has also resulted in a significant improvement in the quality of the SBR. In detail, two aspects have benefited most: first, the timeliness of the update, which has been improved by reducing the processing time of notifications. In this way, the *SBR current frame* is increasingly in line with the needs of STS surveys. Secondly, the completeness of the information in the SBR is now ensured by the significant reduction of duplication in the notifications. All these factors have also had an impact on the organisation of the work of the experts responsible for updating the SBR.

5. The first six years in the use of the Business Portal by the business respondents

The new Italian Business Portal entered the testing phase in June 2013 and has been online and fully operational ever since. One of the initial objectives was to evaluate the new management procedures and functions in a real context, with a targeted sample of enterprises from three representative business statistics surveys, each with different particularities. In detail, these were 21,439 enterprises, involved in the *monthly Survey on industrial production (IPI)*, in the *Short-term survey on turnover and orders in industry (FATT)* and *Survey on information and communication technologies in enterprises (ICT)*. Gradually other surveys and companies were maintained, as shown in Figure 2.

Figure 2 - Active enterprises involved in surveys in the Business Portal by size (2013 - mid 2019)



In the following year 2014 the involvement of small enterprises increased: in particular the *Small and medium enterprise survey - SME (including professional and artistic activities)* and all the short-term monthly surveys of the output prices of services entered the BP system; with the entry of new surveys, the involvement of enterprises has increased over the years and stabilised in 2016. This year represents “the year of stability” when all companies are in the BP system and all surveys use it. In 2018, the *Survey on the production of manufactured goods (PRODCOM)* expanded the sample base to include small businesses; in the same year, the *Intra-flows survey (RFI)* and the *International Sourcing survey* also entered in the BP. Today, with the entry of the *Permanent Census of enterprises*, 354,145 companies use this system to respond to the expected statistical requirements, out of which 89.6% small, 8.2% medium and 2.2% large enterprises. Nowadays the tool is fully implemented.

With regard to the measure of ‘enterprise size’ used for the analysis and shown in the above figure, the enterprises have been stratified both by employment and turnover, in order to take into account the potential differences in the statistical burden and their behaviour as respondents, possibly caused by these factors. After few tests to find a good partitioning of the enterprises in the least number of homogeneous strata, for the construction of the variable “size of the enterprise”, both the number of employees and turnover were taken into account at the same time, thus giving rise to three classes, as showed in Table 1 and in Figure 3.

Table 1 – Size of the enterprises in terms of employees and turnover

Size	Employees		Turnover
SMALL	< 50	and	< 10 mln
MEDIUM	50 – 250	and	10 – 50 mln
LARGE	≥ 250	OR	≥ 50 mln

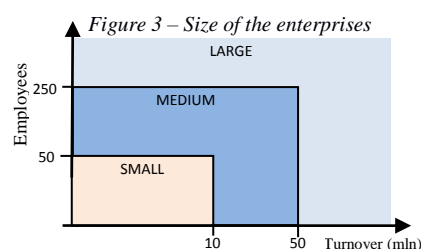


Table 2. Active enterprises by number of surveys, size and reference year (2013 - mid 2019)

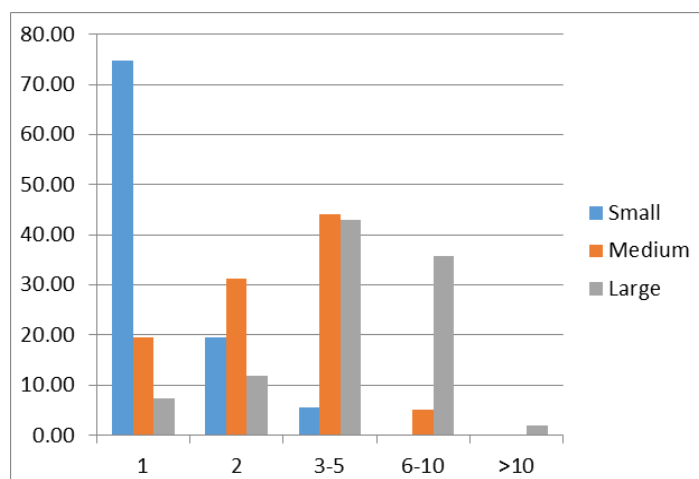
Number of Surveys	2013	2014	2015	2016	2017	2018	2019
SMALL							
1	13792	119285	161254	175057	166426	141144	309102
2	1617	9263	17009	22507	20701	36850	7542
3-5	50	1663	4513	9530	7643	10730	716
6-10	0	1	25	174	121	37	1
>10	0	0	0	0	0	0	0
TOT	15459	130212	182801	207268	194891	188761	317361
MEDIUM							
1	2738	6943	7876	5869	6843	4863	20235
2	1145	4939	5760	4966	4849	7759	6008
3-5	164	3837	8664	9515	9937	10995	2869
6-10	0	30	1440	3258	3257	1255	28
>10	0	0	1	63	18	0	0
TOT	4047	15749	23741	23671	24904	24872	29140
LARGE							
1	1001	718	791	483	704	542	2296
2	723	991	618	580	623	876	1949
3-5	209	3700	2464	2066	2295	3172	2893
6-10	0	311	3083	2960	3001	2629	506
>10	0	0	101	899	584	152	0
TOT	1933	5720	7057	6988	7207	7371	7644
TOTAL							
1	17531	126946	169921	181409	173973	146549	331633
2	3485	15193	23387	28053	26173	45485	15499
3-5	423	9200	15641	21111	19875	24897	6478
6-10	0	342	4548	6392	6379	3921	535
>10	0	0	102	966	602	152	0
TOT	21439	151681	213599	237931	227002	221004	354145

To date, this tool is the only point of collection of business communications for filling in survey questionnaires. With the gradual entry of surveys on the Business Portal system and with the involvement of the units concerned, it can be seen that, depending on the size, companies are affected by a different number of surveys.

In 2016, 175,057 small enterprises (84.5%) were covered by only one survey, 10.9% by two surveys and only 0.09 % by more than 5 surveys; even less statistical burden for them in 2019, where 309,102 small enterprises were involved in a single survey, representing 97.4% of the total (Table 2).

Comparing this result with the statistical burden in the other size classes, medium-sized and large enterprises are affected by a larger number of surveys: in 2018, less than 20% of medium-sized enterprises and just 7% of large enterprises were only involved in one survey, while this

Figure 4. Active enterprises by number of surveys and by size (year 2018)

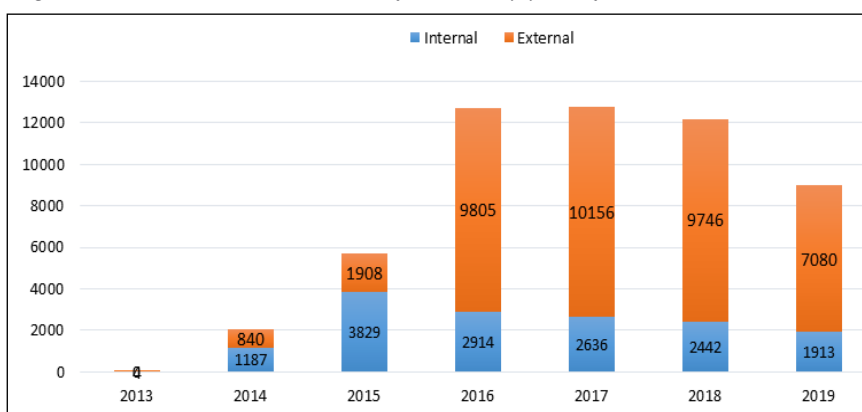


percentage is up to 75% in small enterprises. As the number of surveys in which a company may be involved increases, so does the average size of the company: respectively, 44% and 43% of medium and large enterprises are involved in 3-5 surveys and even almost 38% of large enterprises have to respond to more than 5 surveys (Figure 4).

To date, this tool is the only point of collection of both communications from companies during the filling-in of survey questionnaires, and information acquired through other channels from staff involved in the survey operations which, by

communicating them on the Portal system, allows sharing with all potential stakeholders.

Figure 5 - Internal and external notifications by year of transmission (2013 - mid 2019)



Over time, the number of notifications received by businesses has increased, with a total of 54,460⁴ notifications, 72.6% of which from outside (Figure 5).

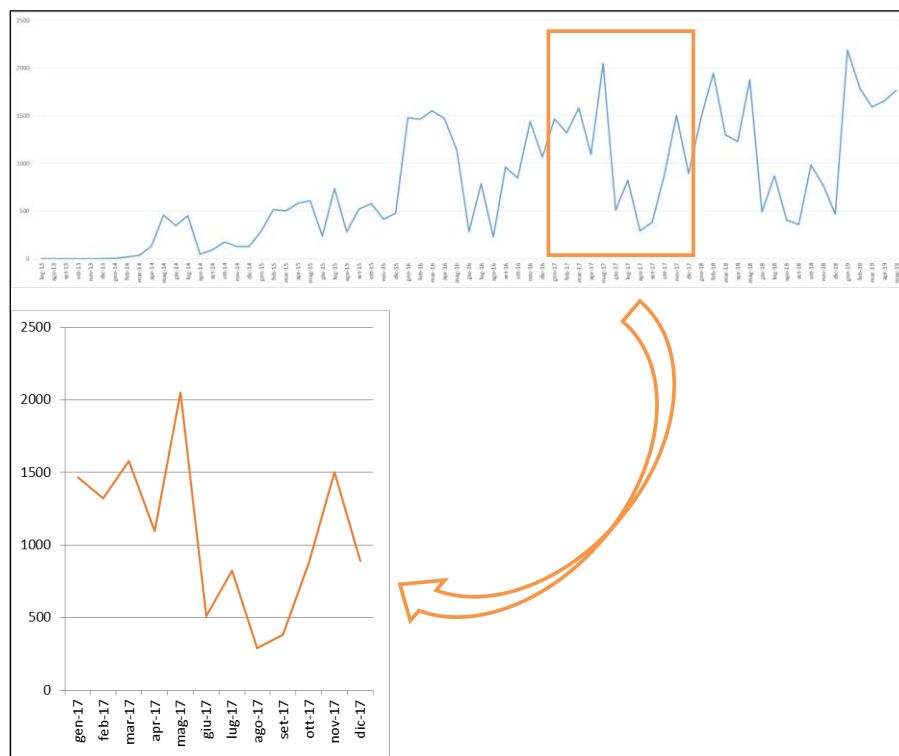
Although fewer in number than the external ones, the internal notifications have slightly decreased in recent years, perhaps due to a more targeted use of the information received - to be shared with other

statistical domains - learned over time. The greatest contribution of the total 14,921 internal notifications is given by the referents of the short-term surveys (about 94%), which, due to the nature of their surveys, are found more frequently to update the characteristics of the enterprises, usually monthly (only 6% of the notifications come from structural surveys). Users of structural surveys can therefore benefit from the notifications made by participants in short-term surveys, which by their nature are able to capture changes or new information earlier.

The number of notifications received reaches peak points when new units enter the system. As shown in Figure 6, in May 2014 about 1,500 companies with more than 500 employees entered the system with all the surveys in which they are involved. During 2015, the Business Portal also included the *Monthly Survey of Productive Prices of Industrial Products Sold Abroad* (PPI_ND), the *Small and medium enterprise survey – SME*, the *Survey on the production of manufactured goods* (PRODCOM) and the *Survey on enterprise accounting system* (SCI), which were completed in 2016; also in the same year, the *Community innovation survey* (CIS) and the *Quarterly services turnover survey* (FAS) were merged into the system, and in 2017 the *Survey of Producer Prices of Industrial Products - Foreign Market and Internal Market* was also added.

⁴ The number refers to the notifications on the Business Portal system as of 30th May 2019

Figure 6 - Internal and external notifications received during the reference period 2013-2019



In general, if we take into account the presence of companies participating in at least one survey in the year, the arrival of the notifications is constant over time; the participation of companies is good, with percentage values of notifications sent always close to 6%.

Since the Business Portal started working, companies have become aware of the existence of a single channel of communication. As shown in Figure 6, the trend is cyclical over the years: the peak points are linked to the different survey phases: start-up, reminders and closure.

The number of notifications increases immediately after the sending of the information letter inviting to cooperate in the survey and concerns the most active and well-organized companies, then there is a peak nearby the reminders and a maximum peak close to the end of the survey. The same trend is constantly repeated over the years. Definitely the phenomenon is not perceived in short-term surveys which, being monthly or quarterly, are continuously involved. For the structural surveys, however, this is the cycle in which the typical enterprise usually responds to the standard survey.

6. The new SBR updating process using statistical sources

The SBR is largely the result of a complex process of integrating data from administrative sources, but while these sources are the primary information basis for the setting up of the SBR, they are not in themselves sufficient for a definitive estimation of the characteristics of all its units. This is due to a variety of reasons, which make it essential to carry out continuous maintenance and updating of the SBR itself. There are limitations in the use of administrative sources for statistical purposes, including first of all the *time lag* between the date on which the sources are usable and the SBR reference year. Failure to receive sources promptly leads to a loss of information that must be resolved in another way. Therefore, the use of statistical sources is used, through which it is possible to update in real time at least a part, the most relevant part, of the units contained in the *running file*, the historical register, a relational database containing the historical information of all the companies disseminated since 1996, including any structural changes that these units have undergone over time as a result of changes in identification characters or location, or economic activity, or the occurrence of demographic events such as mergers or demergers.

In general, while the process of integrating administrative data is sufficient for the annual updating of small units – which make up about 90 percent of the companies in the SBR – for the most relevant units, monitoring by experienced auditors is essential. The data relating to large companies are of significant importance for the construction of structural indicators and therefore need to be monitored and updated with particular attention.

The main economic activity, the average number of employees and the administrative headquarters, which are fundamental characteristics of the statistical unit 'enterprise', cannot be updated exclusively by automatic assignment methods but require manual checks by auditors with extensive experience and sensitivity in evaluating them. For this reason, *online* updates are considered qualitatively superior to any other type of update, as they are the result of constant monitoring by the auditor who, comparing information from different sources, identifies the correct value of the variables to be attributed to each statistical unit. Generally, these are mainly large units in terms of employees, which are often part of an enterprise group; this is the case, for example, of companies with more than 500 employees, where 95% of the employees belong to groups.

The continuous updating of the "current SBR" using statistical sources is therefore the result of different processes involving the auditors throughout the year. During a generic year T+2 the characters of some companies "relevant for users" are updated, with reference to years T and T+1. More rarely, information is also made available for year T+2. Relevance is defined by the size of the enterprise, in terms of employment and/or turnover, or because it is of particular importance for the purposes of a specific survey or because it belongs to particular economic activity sectors.

The inputs for the update activity can come from both SBR internal and external sources. Among the inputs received from internal sources there is first of all the *profiling activity* and the updating of the Enterprise Groups Register; during this activity, the auditor analyses the legal, operational and accounting structure of an enterprise group, identifies the statistical units, checks the correct perimeter of the group, the nationality of the top management, and determines the prevailing economic activity and any ancillary units.

The updating inputs from outside the SBR include the information acquired through the exchange of data with the main structural and short-term statistical surveys. In the past, this exchange took place in an unstructured way, using different ways of contact between the survey managers and the SBR staff, such as sending e-mails, faxes or direct telephone contacts, but the whole thing was left to the initiative of the individual researcher and his good will. The information collected in specific sections of the survey questionnaires was transmitted from the business surveys to the SBR manager. Each questionnaire included the so-called "short-form", mostly pre-filled with data from the SBR itself, including the company name, address, legal form, telephone number, a brief description of the economic activity, the starting and ending dates of the activity. The persons in charge of each survey only sent to the SBR any changes communicated by the unit interviewed, thus providing a signal, in advance of the timing of the administrative sources, of the occurrence of events that change the life of the company and that entail substantial changes in the state, size or activity carried out.

Today, most of the updates are acquired through the sharing of information collected by the Istat Business Portal. This system has profoundly changed the methods of updating the SBR from statistical sources, mainly regarding the treatment of the most relevant units. For these units, continuous monitoring by experienced auditors is absolutely necessary and constitutes the core on which the updating of the SBR is based. However, the exchange of information among Istat statistical domains is a process that is still only partially standardized, in terms of phases and times, necessary in order to: allow the SBR to be updated as fully and promptly as possible; allow the surveys supervisors to have lists updated on an infra-annual basis for their own business and structural surveys; guarantee the sharing, within the Istat survey system, of the personal and structural information of enterprises, whatever their origin, in advance of the annual release of the SBR. The main users have increasingly expressed the need to have the most updated data and for this reason the running file maintenance activity has become increasingly central.

The new approach has changed significantly the SBR updating process, with a number of benefits, first of all the improved quality of the register in terms of timeliness and completeness of information. As already mentioned, following a notification, an official application is activated, identified by a specific protocol, which a register auditor takes over and verifies. Each notification is composed by signals, one for each changed character. Once the analysis has been completed, the outcome of the control procedure is used to update the

SBR, it is visible also for the company itself and provides elements to distinguish the cases of closure of the application for acceptance of the change reported, from those of refusal; in these cases the information is completed with a specific reason.

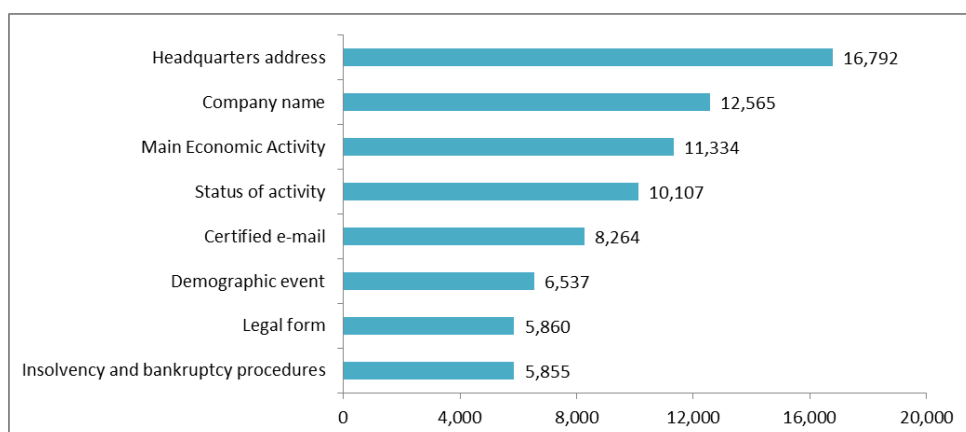


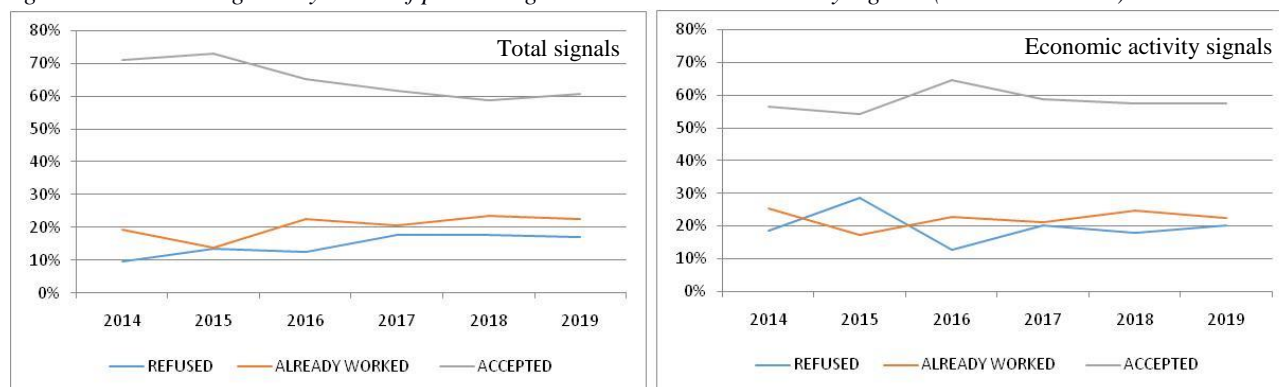
Figure 7 - Total (internal and external) signals by variable (2013 - mid 2019)

The specific signals of which the notifications are composed, each referring to a different variable, are a total of 77,314. Considering together all the signals collected to date from 2013, the distribution of the main

characteristics considered in the SBR screen is shown in Figure 7, where it can be seen that the changes in the identification variables, like company name and address, make up the highest percentage (respectively 16.3% and 21.7%), but also the demographic changes (8.5%), changes in activity status (13.1%) and changes in the main economic activity (14.7 %) constitute a significant percentage of the total signals received⁵.

Looking at the way in which the signals are examined and processed by the SBR staff, the trend over time of the outcome of the processing shows first of all that there is always a percentage of unnecessary work done by the auditors to examine warnings of changes, that actually have already been acquired in other ways and already entered into the information system of the SBR. This is the red line on the left side of Figure 8, which represents the 20% share of the so-called “already worked” results.

Figure 8 - External signals by result of processing: total and economic activity signals (2014 - mid 2019)



In addition, more than 60% of the signals are accepted each year and between 10% and 20% are refused. Economic activity signals have a similar trend but less constant in the first years, 2014 and 2015, when the “refused” results were almost 30% (Figure 8, right size).

In 2018, the objective of aligning the processing of the signals received with the date of their inclusion was achieved; for this reason, it was considered interesting to focus on the signals processed during the year, used for the set-up of the frozen frame with reference year 2017. In particular 12,188 notifications were received in the reference year, almost 80% coming from outside; these notifications involved 15,871 signals (77.2%

⁵ It should be noted that 8,264 signals concern the certified mail that is not a Business Register variable and all related notifications are entirely managed by the Data Collection colleagues. For this reason the variable has been excluded from the following analyses to assess the actual impact of the Business Portal on updating the Business Register.

coming from small units) and 9,585 enterprises. These companies that had access and sent a notification represent 4.3% of the companies involved in at least one survey in 2018 (221,004 enterprises); taking into account their number by size, 76.8% are small units, quite 16% are medium and 7.2% are large companies.

The variables analysed have been put together into three groups, as shown in Table 3:

- *identification and contact variables*, which take account of changes in company name, headquarters address, legal form, insolvency and bankruptcy procedures;
- *structural and demographic variables*, which take account of status signals and structural events;
- *main economic activity*.

Table 3 – Signals received during 2018 by result of processing and size (absolute values and percentage compositions)

SIZE	ACCEPTED	REFUSED	ALREADY WORKED	TOTAL		ACCEPTED	REFUSED	ALREADY WORKED	TOTAL
Identification and contact variables					Identification and contact variables				
Small	4504	987	1667	7158	small	62,9	13,8	23,3	100,0
Medium	1061	151	282	1494	medium	71,0	10,1	18,9	100,0
Large	421	96	103	620	large	67,9	15,5	16,6	100,0
Total	5986	1234	2052	9272	Total	64,6	13,3	22,1	100,0
Structural/demographic variables					Structural/demographic variables				
Small	1791	864	598	3253	small	55,1	26,6	18,4	100,0
Medium	333	115	115	563	medium	59,1	20,4	20,4	100,0
Large	283	63	80	426	large	66,4	14,8	18,8	100,0
Total	2407	1042	793	4242	Total	56,7	24,6	18,7	100,0
Main economic activity					Main economic activity				
Small	1144	306	388	1838	small	62,2	16,6	21,1	100,0
Medium	197	94	88	379	medium	52,0	24,8	23,2	100,0
Large	69	38	33	140	large	49,3	27,1	23,6	100,0
Total	1410	438	509	2357	Total	59,8	18,6	21,6	100,0

In general, the percentages of *accepted signals* are very good (62%); accepted signals from structural and demographic variables account for almost 57% of this type of reporting. This percentage constitutes a considerable advantage for the SBR, allowing it to follow, well in advance of administrative sources, the evolution of the structure of large enterprises over time consistent with the dispatch of the main economic surveys.

In 21% of cases, the signals have *already been worked*. This percentage represents an additional workload as the new indicated values were already included in the SBR: the highest percentage is for main economic activity variable, especially in large companies (23.6%), as they are monitored much more than other companies due to other activities such as profiling.

The share of total *refused signals* is 17%. In detail, 24.6% of signals for structural and demographic variables were refused (the highest percentage for small and medium sized enterprises, 26.6%): demographic events often have a time lag problem, as the reports refer to different periods. With regard to status of activity signals, they are quite at all declarations of inactivity for refusal to respond to surveys, while in reality the enterprise has bankruptcy procedures but is still active because it has employment and/or turnover; moreover, there is no deed of cessation in the Chambers of Commerce. With reference to the identification and contact variables, refused signals in reality hide events of spin-off and merger: in almost all cases, the enterprise indicates the company name and headquarters address of the acquiring company; sometimes, moreover, the address of legal office is indicated instead of the headquarters one. The highest percentage of refused signals about the main economic activity are from large enterprises (27%). Reports of changes in economic activity highlight a problem immediately encountered within the back-office activities, which consists in the difficulty for companies to

understand the definitions and concepts valid from a statistical point of view. This critical situation is accentuated by the main economic activity, for which many reports derive from the fact that enterprises see it as important to ensure uniformity between the NACE code in the Chamber of Commerce, that is valid for administrative purposes, and that present in the SBR, which has instead a statistical meaning. The units recorded in administrative systems are usually defined to meet administrative and legal objectives which can be different from those needed for economic statistics, so compromise between conceptual truth and common sense may be necessary.

In order to show the impact of the BP on updating the SBR since 2013, together with the activities carried out for introducing process innovations that substantially modifies the SBR updating methods using statistical sources, we focus our attention on the main economic activity assessing process for the reference year 2017.

Table 4 – Active enterprises in the SBR by type of updating process to assess the main economic activity (reference year 2017, three years notifications)

Presence of ENTs in BP	Process	Admin sources reporting a change of economic activity		Admin sources confirm the T-1 economic activity	TOTAL
		Change NOT accepted	Change accepted		
Enterprises in BP reporting a change of economic activity	Manual online updating	3,602		2,723	6,325
Enterprises in BP confirming the T-1 economic activity	Manual online updating	1,637		1,699	3,336
	Automatic process	25,591	25,868	585,544	637,003
Enterprises outside the BP	Manual online updating	716		797	1,513
	Automatic process	14,897	197,120	3,611,419	3,823,436
Total		46,439	222,992	4,202,182	4,471,613

Notifications received from 2016 onwards are taken into account to update the reference year 2017, to consider the stability rules that are usually applied in the process of updating the main economic activity (Table 4).

The 4,471,613 active enterprises contained in the SBR 2017 can be considered as belonging to three subsets, depending on their presence on the BP and their behaviour in reporting a change of the SBR data. Almost 86% are outside the BP system (the pink lines), while more than 14% are involved in at least one survey, of which 6,325 report a change in the last three years (the yellow lines) and 640,339 do not send any report, thus confirming the activity recorded in the SBR (the light blue lines).

As regards the main economic activity updating process, the enterprises outside the BP are mainly updated using administrative sources, which confirm mainly the same T-1 activity code (94%) and in very few cases (0.4%) are involved in automatic check procedures that do not make the change of code accepted. Always belonging to the subset of units outside the BP, 1,513 companies are updated online by the SBR auditors, most likely as a result of profiling activities.

In the other two subsets the impact of BP in the SBR update process is to be sought. As can be seen from the integrated management model of respondents' notifications, when the enterprise reports a notification, the validation process starts regardless of the value estimated using the administrative sources (whether there is a change or not) and always ends with a manual online update of the value in the SBR. In all cases (6,325) the economic activity code is examined online and assessed by the SBR expert staff, and the large relevant units accounted for 32% of these total online inspections. Perhaps not all of these companies would have been under observation if there had not been a notification from the BP, probably at least some of the 2,723 companies would not have been under observation since the related administrative sources confirm their activity.

As regards enterprises in the BP confirming the T-1 economic activity, in any case some of them are under manual inspection, specifically 3,336 enterprises, updated online usually for profiling activity or to solve some

inconsistencies detected by the check procedures of the SBR updating process. In the remaining part, 8% has a variation in the economic activity estimated by administrative sources. While in the past the change would have been acquired directly, thanks to the “confirmation” information of the BP, now the change communicated by the administrative sources is not accepted in more than half of the cases (25.591). These are the cases in which the company has accessed the web portal in the period in question and has looked at its data in the SBR screen, thus having the opportunity to confirm / change it. Certainly the operation of non-acceptance of the code is carried out only if it is a very small company.

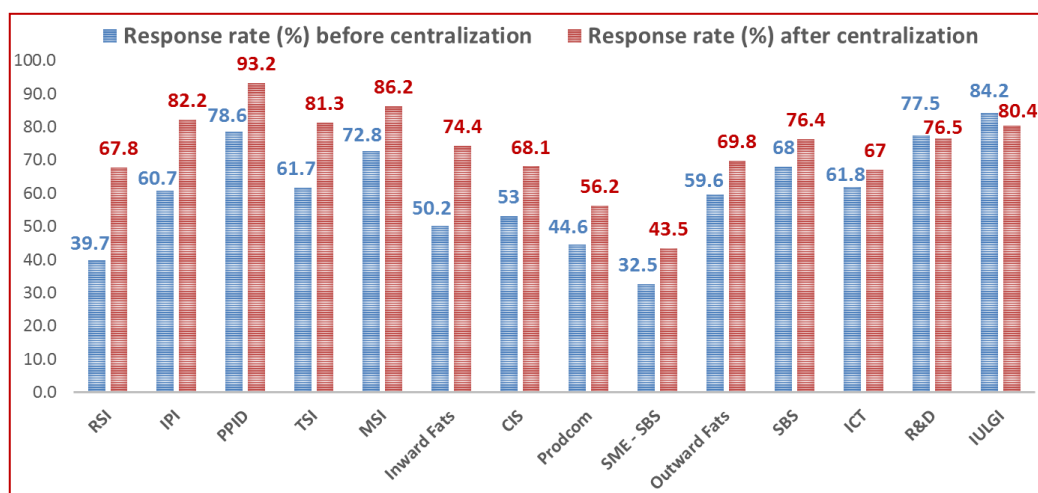
Initially, the BP entailed an additional workload for the analysis of the notifications, the size of which then stabilised over time. In addition, online manual checks on economic activities have decreased and now account for 0.25% of active enterprises, all of which are large companies, compared to around 0.6% in the previous decade.

7. Conclusions

The use of statistical sources for SBR has become increasingly important over time, including the exchange of data with the main SBS and STS surveys conducted in Istat. In the past, this exchange has been carried out in an unstructured way, using different ways of contact between survey managers and the register. Today, all updates are acquired through the sharing of information collected by the Business Portal and disseminated through the SBR, which acts as a collector and a spreader.

The new approach of centralized data collection has produced a series of benefits, first of all the renewed process of conducting surveys. First, there are overall effects on data collection periods, with an average reduction of 37.2 calendar days in business structural surveys. In addition there is a general increase of response rates in quite all business surveys after the data collection centralization and the opening of the BP (Figure 9).

Figure 9 - Average response rates of the main SBS and STS surveys before and after centralized data collection



Centralised data collection had a positive effect on reducing the total survey error (TSE), both in terms of observation and non-observation errors. For example for the main SBS surveys an increase of response rates has occurred (+24.2% in the last edition of Inward Fats

survey; +28.0% in the Monthly survey on retail sales (MRS); +11.6 in Prodcom survey; +11.0% in the Small and Medium business survey – SME-SBS; +15.1 in the Community innovation Survey – CIS).

Collecting information in advance with respect to the past through the opening of the BP has involved an improved quality of the SBR in terms of timeliness and completeness of information. Nowadays, the BP is the only access point for the acquisition and return of statistical information directly from enterprises involved in all SBS and STS surveys. The full sharing of information is ensured not only between the surveys and the SBR

but also among the business surveys themselves. Through this single point of communication the duplication of warnings and requests for changes of the SBR variables is avoided, as survey managers can access to updated data at any time. For this reason, the central role of the SBR and its use as a potential tool to harmonise all business surveys has been strongly reinforced. This process has been even more enhanced by the attempt to harmonize all survey questionnaires in terms of variables and definitions for a further standardization of the statistical language that is still ongoing. An important benefit has been the significant decrease of the enterprises respondent burden; this was possible thanks to innovative design and architecture of the system and to important process innovations.

In addition to the evident benefits, there are also a number of problematic issues that need to be monitored and which, if not properly assessed, could lead to increased operational costs. For example, centralisation certainly leads to fragmentation of processes and complicates relations.

With the increase in the number of companies accessing the portal, i.e. all companies involved in at least one Istat survey, there is a risk that the number of external requests will increase significantly and therefore the current priority criterion may no longer be sustainable. This could lead to an increase in the workload for the SBR resources currently employed in this activity and, as a consequence, to an increase in the number of notifications that remain unprocessed in the back-office system.

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