

**TRANSITION TO AN INTEGRATED SYSTEM OF BUSINESS
SURVEYS – THE BRAZILIAN CASE**

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INDEX

1. Historical background

1.1 Economic Censuses

1.2 Economic Surveys Program up to 1995

1.3 Standardization issues

2. Revision of the Economic Statistics Program

3. Structure of current Brazilian Business Statistical System

3.1 - General view

3.2 - Central Business Register

3.3 - Surveys organization

3.4 - Annual surveys

3.5 - Monthly surveys

3.6 - Satellite surveys

4. Implementation of the Economic Statistics Program

4.1 - Revision and implementation of standard economic classifications

4.2 - IBGE's Central Business Register

4.3 - Implementation of the Annual Surveys

4.4 - Implementation of Short Term Indicators Program

4.5 - Implementation of satellite surveys

5 Appraisal of Brazilian experience and near future challenges

Transition to an Integrated System of Business Surveys the Brazilian Case

Up to the nineteen eighties, the organization of Brazilian Economic Statistics Program was based in the Economic Censuses. In the first quarter of the nineties, however, the *Brazilian Institute of Geography and Statistics - IBGE* has started an extensive revision of its economic statistics program involving the transition to an integrated system of business surveys whose core instrument is a central business register merging data from IBGE surveys and from administrative files covering all business units in the country. This paper deals with the reasons and the way this transition has been accomplished.

1. Historical background

1.1 Economic Censuses

The first economic census of the Brazilian economy, covering agriculture, manufacturing and trade, was done in 1920. Twenty years later, the 1940 censuses operations started a continuous and comprehensive program of decennial censuses, including population, agriculture and economic censuses. 1950, 1960, 1970 and 1980 were the next base years for the comprehensive censuses operations.

Economic censuses referred to industry (mining and manufacturing), trade (wholesale and retail), and part of the services activities (the coverage of the services activities varied in each census operation). Their historical role was to provide data on the structure of the economy at a time where no other source of comprehensive data on economic activities existed.

The fast growing of the economy, since the nineteen fifties, brought the demand for new sets of economic statistics, including updated structural data and a short term system of economic indicators to point out the performance of businesses activities, particularly in manufacturing, the leader sector in the Brazilian development at that time. National Accounts first developments on the estimates of GDP, reinforced the need of enlarging the production of economic statistics beyond the decennial census program.

In the nineteen seventies the periodicity of economic censuses turned to every five years. 1975, 1980 and 1985 were, respectively, the base years for the economic censuses held under the Five-Year Economic Censuses Program.

The 1985 census operation – our last economic census - brought many conceptual and operational improvements to economic statistic production. The use for the first time of the enterprise legal inscription number at the Internal Revenue Services as the identification code of the business units has permitted the linkage of all local unit/establishment of the enterprise. IBGE first developments towards the organization of a computerized central business register comes from that time. The idea was to fill up IBGE's business register with 1985 Census data and, afterwards, to update it with data from the IBGE's surveys and from administrative records.

For several reasons this project was not well succeeded: lack of resources, chronic delay of annual survey results, irregularity in receiving the administrative data, and last but

not least, the lack of standardization of two basic elements: the statistical unit and the industrial classification.

The territorial size of the country and the growing number of business units resulted in quite complex, costly and long-lasting censuses operations. In the 1985 economic census operation, 1,3 millions enterprises all over the country were surveyed by 30.1 thousand interviewers and 1,7 millions of questionnaires were filled. Census operation has started in July 1985 and its final results were published in January 1991.

1.2 Economic Surveys Program up to 1995

Annual surveys

The first attempt to enlarge the system beyond the census operation has happened late in the sixties when a quarterly survey covering industry activities was organized. In the nineteen seventies, the diversification of the economic statistics program has involved a systematic production of annual surveys and short-term indicators on Mining and Manufacturing activities. Later in the nineteen eighties, the Annual Survey Program was extended to Wholesale and Retail trade activities (1988) and Construction Enterprises (1990). A survey covering the universe of road transport enterprises (initial year in 1968) was also part of the set of annual economic surveys held by IBGE. In this framework, economic censuses have been used as the register base to the selection of the samples for yearly and monthly surveys.

For many reasons the Annual Economic Survey Program did not succeed in providing updated data in the intercensus period. Their results were systematically published with long delays (up to 6 years for the Manufacturing survey; up to 4 years for Wholesale and Retail trade; up to 3 years for Construction and Road transport).

The lack of an updated business register was a serious constraint, as the references taken from the census for sampling selection were rapidly out of date. On one hand, due to the delay in the availability of the census results. On the other, due to the business demographic dynamism, characterized by high rates of birth and death of enterprises.

Short term indicators

The Short Term Indicators System, including quantum and employment and salaries monthly indicators for Mining and Manufacturing activities, first developed in the nineteen seventies, revised and updated in 1981 and 1991, turned out to be the piece of resistance of the Brazilian Economic Statistics Program up to the nineteen nineties and the main source of data to National Accounts estimates for current year Production Account.

1.3 Standardization issues

As previously mentioned, a central problem in the Brazilian Economic Statistics Program was the lack of standardization of two basic elements: the statistical unit and the industrial classification.

The unit surveyed in the economic census operation as well as in economic surveys was the establishment. For multi-establishment enterprises, the whole business data was derived from an aggregation of data collected at the establishment level. Otherwise, since the 1975 Economic Census, IBGE has introduced the practice of breaking down the local unit of complex industrial plants in as many establishments in the sense of

statistical units as the different production lines or stages of production process held there could be associated to different classes in the industrial classification, in a clear attempt to come closer to the theoretical definition of technical unit of production¹. The consequences of this procedure were quite harmful for the Brazilian Economic Statistical System, mainly for industrial data. It has introduced additional difficulties both for the enterprise in fulfilling the census or the survey forms and for IBGE in collecting and processing the information. On the other hand, the lack of harmonization with the definition of legal unit adopted in business administrative files (local unit) limited the use of the administrative source to support the updating of the register or of survey samples.

In relation to industrial classification, there was little concern on national or international standardization. Classifications used by IBGE were, originally, based on the International Standard Industrial Classification ISIC-Rev1, at two-digit level, but, along the years, national revisions were not necessarily in accordance with the ISIC revisions. Otherwise, previous industrial classifications held by IBGE had not a comprehensive scope, limited to activities surveyed in economic censuses, and defined as a list of codes and activities, without description of their content. At different moments along the nineteen seventies and the eighties, governmental agencies have adapted and completed the scope of IBGE industrial classifications to use them in their administrative records. Although they have benefited from IBGE's expertise, these work was done without a systematic or synchronized discussion and revision of the classifications.

2. Revision of the Economic Statistics Program

Background

The first quarter of the nineteen nineties was a period of intense structural changes in the Brazilian economy due to the increasing opening of the economy, the intensification of the industrial restructuring process, the large dissemination of information and communication technologies and the multiple extension of outsourcing practices. In such environment it was only natural the increase of the demand for updated and diversified economic data. It became clear the inadequacy of the Brazilian traditional economic statistic system organization to respond to this demand. The lack of updated structural data was evident. In mid nineties, the 1985 Economic Census was the sole reference for structural data. The annual survey system turned out to be unable to answer the demand for updated structural business data in the intercensus period. And, at last, for reasons of budget restrictions, the 1990 Economic Census was postponed for several years.

Under these circumstances, it was clear the need to revise the model and the procedures until then adopted in the production of economic statistics, looking for other alternatives suitable to respond to the challenge faced by IBGE on how to produce, at a compatible

¹ "An establishment can be defined, as "an enterprise or part of an enterprise which independently engages in one, or predominantly one, kind of economic activity at or from one location or within one geographic area, for which data are available, or can meaningfully be compiled, that allow the calculation of the operating surplus" in International Standard Industrial Classification of All Economic Activities – Series M N° 4, Rev3, p.25.

cost with the environment of short resources, a set of integrated economic data that could meet the demand for more updated, diversified and of good quality economic data.

The pointed out solution was the rationalization of the system with wide use of sampling surveys and the articulation with administrative files and data.

In mid nineteen nineties, the size of the Brazilian business sector (formal sector) was already quite large, summing around 3 million enterprises, and representing around 50% of the GDP. However, in this universe the greatest part was made up of small businesses with relatively small participation in production. This feature of the Brazilian business organization was well revealed by 1985 Economic Census: 3,7 % of total enterprises responded for 86,4 % of the revenue and 59,4 % of the employment in the surveyed Business Sector. In 1995, business units with less than 20 employees, represented 96,4% of the universe of 3 millions active enterprises registered at the Internal Revenue Services, but only 39,6% of the formal business employment.

As the main aim of economic statistics is the measurement of the economic activity, it became clear that the design of economic surveys should take into account the uneven weighting in the business universe. Census operations surveying all enterprises are inevitably expensive and long lasting, but not necessarily the most efficient way to provide updated data on the structure of the economy. The crucial question was then how to develop and maintain an updated statistical business register covering the universe of enterprises to serve as central frame for sample design.

Articulation with administrative files covering the universe of enterprises of the country was essential. Since the nineteen seventies, Federal Government had started the process of computerizing their administrative files and records. A consequence was the improving of the effectiveness in the coverage of the business universe. Since the nineteen eighties IBGE has had access to individual business information from administrative files of Labor Ministry, but not on a regular basis so far.

The Program of Modernization of the Economic Surveys was then designed and implemented by IBGE, involving the transition to an integrated system of business surveys whose sample design is based in a central business register comprehensive of all business units in the country, systematically updated by the merging of data from IBGE surveys and from administrative files. The Program's main objective has been to improve the capacity and efficiency – in terms of quality, time and cost – to answer the growing and diversified demand of economic information.

Two questions were object of special attention in this process. On one side, a more effective attention has been given regarding standardization, aiming to enlarge the articulations among national sources of data, including economic data coming from administrative sources, and to promote the harmonization with international patterns, given the growing need of international comparability. In this respect a special objective has been the definition and implementation of standard national classifications and the definition of statistical units aligned to legal units definitions used in administrative records, corresponding to the ISIC revision 3 statistical definition of enterprise and local unit. On the other side, high attention has been given to the simplification of the data collection instruments and procedures, aiming to reduce the response burden to the

informer of the statistical surveys. Experience has shown that responses loose quality when overloaded survey forms are applied.

3. Structure of current Brazilian Business Statistical System

3.1 - General view

At current Brazilian Business Statistical System, the economic censuses have been substituted by annual sampling surveys in the production of data on the productive structure. The annual survey design takes into account the concentration of the productive activity in the segment of larger companies. The cut-off to separate by size the groups of enterprises that should have a differentiated treatment was fixed in 20 or 30 employees, according to the kind of activity. Enterprises above this cut-off receive differentiated treatment, all of them being surveyed annually, while the others, a numerical majority with relative small expression in terms of economic activity, are objects of a random sampling selection. This procedure makes possible the systematic production of data on the country's productive structure, at a smaller cost and in shorter time. The annual structural surveys constitute the central nucleus around which all other economic surveys - the product surveys, the monthly surveys and short-term indicators, or the satellite surveys – are articulated, forming an integrated system of information.

3.2 - Central Business Register

The Statistical Business Register is the instrument that makes possible this architecture. The Register lists and follows up the existence of the universe of enterprises and their dismemberments in local units (addresses), identifying them by name (social reason), location, the unique legal identification number, the activity code, the size (in base of the variable number of employees, salaries paid, income) and other elements needed to the administration of the register, constituting the reference base for the sampling design of the business surveys, besides other specific uses (studies on the demographic dynamics of the companies, on regional or by kind of activities distribution of the productive units, etc.).

The Central Business Register – CEMPRE – is a computerized register of enterprises and their local units maintained by IBGE. It is the reference of the universe of the units that compose the formal productive sector of the country, that is, the units registered in the Internal Revenue Services with a unique legal identification number². It includes also public administration organizations and non-profit entities.

Sampling design of all business surveys held by IBGE is based in CEMPRE's information on the four basic elements in the identification of the enterprises and their local units: the unique legal identification number, the location, the activity code and the size variables (volume of employees and salaries paid). On the other side, the IBGE's economic surveys feedback CEMPRE with the information collected and analyzed.

² The Informal Sector is object of a special national survey – Pesquisa da Economia Informal, held in 1997 and 2004. IBGE plans to hold this survey with a five years periodicity.

3.3 - Surveys organization

The economic surveys are organized into four subsystems referred to Industry (Mining and Manufacturing), Trade (Wholesale and Retail); Construction; and Services. Each subsystem covers the universe of enterprises that have their principal activity included in the productive segment it is comprised. As a general schema, the subsystems have the following organization: a central nucleus and a group of satellite surveys (special surveys). The central nucleus is composed by the annual surveys that provide structural data in substitution of the census data and the monthly surveys that are the base for the construction of short-term indicators. The satellite surveys cover with more detail specific themes. Themes as technological innovation or the impacts of the information and communication technology, however, have their universe of reference not limited to one of the subsystems. In this case, the surveys need to have a transversal character.

3.4 - Annual surveys

The annual structural survey has the double function of providing essential information to characterize the economic organization of the business sector - their structural characteristics and changes along the time - and of constituting the nucleus of information around which all other surveys data should be articulated.

The adoption of a common framework for concepts and definitions of variables guarantees the articulation among the four subsystems, making possible the construction of a coherent set of data on the productive system. The structural surveys are strongly referred to the concepts of the National Accounts, as their prior objective is focused on National Accounts demand for the estimates of production account and GDP.

Annual surveys of the four subsystems have some methodological characteristics in common: the enterprise as the basic unit of information; the sampling design with a certainty *stratum* necessarily including all medium and large companies; the focus on the production of national and sub-national data; and annual periodicity.

Industry, Construction and Services annual surveys raise information in two dimensions: activity and product.

3.5 - Monthly surveys

The monthly surveys are the basis to the construction of short-term indicators. Their main aim is the production of a set of data on the performance of the economy. The monthly surveys have their design and content integrated to annual surveys, as sub-samples of the units annually surveyed or by taking the same basis of the Central Business Register as reference to their sampling design.

3.6 - Satellite surveys

The satellite surveys have the function to enlarge the set of data of each subsystem, covering a variety of themes, whose choice reflects demands and priorities specific for each subsystem. They may be systematic or not. The reference universe, the space representation, the detail of the activity and other parameters are defined in agreement with the characteristics and the purposes of each survey. Usually their design corresponds to sub-samples of the annual structural survey. The articulation to the annual survey increases the potential of a analysis of the information produced.

4. Implementation of the Program of Modernization of the Economic Surveys

The program has been implemented by steps, not necessarily in sequential time:

- ? Revision and implementation of the national standard industrial classification
- ? Organization and managing of the Central Business Register
- ? Implementation of the annual surveys program
- ? Implementation of short term indicators program
- ? Implementation of satellite surveys

4.1 - Revision and implementation of standard economic classifications

Brazilian Industrial Classification

In the organization of data on economic activity the industrial classification is a key instrument and the standardization is necessary in order to promote the integration among different sources of data, national or international, and to preserve the consistence of temporal series.

The Brazilian experience in the implementation of a standard national industrial classification started in 1995, with the progressive use of *Classificação Nacional de Atividades Econômicas – CNAE*, derived from ISIC Rev3, in statistics data production as well as in administrative registers. It was a pre condition in the construction of an integrated system as proposed by the Program of Modernization of the Economic Surveys.

CNAE original version (December 1994) kept the structure of ISIC 3 at the section and the division levels (two digits), and introduced more categories at three and four digit levels. Updated in 2002 after the ISIC 3.1 version, CNAE 1.0 structure (present version) remains largely unchanged, identifying 223 groups and 581 classes.

As a standard national industrial classification, CNAE represents an essential infrastructure to the implementation of present structure of Brazilian Economic Statistic System.

The new approach of giving priority to international standardization has resulted in a quite extensive and broad revision of previous classifications with costs and benefits. Besides the benefit brought by the use of a standard classification, it is largely recognized that CNAE represents an important improvement in relation to previous classifications in terms of an updated structure, sounder methodological principles, better defined contents, accordance with the international standards and availability of tools to help users. These gains in quality were important to support decisions of implementing CNAE in statistics production and administrative records in spite of the high expenses of a process of changing classification.

The implementation of a standard classification has involved a significant cultural change among the users of the classification, at the Statistical Office and at the Public Administration. Two meaningful institutional arrangements should be mentioned as

well: at IBGE, the formal organization of a Coordination of Economic Classifications at a higher administrative level, and the organization of an inter-agencies classification commission - Comissão Nacional de Classificação (Concla) – with the participation of Federal Governmental agencies dealing with business administrative registers with the aim to promote the standardization of social and economic classifications, under the custodian of IBGE.

Other relevant point refers to the leadership of the Statistical Institute over this process, which had its expertise on the treatment of questions related to economic and social classification recognized along the time. Furthermore, this has been a way to improve the relationship between IBGE and other governmental agencies dealing with administrative records.

The cost of implementation of CNAE has laid on the inevitable disturbance in temporal data series, due to the quite radical change in relation to the structure of the previous industrial classification. The problem was largely felt in the industrial statistics, in special in the structural series (Census versus the new annual surveys), because they have faced at the same time a change in the basic statistical unit in their new surveys, as will be mentioned later.

Current version of CNAE is used throughout the Brazilian Statistical System for a large variety of statistics and surveys (e.g., enterprise surveys, household surveys, employment surveys and the System of National Accounts) as well as for administrative registers and files requiring industrial classification.

Products Classification

IBGE Products Classification Project has started with the definition of a detailed and comprehensive list of product descriptions and codes linked to the class level of the Brazilian Industrial Classification (CNAE) with the aim to be used in the collection of product data, following Eurostat PRODCOM patterns. Besides the *Mining and Manufacturing List of Products* (PRODLIST-Indústria), IBGE has defined similar lists for Agriculture and Fishing (PRODLIST-Agro/Pesca), Construction and for the following services activities: Transport, Information and Communication services (Telecommunication, Computer, Television and Radio) and Architectural and Engineering Consultancy. This project has been developed step by step, covering new activities as long as IBGE is able to implement product survey to collect product data. For the 2004 Services Survey, a new Product Supplement has being applied to the enterprises with main activity in advertising.

The industrial goods part of PRODLIST is derived from the NCM/HS, the nomenclature used in foreign trade. The services part of PRODLIST has been developed taking as reference the Central Product Classification – CPC and other countries experiences. PRODLIST is organized by origin of production.

PRODLIST-Industry has been implemented through the *Mining and Manufacturing Survey – Product*, since 1998; *PRODLIST-Services*, through the *Annual Services Survey - Product Supplement*, for selected activities, since 2000; PRODLIST-Construction, is applied in the Annual Construction Survey, since 2002.

4.2 - IBGE's Central Business Register

Given the strategic function of the Business Register in the new architecture of the IBGE Business Statistic System, the works of restructuring the pre-existent Register structure were prioritized, as well as the implementation of mechanisms and instruments for its systematic updating. Indeed, the quality of the economic surveys is closely related to the quality of the Register information as well as to the capacity to guarantee the Register coverage of the universe of enterprises and its systematical updating.

Through institutional agreement with the Ministry of Labor, IBGE has started to receive, in regular basis, the annual and monthly employment files with updated individual business information.

The Social Security Administrative Record – RAIS source provides data on name, location, type of business activity (industry code), number of employees, total of salaries paid, as well as information on new enterprises created. All major administrative records as well as business register uses an unique identification number for legal units given by the Internal Revenue Service. This 14-digit key-number enables a perfect linkage between administrative and statistical business registers, besides allowing the link of the enterprise to its local units.

The 1994 reorganization of IBGE's Register faced additional difficulties due to changes in two crucial elements in economic statistics: the industrial classification and the basic statistical unit.

Due to the extension of the changes in the industry classification structure, an inevitable consequence was the impossibility of exact conversion between CNAE's codes and previous classifications codes restricting the effectiveness of automatic procedures of reclassification.

On the other hand, quality of self-coded CNAE in administrative files is usually low. As 1995 was the first year of use of the new classification, the level of mistakes of CNAE code in RAIS files was supposed to be particularly high.

As already mentioned, in relation to the statistical unit in industrial surveys, IBGE had adopted as practice the extensive subdivision of the local units - specially in the most complex units. "Establishments" were identified for each production line or stage of the process, whenever the association with detailed activities in the classification of activities was possible. The consequences of this procedure were quite harmful for the economic statistics production, mainly for industry. Besides distortions in the measurement of the activities, this procedure was the origin of many problems faced in the industrial statistics production (organization and updating of registers, collection of information, etc.)

In the Revision process, IBGE decided to change his procedures and to adopt the local unit concept as the basic statistical unit, which is close to the definition of legal unit in administrative files, in substitution of previous concept of establishment which is close to the statistical definition of homogeneous unit of production.

The difficulties to deal with these two changes, made unfeasible the simple conversion of codes. In this context, it was clear the need of a field operation – the organization of

an special survey with the explicit objective of attributing the new code CNAE to the statistical units in the business register making the transition to a new classification and the adjustments to implement the new basic statistical units.

CEMPRE adopts in its statistical units the same concept of legal units used by the administrative records, that is, the enterprises are the legal units registered in the Internal Revenue Service and each of their different addresses is treated as an establishment. This means that the smallest unit CEMPRE (and all IBGE's business surveys) is able to delineate for the collection of data is a mix of local unit and establishment: one location, one or more activity, one legal identification (usually one for each local unit, but in a few cases it might be found more than one legal identification for the same localization)

A special and extensive Business Survey (sized 430,000 local units surveyed) was conducted in 1995/96 with the specific aim to improve the quality of the economic identification (CNAE code) at the local unit level in IBGE Business Register.

After the absorption of the Business Survey results, the Register was ready for its first use as frame for the sampling of economic surveys. 1996 Mining and Manufacturing and Trade annual surveys, revised to the new parameters, were the first surveys to have their sampling design based in CEMPRE and to adopt as statistical units the same concept of legal units used by the administrative records, that is, the enterprise and its local units/establishments (corresponding to one specific address) as registered in the Internal Revenue Service.

Besides using CEMPRE as a sampling frame, the annual surveys conducted by IBGE also feedback information to update the enterprises and local units, such as main economic activity, employment and operating status. The survey information prevails over the administrative data and includes all the largest business in each economic activity researched.

It is well known that the construction and maintenance of a Statistical Business Register is a long lasting project and that it's good quality is achieved over the time. Specific checking processes of the consistence of the information are largely used in view of the quality parameters of IBGE's Business Register. At the same time, a set of indicators are used to follow the evolution of the quality of the Register data. Along the time the improvements on its quality are evident.

CEMPRE has many other uses, besides serving as frame for sampling business surveys, like to serve as frame for other surveys, as a source to provide industry codes for every one interested in enterprises classification (as it is regarded as the best source to provide industry codes), annual statistics on the Business Register, etc.

4.3 - Implementation of the Annual Surveys

In 1996, IBGE has started the discussions on the revision of their two main annual surveys - the Annual Mining and Manufacturing Survey and the Annual Trade Survey aiming to adapt them to the architecture of the new system of economic statistics, taking in account their specific role as central element of integration of all other surveys in the subsystem. Two years later the revision process was extended to Services, a new survey referred to all business in non-financial services activities except health and education

activities. The complete revision of the Annual Construction Survey to fit the parameters of the new System was completed in 2002.

The revision of the annual surveys was extensive. This paper focuses mainly on the conceptual and methodological changes introduced.

Statistical unit

The complexity of the economic activity and their multiple organization levels (company, groups, local unit, production unit, etc.) introduces additional difficulties in the choice of the basic statistical unit in economic surveys. It is well known that there is no suitable option that could meet the need for analyses of all kinds of phenomena.

For this reason, a central question in the design of the economic surveys is how to take into account the diversity of types of units, without introducing complex or overlapping approaches, neither losing the perspective of the necessary consistency for the construction of a coherent system of information nor introducing additional burden to the informant.

In the new annual surveys, the basic statistical unit and main focus of attention is the enterprise.

Reasons of several natures justify the option of the enterprise as the basic unit of investigation, even in the cases of multi-located or multi-kind of activity companies. The enterprises are the real units that operate at the market. They are the units of decision, of juridical existence, the ones to assume financial duties and that stay ahead of the market transactions. Otherwise, it is at the level of the enterprises that relies the obligation to maintain accounting records. Therefore, it constitutes the unit adapted as for the analyses of the economic agents' behaviors as for the statistical observation of a set of variables.

On the other hand, it remains the problem on how to treat the enterprises with multiple locations or multiple kind of activities due to the fact that this heterogeneity is problematic for the analyses and studies on a regional or local approach or of specific kind of activity segments.

Enterprises operating in more than one kind of activity and at more than one location occur mainly in Manufacturing. Diversification within company is typical in industrial enterprises, which is frequently the case of the larger companies. Multi-located or multi-kind of activity enterprises are not important in number but are relevant in the share of production. In 2002, for instance, the industrial enterprise operating in more than one of the CNAE's Divisions were only 1,7% of total number of active industrial enterprises but their participation on the total industrial value added reached 33,6%.

For this reason, in enterprises with multiple locations or multiple kind-of-activity, the focus centralized in the enterprise must be complemented with the identification of the local units, in terms of their geographical location and main economic activity, and the information of a limited set of variables regarding the business activities in the local unit. This information (at the local unit level) is used as a parameter for the distribution of the global values informed at the level of the company. By this way, it is possible the construction of regional statistics or data by kind-of-activity. Otherwise, doing this way,

the coherence among the statistics at the enterprise level and for the local units is necessarily achieved.

This conceptual treatment of the multi located production within the company is translated into a survey questionnaire with the following composition:

A single survey form applied to the industrial enterprises in the certainty *stratum* is composed of two parts. In the first part, the information demanded is mostly financial results of the business and is referred to the company as a whole. In the form applied to the enterprise as a whole the variables have enough detail to meet the needs of National Accounts estimates of GDP but not too many due to the purpose of not burdening the informer. In the second part of the survey form, it is demanded for all productive local units the information on what they produce (permitting to give to each unit an activity code, in the most detailed level of the classification) and a limited set of information: number of employees, revenue, raw material purchases, wages and the total inversions in fixed assets.

Originally the Program had in mind the application of this methodology in both Trade and Services Activities surveys, besides Mining and Manufacturing. As a matter of fact, in the Trade Survey, it was tested in the first two years. However, for the sake of simplification, in special in the collecting stage, the Program has decided the use of this multiple activity sketch just in Mining and Manufacturing survey. In Trade and Services surveys, the enterprise is asked to inform the distribution of a few variables (revenue, wages and volume of employees) by Federal State of the Union.

The Brazilian Industry Classification

As already mentioned, the implementation of the new classification CNAE caused a great impact as it represents an extensive revision in relation to the previous one. On the other hand, the national standardization introduced by CNAE has permitted the data integration inside the statistical system and with external sources.

Sampling design

The sampling design of the annual surveys is highly influenced by two parameters: the concentration in the business world and the role of these surveys as a source of data on the structure of the productive sector, in substitution to the economic censuses.

The Central Business Register, covering the universe of enterprises, is the source of individual business data needed for sampling the business surveys: the unique legal identification number, the address, the code CNAE and the volume of employees and salaries paid in the year of reference.

Due to the uneven weight in the business universe, a differentiated treatment is applied according the size of the enterprises.

The pattern of the sampling design of the business annual surveys is described below.

The sampling frame is stratified into two *strata*. In order to provide domain estimates with controlled precision, the stratification matches the domains for which estimates are required. Hence the first level stratification divides enterprises into “natural *strata*”, defined by cross-classification of Federal States and industrial classification codes (CNAE), and the second level of stratification further divides enterprises of each natural

stratum in two “final *strata*” according to size class, thus matching the Federal State level domains. All the large enterprises (those with the size in the “above cut-off” class) are included in the survey with certainty, and the corresponding *strata* is called *certainty strata*.. Sampling in the non-certainty *strata* is performed by simple random sampling without replacement.

The cut-off to determine the population of these two *strata* was arbitrarily defined, taking into account the number of enterprises in the final selection, trying to balance two different criteria: a sound estimates of the universe represented, on one side, and the cost of the survey, specially the cost of the collection of the information, and the necessary time to produce results, on the other. The choice was a cut-off of 20 employees for Trade and Services activities and of 30 employees for Mining, Manufacturing and Construction. The cut-off refers to the number of employees, because this is the variable accessible in the IBGE’s Register that best fits the criterion of size of the enterprises.

The table below presents the size and composition of the samples in the 2003 business surveys held by IBGE *vis-a-vis* the size of the universe to be represented.

Number of enterprises surveyed and universe covered, 2003

	Mining and Manufacturing	Construction	Trade	Services	Total
Certain <i>stratum</i>	29 886	7 453	33 298	38 755	109 392
Sampled <i>stratum</i>	11 506	4 238	18 696	30 731	65 171
Total sampled	41 392	11 691	51 994	69 486	174 563
Universe covered	153 163	126 656	2 207 828	1 562 845	4 050 492

The cut-off on 20 or 30 employees has resulted, for the complete annual business survey operation, in a total size that, even impressive – 174,563 in 2003 operation - represents a small percentage of the whole universe – around 4 millions enterprises. It has been a reasonable size to be annually managed at the field operation. It has made possible the production of business statistics in a way at the same time efficient, fast and less expensive, if compared to Censuses operation.

On the other hand, the cut-off on 20 or 30 employees is enough to guarantee that all large and medium size enterprises are surveyed every year. This means that for the enterprises in the *certainty stratum* IBGE develops a census operation every year. Table below shows the weight of the enterprises in the *certainty stratum* in terms of revenue, employment and total enterprises. It varies from one activity to another, but always represents the majority of the group.

Weight of enterprises in the *certainty stratum* in 2002

	Total Revenue %	Employees %	Total enterprise %
Mining *	95,00	74,00	19,00
Manufacturing *	95,00	79,00	20,00
Trade	70,88	33,73	2,42
Hotel and restaurant	51,23	30,32	2,75
Transport	90,49	77,18	7,45
Communication	99,63	92,90	11,78
Computer services	86,17	59,47	2,67
Business services	65,93	70,26	4,14
Other services	64,45	40,97	2,37

* Mining and Manufacturing surveys do not cover enterprises below 5 employees

It is important to mention the high priority that has been given to questions related to the integration and articulation within each subsystem (main instrument: the Central Business Register), between the annual surveys (main basis, the reference to National Accounting concepts) and in relation to data from other sources, including the administrative ones (main tool: the standard industrial classification).

In the definition of the surveys content, that is, the variables to be surveyed, the National Accounts concepts and definitions were the basic reference. Annual surveys have their content focused to produce the data needed for the National Accounts GDP estimates. The key variables in the annual surveys are closely related to the demand of National Accounts:

- Revenue data complemented by variation on stocks for the estimates of the Value of Production concept;
- Costs and various components detailed for the estimates of the intermediary consumption;
- Number of employees and value of the salaries paid and social contribution cost for the estimates of value Added composition and the number of employees;
- Cost in the acquisition of fixed assets for the estimates of Capital Formation.

In addition, great emphasis has been given to the updating and regularity of the statistics production. The goal was to publish annual surveys results with a discrepancy no longer than 15 months in relation to the data reference year and to work with a calendar previously announced to the users. Although we have not reached the goal of disseminating the annual surveys data in 15 months, since we are now doing it in 17/18 months, we believe that in a short period of time we will be doing it in less time than defined in the original goal. Since December 2001, the dissemination calendar of annual surveys is announced in IBGE's website <http://www.ibge.gov.br/>.

Conceptual and methodological changes, already mentioned, were followed by extensive revision of the collection, editing and information dissemination procedures. These new procedures have benefited largely from progress in the information and communication technologies.

Product approach in annual surveys

Industry, Construction and Services annual surveys raise information in two dimensions: activity and product. Information on product level has the support of a detailed and comprehensive product list – PRODLIST – linked to the class level of the national industrial classification. In the Industry subsystem (Mining and Manufacturing), the activity and product dimensions are object of separate surveys, with different statistical units – the enterprise for the information on business activities and local units for data on product. In Services activities, information on the product level is a supplementary part of a unique survey form that has the enterprise as basic unit of information. The implementation of product supplements in the Services survey has been done by steps, due to the experimental character of product surveys in the services sector. Construction Annual Survey includes product information on a list of types of construction and services.

The systematic collection on product information represents an important upgrade in the Economic Statistical System. Besides being relevant to market and other analyses they are part of the necessary infrastructure for the development of producer prices indexes.

4.4 - Implementation of short term indicators program

As mentioned before, the short term indicators system on Mining and Manufacturing production and employment, first developed in the early nineteen seventies and revised twice in 1981 and 1991, respectively, was, besides the economic censuses, the sounder part of the Brazilian business statistical program up to the nineteen nineties. The monthly quantum indicator for Mining and Manufacturing has been for some years the main source of data for National Accounts estimates of GDP.

Next step then was to update their basis in accordance with the new organization of the business statistical system. At the same time, short-term statistics should be enlarged to other business segments, as for instance the retail trade.

The works on the revision of the monthly indicators on employment and wages in Mining and Manufacturing have started as soon as the results of the revised annual survey were available. The new series started in 2001 and data are available since 2002 for a group of 18 manufacturing activities (CNAE 2-digit level or an aggregation of them) and for 16 regional areas.

The revision of the monthly indicators on physical production started later, after the results of the Annual Product Survey were available. The new series, referred to CNAE and PRODLIST, started in 2002 and are available since 2004. The new series are linked to the previous one, having 1991 as its initial year.

After 2000 IBGE's short-term indicators system was enlarged to retail trade. The retail trade survey refers to the enterprises with 20 or more employees. The survey collects information on sales value and disseminates two kinds of indicators: in current value and in real volume (deflation being done with specific price indexes based in data from the Consumer Price Index System).

4.5 - Implementation of satellite surveys

Satellite's surveys have the function to enlarge the set of data of each subsystem, covering a variety of themes whose choice reflects demands and priorities specific for each subsystem.

The first survey organized in this framework was the Technological Innovation Survey, -PINTEC, in 2000, covering manufacturing enterprises with 10 or more employees, as part of the program of the Subsystem of Industrial Surveys. For the first time IBGE has used the Computer Assisted Telephone Interview – CATI as the collection method for the majority of the 11000 enterprises surveyed. PINTEC 2003 was implemented with the same scope as the previous survey. The results have just been published. Next PINTEC shall have its scope enlarged to include other activities, such as computer services, communication, etc. Indeed, themes as technological innovation or the impacts of the information and communication technologies are not limited to one of the subsystems of business surveys organized so far in IBGE. For the future, IBGE may organize a specific Department to carry all surveys related to the New Economy, taking into account their transversal character.

5. Appraisal of the Brazilian experience and near future challenges

The transition to an integrated system of business survey based in a Central Business Register was the IBGE's option for the production of updated economic statistics which has permitted to follow up the Brazilian structural changes and, at the same time, the short term performance of their main business segment. It was quite a task, neither easy or immediate, but very instigating for the Institution. It took almost 8 years to complete the revision of the hard core of the Economic Statistical System. By now, looking back to the economic statistics situation at the early nineteen nineties, we felt that the right option has been chosen. The proposed goals have been achieved. IBGE has nowadays a structured Business Register continuously updated; a national standard industry classification used in all IBGE's statistical surveys and by public administration (administrative records); updated statistics on the productive structure of the business sector of the economy and an set of short term indicators.

The investments in two basic elements of the infrastructure of the economic statistical system, the economic classifications and the organization and management of an statistical business register, were the key elements in the alliance formed with other governmental agencies responsible for administrative files on business agents. The standardization of the Brazilian industry classification has contributed for the indispensable update of IBGE's Central Business Register using administrative files, besides being an instrument for the integration of inside and external data sources. The well succeed development of the Central Business Register merging information from administrative files, in special the information on the birth of new enterprises, and from economic statistic surveys, in special to improve the quality of the industrial classification code, has been essential to allow the transition to an integrated system of business surveys.

A relevant aspect has been the better image conquered by IBGE among all kind of users of economic data considering that, after the revision process, the annual and monthly surveys have been produced with effectiveness of time, with transparent

procedures and with a pre determined semester calendar. It is important to mention that the increasing use of information and communication technologies in IBGE was essential for the modernization of the economic survey system.

Updated economic statistics coming from annual surveys and the set of short term indicators have been essential both for the construction of a new base year as for the construction of the current GDP estimates. At the same time, a strong and permanent increase in the number of users of the annual survey data can be observed. Demands for tailor-made information by several kinds of users (public organizations, researches, universities, enterprises, etc) are the evidence of the new possibilities an integrated system may offer. Closer contacts with an increasing group of users, governmental agencies, business entities, universities, the media, etc has also increased the information of IBGE's production and the recognition of the importance of the role of the Statistical Institute.

New challenges are continuously being faced by IBGE in the field of economic statistics: the development of Producer Price Index, the construction of short term indicators for measuring the services activities performance, the revision of the Brazilian Industrial Classification - CNAE, based in ISIC 2007 revision and the organization of new surveys to understand the phenomena of the impact of the new information and communication technologies, the ICT's surveys.

Looking ahead, there is a long way to go...

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