INSTITUTO NACIONAL DE ESTADISTICA

Harmonized Business Demography

General Methodology

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1 Introduction

The management of Business Registers is one of the strategic activities of Organisations with jurisdiction in Public Statistics, since they are key tools in the effective development and coordination of surveys, favouring the balanced distribution of the response burden. The availability of an operative Register is essential, as it takes part both in the design and sample selection, and in the creation of raising factors.

Within the scope of the European Union, domestic processes for managing Economic directories have undergone gradual adaptation over time. Currently, the National Statistics Institutes of the Member States must fulfil the commitments of Regulation (EC) No. 177/2008 of the European Parliament and of the Council, of 20 February 2008, establishing a common framework for business registers for statistical purposes. The aforementioned legal instrument is part of the set of requirements on infrastructure, together with the Classifications and Statistical Units, which all countries must comply with prior to reach significant harmonization on a supra-national level.

The Central Business Register of the INE (CBR) covers the central objective required as an infrastructure tool, that is, to serve as a central sampling framework for the majority of surveys targeting companies and included in the National Statistical Plan. Aside from this basic usefulness, in recent years the CBR has been playing a relevant role in other areas of interest, such as business demography, involving the development of new practices and initiatives with strong innovative components. These applications strengthen the role of the CBR as a statistical-data-generating element, taking into account not only static aspects, but also those linked to business dynamism.

The conclusions of the Lisbon European Council in 2000 were the cornerstone of the statistical development of Business Demography. The policies geared towards creating companies are based on the establishment of conditions that favour innovation, competitiveness, use of new technologies and creation of employment. In this sense, the entrepreneurial frame is considered as crucial element for achieving the objectives proposed in the Lisbon strategy, identified as a key factor for driving economic growth.

In the last decade, the Statistical Office of the European Union (Eurostat) promoted an action programme known as the *Business Demography Project*. In the year 2000, a Working Group was created with the purpose of generating a methodology and common processes to be applied by all participating countries. Phase one of the project consisted of performing a Feasibility Study restricted to certain economic activities. In so doing, the ability of Member States to generate relevant information in this field was quantified, and the level of adaptation of this information to harmonised methodological requirements was identified. From year 2002, the project has been carried out progressively on a wide range of economic activities, identifying populations of interest, as well as associated classification variables. Currently, statistical data on Business Demography have been included in the Annex IX of Regulation (EC) No. 295/2008 of the European Parliament and of the Council of 11 March 2008 concerning structural business

statistics, which requires of all States Members to provide information on Business Demography with annual periodicity.

Lastly, it should be pointed out that Harmonised Business Demography appears in the Inventory of State Administration Statistical Operations (IOE), with code 30204, and that it is included in the 2018 Annual Statistical Programme, with number 7282.

2 Objectives

The overall objective of the Harmonised Business Demography is to provide aggregated information regarding the population of enterprises located in the national territory, considering the aspects linked to business dynamism and applying a methodology agreed on within the scope of the European Union.

This methodology provides the guidelines that enable identifying populations and generating indicators regarding the stock, births, deaths and survivals of enterprises, through a harmonised statistical operation on the Business Registers (Central Business Register or CBR in our case) managed in Statistics Offices.

In addition, the information obtained on a national level has the purpose of meeting the legal requirements of (EC) Regulation No. 295/2008 and becoming a part of the set of structural indicators of the European Union, essential for the annual assessment of the situation and evolution of the European economy.

The indicators on Harmonised Business Demography must therefore fulfil several objectives, making up a statistical base to be used as an useful instrument for assessing the effectiveness of economic policies, profiling policies to be carried out in the future, enabling the work of researchers, or even identifying the best time for companies themselves to invest in new resources or undertake organisational changes.

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3 Data source and time reference

The processes developed for generating demographic indicators take as their starting point the data contained in the INE Central Business Register. The CBR is an organised information system with data for identifying, locating and classifying enterprises operating within Spain, and which is yearly updated. The scope of the maintenance processes affects the entire population and enables the detection of the most significant changes relating both to the existence, and to the main features, of the registered units. This is possible thanks to the reception of a very broad set of sources for which the Management Unit of the CBR has access in identified microdata format.

The prior categorisation of the set of units entering, staying and leaving the system constitutes the basic initial subpopulations. In addition, it is necessary to consider the activity status of the units in historical versions of the CBR, in order to delimit survivals following a number of years.

The time reference considered for the demographic information corresponds to the calendar year, a requirement that is compatible with the update period of the CBR. Specifically, the data appearing in this publication has the year 2016 as the time reference, though in order to be able to study the phenomenon of enterprise survivals properly, following Eurostat methodology, previous years are turned to.

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4 Statistical unit of reference

The demographic indicators are obtained for the *enterprise* unit, which according to Council Regulation 696/93 on statistical units, is defined as *the smallest combination of legal units that is an organisational unit producing goods or services, which benefits from a certain degree of autonomy in decision-making, especially for the allocation of its current resources*.

In practice, it is possible to obtain data from legal units, given that the final result of all the processes to be carried out is sufficiently close to the established concepts of real births and deaths of enterprises.

This statistical operation covers all economic activities of NACE Rev. 2, except for Agriculture, forestry and fishing (Section A), Public administration, Defence and compulsory Social Security (Section O), Activities of households as employers of domestic staff (Section T) and Activities of extra-territorial organizations and bodies (Section U). Similarly, activities of *holding* companies (NACE Rev. 2 class 6420) and units non-market oriented have not been included.

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5 Demographic categories and general processing

The delimitation of populations of interest is carried out by means of an ordered set of procedures varying in nature, designed in accordance with the harmonised methodology principles. Work is basically geared to identify the following aggregates:

- *Stock of enterprises*.- Set of units that have been active during all or part of the reference year. This includes those enterprises that are economically active at the end of the period, plus those enterprises that have totally ceased their activities throughout that period.
- *Enterprise births*.- Set of units that, throughout the reference year, have created a combination of new production factors. There is no connection with other previously existing enterprises.
- *Enterprise deaths*.- Set of units that, throughout the reference year, have dissolved all of their production factors. They have no link with other enterprises that might begin to operate.
- *Surviving enterprises*.- Restricted to each cohort of births, this corresponds to the set of units that continue to be economically active in each of the five years following that of birth.

Therefore, Business Demography analysis is not limited to just quantify the flows obtained during the processes of updating the Business Register. Delimitation and tabulation of the set update of legal units that enter, stay or leave each year, are normally obtained from movements detected in the administrative sources supplying information. In Spain, this kind of data is disseminated periodically on the INE website, under the title of *Movements of the CCD*, and it constitutes an informative base linked to the operation *Statistical use of the CCD*. Although the analysis of movements from administrative sources provides an initial preview of unit renewal processes, the statistical work to be carried out for obtaining harmonised demographic indicators demands an additional effort, contributing added value to the administrative information. Indeed, the purpose is to obtain data most pertinently reflecting the economic frame and its evolution over time. In accordance with this principle, the correct delimitation of demographic categories requires the incorporation of at least the following procedures:

- **Detection and removal of units that enter / leave as a result of production factors redistribution (mergers, take-overs, break-ups, split-offs ...), because they are false births and false deaths.**

  Demographic events that affect enterprises may be due to existential changes in the production factors or to changes in the distribution of existing production factors.

  Existential changes are due to creation or dissolution processes of production factors, and are linked to the enterprise births or deaths. They are featured because a single company is involved after the event and none before it (birth) or vice versa (death).

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However, changes in distribution require the presence of at least one enterprise, both before and after the event. In this typology, there are enterprises integration phenomena, for example, under merger or take-over modalities, which generate a concentration of production means and a resulting reduction in terms of units. Conversely, the events of total or partial split-off generate a dispersion of production factors and an increase in the number of existing enterprises. The units involved in this type of phenomena should not be counted as births or deaths.

- **Criteria of statistical continuity (legal support, main economic activity and main location).**

  These criteria have been set to distinguish between *administrative* and *statistical* events. In practice, a large proportion of demographic events may be detected from the flows of units recorded in the administrative sources.

  However, not all administrative changes are sufficient for conditioning the identity or continuity of an enterprise as a statistical unit, and therefore, should not be treated as demographic-type movements. In this sense, the harmonised methodology has established a simple set of continuity rules.

  The agreed criteria for deciding on the continuity of an enterprise are legal support, main economic activity and main location. When at least two of these elements change, then there is considered to have been a loss in continuity. As a result, a birth or a death of an enterprise should be counted.

- **Special monitoring of large companies**

  The relative weight of this population in the business frame justifies the development of special control operations in order to suitably classify movements associated with these units. Thus, standard procedures are supplemented with validation operations aimed at capturing pertinent information regarding the causes associated with the phenomena of birth and death, which normally requires querying specialised databases (Mercantile Register and others) or access to websites.

The methodology underlying the Harmonised Demographics of Enterprises has been conceived in order to obtain demographic indicators on a national level, given that the objective is to have access to a comparable statistical base for European Union countries. Therefore, the previous processes are applied for the set of units resident in the national territory. Development of a similar methodology, albeit centred on lower territorial scopes such as Autonomous Communities, would generate demographic indicators that would not be consistent with the national aggregate. For instance, a company that changes activity within an Autonomous Community (even if the main activity at a national level does not change), or moves from one Autonomous Community to another, may give rise to different demographic events if observed from different geographical contexts. Nonetheless, this publication has proceeded to break down, by Autonomous Community, the national data on the stock, births and deaths of enterprises, in order to provide a territorial approximation of the most relevant phenomena of business demography.

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6 Specific procedures

The *stock of enterprises* is determined once the annual CBR maintenance processes have finished, considering the set of active enterprises at the end of the year, plus companies that have ceased activity during the course of the year.

Regarding *enterprise births*, the objective is to produce data on the creation of enterprises that start from scratch, and which have truly begun to mobilise new production factors. Therefore, it should be exclude those entries in the CBR due to mergers, splits, internal restructuring of a group of companies or simple changes of activity. In addition, the following cases are excluded:

- New units that simply take the activities from a previously created enterprise.
- New units created for the sole purpose of providing a single production factor (such as estates or staff) or of developing an ancillary activity for a previously existing enterprise.
- Legal form changes to an existing enterprise.
- Reactivated enterprises, when resuming their activity within the 2 years subsequent to the previous ceasing of activities.
- Joint ventures that do not imply the birth of new production factors.

The following outline offers a general perspective on the set of processes.

Identification of enterprise births (Year t)

Population	Criteria used	Aggregates
Enterprises in CBR (t)	Mobilize production factors in t	N_t
Enterprises in CBR (t-1)	Mobilize production factors in t-1	N_{t-1}
Entries in CBR (t)	Comparison between N_t and N_{t-1} taking into account the common identifier, and deleting reactivations	X_t
Populations obtained by matching or other procedures	Matching by Location + Activity Code (X_t and N_t)	X_1
	Matching by Location + Name (X_t and N_t)	X_2
	Matching by Activity Code + Name (X_t and N_t)	X_3
	Sole Changes of the Support Legal Unit	X_4
	Identification of Ancillary Legal Units and Joint Ventures	X_5
	Access to external information (Mercantile Registers, Private Databases, Internet, etc.)	X_6
	Capture of information by means of validation operations (Control on large enterprises)	X_z
Real enterprise births in t		$X_t - U(X_1,..,X_z)$

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Regarding *enterprise deaths*, the process is similar to identifying enterprise births. In consequence, CBR exits due to mergers, take-overs, split-offs or internal restructuring within an enterprise group should not be counted. The application of statistical continuity criteria likewise entails that simple changes of activity or legal form changes should also be excluded. With regard to temporary ceasing of activity, companies resuming their activities within the two years subsequent to the earlier ceasing will not be counted either. Therefore, it is necessary to have the CBR updates available, corresponding to the years t+1 and t+2, in order to remove the reactivated units.

With regard to the phenomena of *survivals*, an enterprise active in year t-1 is considered to have survived in year t:

- If the unit serving as main legal support for the company remains active during year t (survival without changes).
- If said legal unit has been delisted in the CBR, but its activities are taken by a new legal unit created to manage the previously existing production factors (survival having changes).

The survival phenomena must always be observed between two consecutive years. Thus, an enterprise born in year t-2 must be considered to have survived in year t, but only if it was also active in year t-1.

Newly born enterprises do not usually start moving large amounts of resources in the year in which they are created. In order to assess their actual impact on the economy, it is necessary to carry out monitoring for a longer period of time. Specifically, the harmonised methodology establishes that each cohort of enterprise births should be studied for a period of five years. In practice, survivals at the end of the different years are identified from populations generated as enterprise births, and from monitoring the populations in subsequent versions of the CCD.

7 Classification variables

For each demographic category identified, listed below are the classification variables and the modalities adopted for each one of them.

7.1 Legal form

It is obtained from the first character of the tax identifier (N.I.F.) corresponding to the unit used as legal support by the enterprise. Not applicable to surviving enterprises. The following modalities have been considered:

- Sole proprietors
- Limited Liability Companies
- Partnerships and other legal forms

7.2 Size class

The following categories have been considered:

- 0 employees
- 1 to 4 employees
- 5 to 9 employees
- 10 employees or more

7.3 Main economic activity code

The level of detail corresponding to NACE Rev. 2 Divisions (two digits).

7.4 Autonomous Community

The national data on the stock, enterprise births and deaths have been broken down by Autonomous Communities and Cities, according to the region where the enterprises headquarters are located. Autonomous Communities and Cities are named according to the standards of the INE.

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8 Demographic indicators

The indicators proposed in the methodology quantify the relative significance of the phenomena of enterprise births or deaths within the Spanish entrepreneurial frame. The survival phenomenon is similar, but taking as a reference the population of enterprises created in the initial observation period. Shown below:

Birth rate

$$TR_i^t = \frac{R_i^t}{N_i^t} \times 100$$

$R_i^t = Births\ of\ enterprises\ in\ activity\ i\ in\ year\ t$

$N_i^t = Enterprise\ stock\ in\ activity\ i\ in\ year\ t$

Survival rate

$$TS_i^{t+k} = \frac{S_i^{t+k}}{R_i^t} \times 100$$

$S_i^{t+k} = Survival\ in\ activity\ i\ at\ the\ end\ of\ t+k,\ k = 1,2,...$

$R_i^t = Births\ of\ enterprises\ in\ activity\ i\ in\ year\ t$

Death rate

$$TD_i^t = \frac{D_i^t}{N_i^t} \times 100$$

$D_i^t = Deaths\ of\ enterprises\ in\ activity\ i\ in\ year\ t$

$N_i^t = Enterprise\ stock\ in\ activity\ i\ in\ year\ t$

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9 Data series

The presentation of results on Harmonised Business Demography has been structured in a set of tabulations, divided into four series, corresponding to each target demographic category of study: Stock, Births, Survivals and Deaths of enterprises, with 2016 being the main reference year. In additional, included in the Graphic Annex is a set of graphs obtained from the demographic indicators described. These enable users to view the significance of the different events considered, even with a broad time perspective.

Described below is the list of tables generated, according to the classification variables used, and the content of the annex.

Series 1: Stock of enterprises

Stock of enterprises, by size class and main activity

- National total
- Autonomous Communities and Cities

Stock of enterprises, by legal form and main activity

- National total
- Autonomous Communities and Cities

Series 2: Enterprise births

Enterprise births, by size class and main activity

- National total
- Autonomous Communities and Cities

Enterprise births, by legal form and main activity

- National total
- Autonomous Communities and Cities

Series 3: Surviving enterprises

Surviving enterprises, by year observed and main activity

These series are obtained for the cohorts of enterprises born in 2011, 2012, 2013, 2014 and 2015.

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Series 4: Enterprise deaths

Provisional enterprise deaths, by employee size class and main activity

- National total
- Autonomous Communities and Cities

Provisional enterprise deaths, by legal form and main activity

- National total
- Autonomous Communities and Cities

It should be borne in mind that the data on enterprise deaths referring to 2016 is provisional, since it has not yet been possible to identify the companies reactivated in 2018, and which should be subject to removal, in accordance with the harmonised methodology. The data appearing in the tables are estimated by taking the deaths detected in 2016 and that have not been reactivated in 2017. A small percentage of units is randomly excluded from that population base, in accordance with the experience of previous years regarding reactivations in the second year.

Reference to the annex: List of graphs

The set of graphs included in an annex with this publication has the purpose of showing, from a time perspective from 2008 to 2016, the main magnitudes obtained for Spain in the domain of Business Demography.

The following lists the graphs are obtained:

Series 1.- Stock of enterprises

Graph 1.1: Distribution by economic sector

Graph 1.2: Distribution by size class (number of employees)

Graph 1.3: Distribution by legal form

Series 2.- Enterprise births

Graph 2.1: Rates by economic sector

Graph 2.2: Rates by size class (number of employees)

Graph 2.3: Rates by legal form

Series 3.- Survival of enterprises

Graph 3.1: Survival rates in cohorts, from 2008 to 2015

Graph 3.2: Survival rates in the cohorts from 2011 by economic sector

Series 4.- Enterprise deaths

Graph 4.1: Rates by economic sector

Graph 4.2: Rates by size class (number of employees)

Graph 4.3: Rates by legal form

Series 5.- Net rates

Graph 5.1: Net rates (births – deaths) on total units

Series 6.- Autonomous Communities

Graph 6.1: Birth and death rates in 2016, by Autonomous Community and City

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