

Spanish Regional Accounts, base 2000. Homogeneous series 1995 - 2006

Methodological note

Introduction

The purpose of this document is to explain the procedure followed in the compilation of a homogeneous series, since 1995, of the main aggregates of the functional perspective of the Spanish Regional Accounts, base 2000.

In this way, in addition to fulfilling the requirements of the Statistical Office of the European Communities, Eurostat, regarding the table transmission programme covered in the ESA- 95 Regulations ¹, this homogeneous series has the objective of satisfying the demands expressed by different national and international users, of the Spanish Regional Accounts (SRA).

Informative content in the homogeneous series

The retropolation of series to 1995 has been carried out for Gross Domestic Product at market prices (GDP), and regarding the main regional aggregates of the production activities: Gross Added Value at basic prices, employee remuneration and total and wage-earning employment, all by branch of activity.

Both regional GDP and Gross Added Value, by branch of activity, have been estimated both at current prices and in terms of linked volume. Total and wage-earning employment have been estimated in terms of job posts.

The breakdown by branch of activity that the homogeneous series offers is as follows:

- Agriculture, livestock and fishing (sections A and B of CNAE 1993)
- Energy (subsections CA, CB, DF and E of CNAE 1993)
- Industry (section D of CNAE 1993, except DF)
- Construction (section F of CNAE 1993)
- Services (sections G to P of CNAE 1993)
- Non-market services (sections L and P, and part of sections M, N and O of CNAE 1993)

The content of this note is structured in two large sections. The first presents, in detail, the available regional accounting information, and describes the conceptual and statistical changes that were implied in the introduction of base 2000 in the SRA, as compared with the previous accounting base from 1995. Lastly, the second section details the procedure followed to link the series of the accounting aggregates in the two bases.

¹ Compiled in the framework of the European Union in the form of Council Regulation number 2223/96, and therefore, mandatory for Member States

Available accounting series in bases 1995 and 2000 for the Spanish Regional Accounts

SERIES 1995 - 2004, BASE 1995

In June 1999, the INE published the first results of the Spanish National Accounts, base 1995 (SNA-1995), those corresponding to the 1995-1998 series. Subsequently, the INE published the results, from base 1995, of the Spanish Regional Accounts (SRA-1995), which provided the regional estimates of the main economic aggregates, consistent with the results of SNA-1995.

Base 1995 of the SRA implied an important qualitative leap with respect to the previous regional accounting bases, from a methodological point of view, given that it was the result of the implantation, in the framework of the regional economic accounts of the European System of National and Regional Accounts 1995 (ESA-95). In this sense, worth noting is that ESA-95 is characterised by including, in addition to the customary conceptual innovations, two elements that make it different from the prior accounting systems from the regional perspective. This is, on the one hand, the inclusion of a specific chapter dedicated to the regional accounts, and on the other hand, their adoption, in the form of a Regulation of the Council of the European Union (Council Regulation of the EEC 2223/96 of 25 June 1996), which, for the first time, establishes the compulsory nature, for all Member States of the European Union, of using the ESA-95 methodology to obtain the estimates for national and regional accounts.

SERIES 2000 - 2006, BASE 2000

On 19 May 2005, the National Statistics Institute presented new base 2000 of the Spanish National Accounts (SNA-2000). In December of the same year, the first regional results consistent with the above were published, the 2000-2004 series of base 2000 of the (SRA-2000).

The changes that new accounting base 2000 introduces in the national and regional accounts are both conceptual and statistical. The following paragraphs explain each one of these changes.

Conceptual changes

Treatment of the Financial Intermediation Services Indirectly Measured (FISIM)

Regulations 448/98 and 1889/2002 establish that, as of the year 2005, the FISIM must assign themselves to the sectors and branches of activity that use said services, in addition to establish the form in which they should be calculated.

Broadly stated, FISIM could be defined as the indirect income obtained by financial institutions from transactions involving deposits and loans performed with their clients.

In base 1995 of the Spanish National and Regional Accounts, the FISIM were produced by the financial institutions, thereby forming part of their production value, but they did not assign themselves to the sectors and branches of activity that used them, but rather were consumed intermediately in their entirety by a fictitious sector/branch of activity.

This fictitious sector/branch of activity was characterised by having a null production, and an intermediate consumption with the same value as that of the production of FISIM. In this way, the added value of this branch was negative, and of an equal amount, but in the opposite sign, to that of the production value. Thus, the gross added value generated by the different institutional sectors of the economy, was reduced in the amount of said negative value, therefore being neutral as regards the amount of Gross Domestic Product.

In base 2000 of the SNA and SRA, however, following the guidelines established by the aforementioned Regulations, the use of the FISIM is no longer completely registered as intermediate consumption of a fictitious branch/sector, but rather, it is assigned to the user sectors/branches. Thus, for households, non-profit institutions serving households, and public administrations, the use of these services constitutes final consumption expenditure. Likewise, for all of the institutional sectors, it constitutes an intermediate consumption of their productive activity. In addition, depending on the residence of the agents, these services may constitute exports and imports of services. As a result of all of the above, Gross Domestic Product of an economy is affected by the volume of FISIM used in the accounting exercise.¹

Measure of the variations in volume. Introduction of a new price adjustment method

In compliance with Committee Decision 98/715², SNA-2000 and SRA-2000 introduce an important change as regards the measurement of the growth of the accounting aggregates in terms of volume.

Thus, the level of the aggregates at constant prices will not be referring to a fixed base year, as was done in base 1995, but rather, the reference will always be the previous year (mobile base). In this way, the interannual growth of each period will be linked with those of the previous exercises, forming a temporal series of linked volume measurements, which shall be presented in the form of index numbers, referring to the year 2000, (year 2000 = 100). Therefore, the structures used in the estimation of the interannual growth will continuously be updated, with the estimation of said growth being more precise.

Since 2005, the Member States of the European Union have progressively been introducing this change into their national accounts. This methodology had already been implemented in the United States, Canada, Australia and Japan, which allows for comparing the European results with those of these other economies.

However, this new methodology presents several disadvantages, among which is the lack of additivity of the data valued through volume linking measurements. That is to

¹ For more information regarding this methodological change, the INE website provides Council Regulation number 448/98, which completes and amends Regulation 2223/96 regarding the assignation of the Financial Intermediation Services Indirectly Measured (FISIM) in the European System of National and Regional Accounts (ESA-95) and its Regulation on implementation, number 1889/2002.

² This Decision only governs the case of annual accounts. There is no legal requirement for introducing this technique in the regional accounts, given that ESA-95 does not consider, in the case of the regional accounts, the estimation of the aggregates at constant prices. Nonetheless, for reasons of consistency with the national accounts, SRA-2000 also applies this methodology.

say that, for example, the estimates of aggregated GDP in year t, obtained through volume linking measurements, will not coincide with the sum of the components of said aggregate, either from the perspective of supply or from the perspective of demand, in years t-2 and prior. Additivity is only ensured for years t-1 and t. Likewise, spatial additivity is not present for years t-2 and prior either, and therefore, the sum of the GDP of the regional territories will not be the same as GDP of Spain, as a result of the strict application of this methodology ¹.

Statistical changes

This type of change is due to the introduction of new sources of statistical information, appearing since the previous accounting base.

Among the changes introduced by SNA-2000 and SRA-2000, worth noting are:

- The incorporation of the population estimates based on the Census of 2001, and on the data from the Continuous Register.
- The use of the estimates of the employment variable provided by the new Economically Active Population Survey (EAPS-2005), duly adjusted to the conceptual and methodological characteristics of the national and regional accounts.
- Incorporation of the data of the Public Administration Accounts, base 2000, compiled in the area of the working group comprised of the General Intervention of the State Administration, the Bank of Spain and the INE.
- New estimation methodology of the data on the foreign trade of goods and services, in coordination with the Balance of Payments compiled by the Bank of Spain.
- Use of the data provided by the Annual Services Survey in the estimation of the accounting flows of these branches of activity.
- Incorporation of the results of the new, short-term surveys on industrial activities, services activities and Labour Costs (IPI, IPRI, Short-term services sector indicators, etc.).
- Revision of the accounting flows of the agrarian branches, for the purpose of making their data homogeneous with the data from the Economic Accounts of Agriculture, compiled by the Ministry of Agriculture, Fishing and Food.
- New estimation of the production value of imputed rent, that is, the rent generated by the households that are owners of their dwellings.

¹A greater degree of detail of the characteristics of this methodology and of its effects may be viewed in the document, Introduction of the volume linking measurements in the Spanish National Accounts, available on the INE website.

Procedure for the compilation of the homogeneous series

The objective is to build a series of the main aggregates of the SRA that covers the 1995-1999 period, and that is methodologically homogeneous with published accounting base 2000. Thus, the year 2000 shall be the accounting base year, and the reference year of the volume linked indices of the homogeneous series.

Estimates of Gross Added Value (GAV) at current prices

The principle that has been considered at the time of performing the link of the series of both bases, is that the estimates of the base years are of a structural nature, and that, therefore, from a statistical point of view, they will not be revised. Thus, the only possible differences in the estimates from the year 1995, bases 1995 and 2000, will be those that arise from the methodological differences.

Therefore, in order to link the added value series at current prices, the first task to be carried out will be the estimation of the methodological differences, which, at current prices, only affect the treatment of the Financial Intermediation Services Indirectly Measured (FISIM). Thus:

- We should estimate the amount of FISIM that is intermediate consumption in each branch of activity for each territory
- We should revise the production of branch of activity J (financial intermediation), for each territory

Once the effect of the FISIM is eliminated, the only differences that exist between the data of the two bases are those that are due to statistical changes.

Thus, in the year 2000, we will have two estimates. The first, obtained by the extrapolation of the data with the structure of base 1995, and the second, estimated directly within the framework of base 2000. The differences between both estimates are due to the statistical changes, and given that information is not available regarding how and at what time they have been generated, it is assumed that this has occurred progressively over time, from the beginning of the previous base.

Formally speaking, assume that X_{95} , X_{96} , ..., X_{00} are the estimates of the added value at current prices of a given branch of activity, base 1995, once the effect of the FISIM is considered. We shall call Y_t the estimate of the same added value in base 2000. The quotient between Y_{00} and X_{00} is the deviation that the statistical changes have caused in said added value.

If, as mentioned above, we assume that this deviation affects interannual growth progressively, and therefore accumulatively, from 1995 to 2000 (five years), this yields:

$$d = Y_{00} / X_{00}$$

and, distributed over the five years, the annual effect will be:

$$r = d^{1/5} = (Y_{00} / X_{00})^{1/5}$$

Therefore, the values in base 2000 will be:

$$Y_{95} = X_{95}$$

$$Y_{96} = X_{96} * r$$

$$Y_{97} = X_{97} * r^2$$

$$Y_{98} = X_{98} * r^3$$

$$Y_{99} = X_{99} * r^4$$

$$Y_{00} = X_{00} * r^5$$

Once this operation is carried out, and given that the added values of the SRA must be consistent with the corresponding national values, the difference between the national data and the aggregation of the territorial data obtained according to the procedure above shall be distributed proportionally to the weight that each territory carried in each branch of activity.

Estimation of Gross Domestic Product at current prices

Once the gross added value is obtained for each territory, according to the procedure explained in the previous section, the estimation of regional Gross Domestic Product is obtained by adding, to said added value, the taxes on the net products of subsidies.

The assignation of said net taxes has been carried out according to the criterion established in the Eurostat *Regional Accounts Methods* manual¹ which, in synthesis, distributes the national sum of these taxes according to the weight of gross added value in each territory.

Employee Remuneration Estimates

Given that base 2000 did not introduce any methodological change in this operation, the only differences between the territorial values of employee remuneration, bases 1995 and 2000, have been due to statistical changes.

For this reason, the previously explained procedure to correct the GAV of the effects caused by statistical changes has also been applied to this aggregate, in order to obtain the estimates with base 2000.

Gross Added Value Estimates (GAV) at constant prices from the previous year, and linked volume indices.

¹Regional Accounts Methods. Gross added value and gross formation of Fixed capital by branch of activity. Eurostat.

The estimation of GAV at constant prices in new base 2000 includes, as compared with the estimation at current prices, an added methodological change, which is due to the use of a mobile price base, which sets the mobile previous year as the reference for the calculation of the interannual growth between every two periods. Thus, in base 2000, the estimation of the growth, in volume, of an aggregate, between two consecutive years, t-1 and t, is carried out by valuing said aggregate in t with the price structure from t-1.

This has not included new price indices that were already available in base 1995, and therefore, the deflation has been carried out with the same data sources.

For each branch of activity, if we apply these price indices to the added value series at current prices in base 2000, we obtain the gross added value for each year t at prices from t-1 corresponding to each territory. Given that the regional aggregation must be consistent with the national data, the difference is distributed proportionally to the weight that each territory carries in the added value of each branch.

Once this correction is performed in each activity, the result obtained will be the gross added value for each year t at prices from t-1 (base 2000), and the determined growth, in volume, will be the link with which the final chain of said added value will be joined.

Obviously, the aggregation of the added value of the different branches in each year t, at prices from t-1, will allow, for the same procedure, for obtaining the links with which to compile the gross added value chain from each territory.

Estimation of Gross Domestic Product at constant prices from the previous year, and linked volume indices

Once the estimates of gross added value are obtained for each territory in each year t, at prices from t-1, according to the procedure explained in the previous section, the estimation of regional Gross Domestic Product shall be obtained by adding, to said added value, the taxes on the net products of subsidies.

The assignation of said net taxes has been carried out with a criterion similar to that applied to the net taxes on products at current prices.

Employment. Job Posts, both wage-earning and non-wage-earning

The estimation of the values of the homogeneous series of total employment has been carried out with the estimations of wage-earning employment and non-wage-earning employment, both expressed in terms of job posts. Thus, the total employment series has been obtained by aggregation of its two components.

There are not methodological changes between the estimates of both accounting bases, and therefore, the differences in the data are only due to statistical changes, and specifically, from the introduction of EAPS-2005 as a source of information in base 2000.

Thus, in the case of wage-earning employment, and for each branch of activity, the differences observed in the year 2000 between both bases have been distributed over the period 1995-2000, assuming that they have been generated progressively,

applying a procedure similar to that explained previously to correct the statistical changes in the gross added value at current prices or in employee remuneration.

In order to achieve consistency between the regional and national data, the differences have been distributed proportionally, considering the weight that each territory carries in wage-earning employment of each branch of activity.

However, a similar procedure applied to the case of non-wage-earning employment has not provided satisfactory results, especially in the case of some small territories and for certain branches of activity, in which the data from base 1995 were close to zero.

Therefore, we have opted for a simpler method for the purpose of providing more satisfactory results. This procedure is based on a distribution of the national data, using a structure that:

- For the year 1995, is that which is available in said year, base 1995
- For the year 2000, is that which is available in said year, base 2000
- For the intermediate years, an intermediate structure that is obtained by weighting the two previous structures, being closer to that from the year 1995 for the first years, and closer to that from 2000 for the later years.

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