Regional Gva Inventory

ITALY

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Contents

Chapter 1 - Summary: Overview of organisation, methodology and sources

1.1. Organisation of the statistical process for compiling Regional GVA (Gross value added)

The regional accounts are produced by the Division for national accounts (Dccn)[1] of the National Institute of Statistics (Istat). The Dccn is divided into three sections and one technical-scientific secretariat.

One of the secretariat tasks is to estimate the employment aggregates (employed persons, job positions, hours actually worked and labour units) at a national level and by area.

The section for Statistics on Public Finance (Fip) covers public financing and estimates all economic aggregates relative to the General Government activities, both at a national and at a regional level.

The section for Sector accounts, Final demand and Quarterly accounts (Ddr) compiles sector accounts, both on annual and quarterly basis, including the rest of the world accounts, and quarterly main aggregates. It also estimates the aggregates of the final demand and the compensation of employees for the private sector (estimates for General Government are compiled by the section Fip). Within the tasks of the section also falls the estimate of value added for financial institutions, including insurance (both on a national and regional basis).

Finally, the section for Supply of Goods and Service (Obs) estimates, at national and at regional level, the production, the intermediate consumption and the value added of the economy market. It synthesizes the supply aggregates, coordinates the annual estimates of the Gdp (Gross Domestic Product) at national level according to the "production approach" and studies the deflation of the Gdp. Finally, it coordinates and analyses the quality of the database for the national and regional accounts and synthesizes the territorial analyses.

Hence, the construction of estimates by region is a transversal activity that involves all the structures of the Division for national accounts. All sections and operative units are responsible for the estimates of the economic aggregates that fall under their competences both at a national and regional level. About forty units (researchers and technicians) are involved in the territorial estimates (the Division for national accounts counts about a hundred units).

The territorial estimates follow and are aligned with the national estimates that are drawn up in February of each year. Usually, the national and regional economic accounts of the last two years are revised to include the definitive information. The final national accounts are published in March of every year; on the other hand, territorial estimates are elaborated and published in the following months as laid down in Table 1.1.

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[1] Dccn is a division of the Department for Statistical Production and Technical-Scientific Coordination (Dpts).

Table 1.1 - Timetable and content of the estimates of the regional accounts and aggregates at Nuts-2 and Nuts-3 level

Dissemination date	Territorial level	Content	Reference year of the data	Aggregates and accounts	Detail
May of year t	Nuts-1	Early estimate of the main economic aggregates	t-1	- Gross Domestic Product (Gdp) - Gross value added (Gva) - Final consumption expenditure (total and households) - Full-time equivalent units (*domestic concept*)	3 industries Total 3 industries
September of year t	Nuts-2	Estimation of main economic aggregates	t-1	- Gross Domestic Product (Gdp) - Gross value added (Gva) - Household final consumption expenditure - Compensation of employees - Full-time equivalent units (total employment and employees - *domestic concept*) - Persons employed (total employment and - employees - *domestic concept*)	3 industries Total 3 industries 3 industries 3 industries
		Complete accounts	t-2 e t-3	- Resources and uses accounts - Distribution of income account - Gross Domestic Product (Gdp) - Gross value added (Gva) - Households final consumption expenditure - Government's final consumption expenditure - Npishs final consumption expenditure - Gross fixed capital formation - Changes in inventories and valuables - Compensation of employees - Wages and salaries - Social contributions - Full-time equivalent units (total employment and employees - *domestic concept*) - Persons employed (total employment and employees - *domestic concept*)	24 industries 12 chapters 10 functions Total 24 industries Total 24 industries 24 industries 24 industries 24 industries 24 industries
December of year t	Nuts-3	Employment and Gross value added	t-2 e t-3	- Gross value added (Gva) - Full-time equivalent units (total employment and employees - *domestic concept*) - Persons employed (total employment and employees - *domestic concept*)	6 industries 6 industries 6 industries 6 industries
April of year t+1	Local labour systems	Persons employed and Gross value added	t-3	- Gross value added (Gva) - Persons employed (total employment and employees - *domestic concept*)	3 industries 3 industries

Table 1.2 presents the calendar of the national and regional estimates Nuts-2 and Nuts-3 for 2007 and 2008. The 2008 scheme is representative also for future editions.

Table 1.2 - Timetable of the estimates of the national and regional accounts at Nuts-2 and Nuts-3 level

Reference year of the data	Edition year					
	2007			2008		
	February	September	December	February	September	December
2004	National definitive	Nuts-2 definitive	Nuts-3 definitive			
2005	National semi-definitive	Nuts-2 semi-definitive	Nuts-3 provisional	National definitive	Nuts-2 definitive	Nuts-3 definitive
2006	National provisional	-	Nuts-2 provisional (a)	National semi-definitive	Nuts-2 semi- definitive	Nuts-3 provisional
2007	-	-	-	National provisional	Nuts-2 provisional (a)	-

(a) Up to 2007, the provisional estimate at Nuts-2 level was done at t+12

Istat elaborates rather extensive regional accounts at Nuts-2 level, which, in some points, differ from Eurostat schemes, providing much richer statistical information (see Table 1.1, "Complete accounts").

Assuming that the economy of a Region in the regional economic accounts must be considered with the same logic as the economy of a country in national accounts, Istat defines good and services account and the income distribution account for each region of the Nuts-2.

The regional use and supply account is obtained in a simplified way compared to the estimates for the national territory. For the resources, only the Gdp is directly estimated and not the imports while for the final uses all aggregates are directly estimated and not the exports. Imports and exports of each region are not directly and distinctly estimated because of some statistical difficulties they entail: such estimate is not of the exchange flows with foreign countries only but includes all the other Italian regions. The account is "closed" by estimating the "net imports" aggregate, the result between Regional Gdp and final uses within the region.

Table 1.3 - Resources and uses account at Nuts-2 level

Gross Domestic Product

Net imports

Total (resources / uses)

Final consumption expenditure (domestic concept)

    - Households final consumption expenditure

    - Government final consumption expenditure

    - Npishs final consumption expenditure

Gross fixed capital formation

Changes in inventories and valuables

The "net imports" aggregate is useful not only for understanding the regional economy but also for the statistical problems. It indeed enables to evaluate the estimate of the aggregates in the good and services account.

Hence, to avoid introducing any distortions in the "net imports" aggregate, Vat (Value-Added Tax) and other indirect net taxes on products and imports were regionally attributed on the base of economic criterion. In particular, the Vat, (about 60% of the total net taxes) that "…fully weights on the final buyer" (Esa95, §4.17), is regionalised according to different criteria, as specified below.

The part that weights on the households final consumption expenditure (about 73% of the total between 2000 and 2006) is regionalised according to households final consumption expenditure. The part that weights on the intermediate consumptions of the enterprises (about 14% of the total revenue) is regionalised on the base of their Value added. The part that weights on the consumptions of the General Government and non-profit institutions (2%) is regionalised on the base of final consumption expenditure by General Government, finally, for the gross capital formations and value objects (about 11%), it follows the regionalisation of these aggregates.

A different regional distribution of the Vat would involve a serious unbalance in the Supply and use account, since the internal final demand aggregate (including the consumptions of the households) is substantially expressed at purchaser prices (Sec95, 3.92 and 3.113), that is,

weighted by the Vat. Consequently, for the demand, it is implicitly regionalised on where the final purchaser buys the good or service.

All aggregates of the Use and supply account are expressed at current prices, at the prices of the previous year and at chain-linked values with reference to 2000.

1.2. Overview of the methodology of Regional GVA compilation

The approache and method that can be used in the Regional GVA compilation differ according to the economic sector divided by the Nace-REV1.1 - 30 industries (Industrial Classification of Economic Activities within the European Communities (revision 1.1)). Just as in the national accounts, the regional accounts are constructed through benchmark estimates and subsequent annual updates. Generally, beyond the simple need of realignment, the general revisions at a national level allow revising the regional accounts, especially after method improvements were introduced. The revisions to which the national accounts were submitted in December 2005 led to some changes in the regional estimates too. The description here given obviously refers to the estimation systems actually in use, some of which were introduced during the last revision of the national accounts.

The regional estimates available at the end of the year are usually realigned with the national economic context, previously defined in March.

The most popular method is the *pseudo-bottom-up* because of the insufficiency of data directly drawn from the local KAUs (kind-of-activity units).

As we will see below, the general approach for estimating the Value added is the: (Value added per labour unit) * (Labour Unit))

Both at Nuts-2 and Nuts-3 levels, the production approach is used, apart from the financial intermediation, where income approach is used.

The estimation method in the production approach considers directly the Value added; the production and costs are separately estimated only as regards some industries (Agriculture and Fishing - Activities of the General Government and non-market non-profit institutions).

The Value added of the financial intermediation is the sum of the compensation of employees and the gross operating surplus.

The Value added is preliminary recorded at *producer prices* and only afterwards on the basic price version. The indirect taxes and subsidies are initially estimated by product and then by economic activity unit (see Par. 3.2).

Unlike what occurs at national level, no Input-Output and Supply-Use tables are elaborated.

1.2.1 Regional territory
The Value added is estimated both at Nuts-2 level (administrative regions and autonomous provinces) and Nuts-3 level (administrative provinces). In addition, Istat calculates the Value added also at local labour system level. This territorial level, under Nuts-3 level, is obtained grouping several municipalities based on the employment self-containment base, both from the demand and the offer side.

At Nuts-2 level, there are 21 territorial units, at Nuts-3 level 107 units and at Local labour system level 684 units.

In particular, the Nuts-2 level includes the following territorial units:

Piemonte - Valle d'Aosta - Lombardia - Bolzano (autonomous province) - Trento (autonomous province) - Veneto - Friuli-Venezia Giulia - Liguria - Emilia-Romagna - Toscana - Umbria - Marche - Lazio - Abruzzo - Molise - Campania - Puglia - Basilicata - Calabria - Sicilia - Sardegna.

1.2.2 Regionalisation method

The various methods for the regionalisation differ one from the other according to the different sources available, such as:

1. Bottom-up and Pseudo bottom-up

3. Mixed-methods

3. Top-down

The *pseudo-bottom-up* method is mainly used in the industry and in part of the service branch both at Nuts-2 and Nuts-3 levels. The estimate of the Value added by worker drawn from the enterprises balance-sheets surveys (to be multiplied per labour units to obtain the bringing back to the universe) is the average between direct estimate (values for the economic activity units at local level of the domain object of survey) and a synthetic estimate (values relative to a macro area, which the domain object of estimation is part of). According to empirical studies, this method ensures a lower error both to the full bottom-up approach and top-down approach.

Other methods are used for Agriculture, Forestry and Fishing, Financial intermediation, Domestic services to households and cohabitations, Activities of the General Government and non-market non-profit Institutions.

In the Agriculture, Forestry and Fishing branch, the method used entails aggregating quantity and price estimates, both for production and costs. The estimates of the latter are supported, through the recent benchmark, by the direct costs and benefits survey on the economic results of farm holdings (Rea). In that case, the bottom/up method can be used since the values are obtained aggregating directly the information per local KAU.

The mixed method is used instead for the financial intermediation branch because the Value added is the sum of compensation of employees and gross operating surplus, obtained through the bottom-up and top-down methods respectively. It is also used for the activities of the General Government. The bottom-up method is used for local institutions, while the top/down method is used for national institutions where the national data are divided on the basis of auxiliary variables strictly correlated with the main variable to be regionally aggregated.

The pseudo-bottom-up method and the top-down method, though considered only residually, are mainly used for the activities of the non-market non-profit institutions. Overall the pseudo-bottom-up method covers about 90% of the non-profit institutions' values.

The bottom-up method is used to estimate the households activities as employer of domestic staff both for the incomes of janitors and staff for cleaning and maintenance. Some indicators are available to update the regional levels of the per-capita of incomes (in the different components) separately for the staff for cleaning and maintenance and for the janitors, and of the corresponding registered and unregistered labour units. The re-proportioning weights indeed for 2% of the total of the estimates.

1.2.3 Coherence of the series

The regional accounts aggregates are currently comparable for the 2000-2007 period as regards the Nuts-2 level and for the 2001-2005 period as regards the Nuts-3 level. The series will be extended to 1995 for both levels. Before the last general revision (see par. 2.2), the estimates at Nuts-2 level went from 1980 to 2004 and at Nuts-3 level, from 1995 to 2003.

1.2.4 Industry detail

At the Nuts-2 level, the elaboration is done at a 30-industry level, while the publication at a 24-industry level (Table 1.4). At the Nuts-3 level, since the domains are smaller, the elaboration is done at a 16-industry level and the publication at a 6-economic activity industry level (Table 1.5).

Table 1.4 - Statistical Classification of Economic Activities to Nuts-2 level - 24/30 industries

Dissemination level - 24 economic activities		Computational level - 30 economic activities	
Progressive numbers	Industries label	Progressive numbers	Industries label
1	Agriculture, hunting and forestry	1	Agriculture, hunting and forestry
2	Fishing	2	Fishing
3	Mining and quarrying	3	Mining and quarrying of energy producing materials
		4	Mining and quarrying, except of energy producing materials
4	Manufacture of food products, beverages and tobacco	5	Manufacture of food products, beverages and tobacco
5	Manufacture of textiles and textile products	6	Manufacture of textiles and textile products
6	Manufacture of leather and leather products	7	Manufacture of leather and leather products
7	Manufacture of pulp, paper and paper products; publishing and printing	8	Manufacture of pulp, paper and paper products; publishing and printing
8	Manufacture of coke, refined petroleum and chemicals products	9	Manufacture of chemicals, chemical products and man-made fibres
		10	Manufacture of coke, refined petroleum products and nuclear fuel
9	Manufacture of other non-metallic mineral products	11	Manufacture of other non-metallic mineral products
10	Manufacture of basic metals and fabricated metal products	12	Manufacture of basic metals and fabricated metal products
11	Manufacture of machinery, electrical and optical equipment, transport equipment	13	Manufacture of electrical and optical equipment
		14	Manufacture of machinery and equipment n.e.c.
		15	Manufacture of transport equipment
12	Manufacture of wood, rubber and plastic products and other manifacturing	16	Manufacture of wood and wood products
		17	Manufacture of rubber and plastic products
		18	Manufacturing n.e.c.
13	Electricity, gas and water supply	19	Electricity, gas and water supply
14	Construction	20	Construction
15	Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	21	Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods
16	Hotels and restaurants	22	Hotels and restaurants
17	Transport, storage and communication	23	Transport, storage and communication
18	Financial intermediation	24	Financial intermediation
19	Real estate, renting and business activities	25	Real estate, renting and business activities
20	Public administration and defence; compulsory social security	26	Public administration and defence; compulsory social security
21	Education	27	Education
22	Health and social work	28	Health and social work
23	Other community, social and personal service activities	29	Other community, social and personal service activities
24	Activities of households	30	Activities of households

Table 1.5 - Statistical Classification of Economic Activities to Nuts-3 level - 6/16 industries

Dissemination level - 6 economic activities		Computational level - 16 economic activities	
Progressive numbers	Industries label	Progressive numbers	Industries label
1	Agriculture, hunting and forestry; fishing and operation of fish hatcheries and fish farms	1	Agriculture, hunting and forestry, Fishing
2	Industry, including energy	2	Manufacture of food products, beverages and tobacco
		3	Manufacture of textiles, leather and shoes
		4	Manufacture of coke, refined petroleum products and nuclear fuel; Manufacture of chemicals, chemical products and man-made fibres
		5	Manufacture of basic metals and fabricated metal products; Manufacture of machinery and equipment n.e.c.; Manufacture of electrical and optical equipment; Manufacture of transport equipment
		6	Mining and quarrying; Manufacture of rubber and plastic products; Manufacture of other non-metallic products; Manufacture of wood and wood products; Manufacture of pulp, paper and paper products; Manufacturing n.e.c.
		7	Electricity, gas and water supply
3	Construction	8	Construction
4	Wholesale and retail trade; repair of motor vehicles and household goods, hotels and restaurants; transport and communications	9	Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods
		10	Hotels and restaurants
		11	Transport, storage and communication
5	Financial, real-estate, renting and business activities	12	Financial intermediation
		13	Real estate, renting and business activities
6	Other service activities	14	Public administration and defence; compulsory social security
		15	Education; Health and social work; other services
		16	Activities of households

1.3. Main sources used for the compilation of Regional GVA

An integrated system of sources is used to estimate the Value added at a regional level . It mainly includes sources used also to estimate the national accounts and in part other sources introduced to make up for the lack of geographically referenced information.

The main sources for estimating the Value added for the Market enterprises include the business balance sheets surveys (Sbs - Structural Business Statistics) and the estimates of the Labour units (as we will see below, the most popular method for estimating the Value added is the: (Value added per labour unit) * (Labour Unit)). Another source that, in the last years, has become more and more popular to estimate and calculate the missing values is the Stock companies' business accounts (administrative source available in Chambers of Commerce).

Moreover, there are two surveys on enterprises' accounts: the "Small and medium enterprises survey" and the "Business System of Accounts survey".

Istat "Small and medium enterprises survey" examines the economic accounts of enterprises with up to 99 workers, and their economic activities, except for Agriculture,

Hunting and Fishing, Financial activities (except for the additional activities of the Financial intermediations and insurances), General Government and Activities of households and of association organizations.

The census "Business System of Accounts Survey" is addressed to enterprises with at least 100 workers (about 10,000 units). The data collected refer to the enterprise, classified according to its main economic activity, and to its functional units. They are drawn by separating the main economic aggregates, according to the different production lines, to provide homogeneous data per economic activity sector.

The Labour units are estimated integrating different sources, such as census, sample or administrative ones. The main sources include the Labour Forces survey and the "Statistical Register of Active Enterprises" (Asia).

Other sources used to estimate the Value added of the market segment concern "Agriculture", "Financial Intermediation" and "Domestic services".

To estimate agriculture production surveys from regional and provincial agricultural inspectorates are used; moreover census surveys are used to estimate some specific costs.

Different sources are used for the Financial Intermediation branch according to whether the estimation of the compensation of employees is considered or the gross operating surplus. The following sources are used in the first case: the regional employees in full-time equivalent, the regional employees by professional qualification drawn from Abi (Italian Bank association); the regional structure of the Central Bank's employees drawn from the Bank of Italy; the national structure by qualification of insurance companies' employees drawn from Ania (National Association of Insurance Companies); the incomes by qualification drawn from Istat survey "Contract gross wages and contract duration of job and annual competence wages"; the regional per-capita wages of employees of financial auxiliaries drawn from Inps administrative archives.

Two administrative sources are used to estimate the gross operating surplus: the sum of the loans deposits granted gathered from the banks and drawn from the Central Bank and the gross regional premiums from the insurance companies drawn from Isvap (Inspection Institution of Private Insurances).

Detailed information is available for domestic services: for staff for cleaning and maintenance, the administrative archives (Inps DM10) used for the national estimates provide reliable data at a territorial level for the employment estimates and the per-capita estimates. For janitors, the sources used nationally provide territorial information that updates the labour units (Inps archives, Labour forces survey, sources used for estimating unregistered workers) and the per-capita levels (consumption price index for janitors).

The same statistical sources available for annual estimates were used for the Npishs (Non-profit institutions serving households). These mainly census sources were integrated with other information. More in detail, the sources used are:

1. the Non-profit institutions census that represents the first census survey of non-profit private institutions and enterprises in Italy, conducted by Istat in 2000;

2. the 8th General Census of Industries and Services for 2001;

3. the Inps archives.

Finally, the principal sources of the General Government are mainly those used for compiling the estimates at national level. Other additional sources help locate correctly the national estimates at regional level. The following prospect sums up the informative sources used:

Table 1.6 - General Government - sources used for compiling the regional accounts

Subsector	Description	Source
Central Government	State	Book: "La spesa statale regionalizzata" - Ministry of Economy
	Research Institutes	Data-base: "La spesa statale regionalizzata" - "The Annual Account Survey" Ministry of Economy
	Other Economic Services Producers	Data-base: "La spesa statale regionalizzata" - "The Annual Account Survey" Ministry of Economy
	Istitutions providing cultural services and assistance at the central level	Balance sheets
Local Government	Regions and Authonomous Provinces	Balance sheets
	Provinces	Balance sheets
	Municipalities	Balance sheets
	Chambers of Commerce	Balance sheets
	Economic Bodies at local level	Balance sheets
	Istitutions Providing Education, Cultural Services and Assistance at the Local Level	Balance sheets
	University	Balance sheets
S1314	Social security funds	Balance sheets

Finally, Table 1.7 provides an evaluation, taken from the Process Table (Year 2000), of the weight of the sources in terms of Value added, according to whether it involves survey data, administrative data or combined data. In particular, the combined sources are used in case of a combined subset of sources. A classic example is the "Survey of Business Systems of Accounts", which is integrated with data from the Stock companies' business accounts.

Table 1.7 - The contribution of the main sources to the Regional GVA (Year 2000) Data calculated from the Process Table

Sources	Gva basic prices Share %
Survey data	44.5
Administrative data	24.8
Combined data	30.7
Total	100.0

Chapter 2 - Release and publication timetable, revision policy, access for the Public[1]

2.1. Timetable for release and publication of provisional and final estimates

As from the 2008 edition, for the year "t" preliminary data at Nuts-2 will be ready at t + 9 months (provisional version), the semi-definitive version will be ready at t + 21 months, and the final version will be ready at t + 33 months (definitive version).

The publication's date is not set beforehand but is decided on each case. First estimates are prone to revisions. They are provided by advanced econometric techniques using provisional data on employment and other indicators.

The t + 21 (semi-definitive) estimates are based on direct data that is still incomplete, using the same basic statistical sources that are used as a rule for the final estimates at t + 33.

As regards Nuts-3 level, provisional estimates are produced at t + 24 and definitive estimates at t + 36.

Territorial estimates are based on national estimates produced in February, and are aligned with the same (Table 1.2 provides a schematic outline of the template for national and regional estimates done in 2007 and 2008).

2.2. Policy on benchmark revisions

Annual estimates of regional accounts are subject to two types of revisions - routine and exceptional (general) revisions. These are caused by important methodological innovations in the used concepts, definitions, and classifications or to the availability of statistical sources' contents. General revisions of regional accounts follow those for national accounts. In fact, first a general revision of the national accounts is carried out and then follows a general revision of regional accounts, adopting all the innovations introduced at a national level. Also each revision includes alignment of regional aggregates with the new values for the national accounts. The latest general revision of national accounts was completed in February 2006. Estimates at Nuts-2 level were revised in December of that same year, and those at a Nuts-3 level in December 2007.

Regional estimates are subject to general revisions independently from the national estimates, only if the Nuts are modified.

2.3. Comparability over time

Currently, aggregates for regional accounts can be compared for the period 2000 - 2007 for the Nuts-2 level, and for the period 2001 - 2005 for the Nuts-3 level. Extension of the periods to 1995 is planned in the future, for both Nuts levels.

Before the latest general revision (see paragraph 2.2) estimates at Nuts-2 level covered the years 1980 - 2004 and those at Nuts-3 level, the period 1995 - 2003.

In the latest general revision, new handling of the "financial intermediation services indirectly measured" (Fisim) was introduced, as well as a new classification of the Nace - Rev1.1 economic activities. Data was obtained from the Census on Agriculture (2000), Census

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[1] *Authors are: Alessandro Faramondi 2.1, 2.2, 2.5; Claudio Pascarella 2.3, 2.4; Michele Marotta 2.6*

of Industry and Services (2001), and Census of Population (2001), as well as data from new archives "Statistical Register of Active Enterprises-Local Units" (Asia-Ul) and employment data from a new Labour Force survey reconstructed back to 1992 for National and Regional accounts. Moreover, in Agriculture new sources are used: survey on economic results for agricultural companies (Rea; Istat - Inea (National Agricultural Economy Institute) and the Istat - Irepa (Institute for Economic Research for Fishing and Aquiculture) sample survey.

New methods were implemented for data handling taken from surveys of companies, with the integration of information taken from the archives of balance sheets for capital companies and the adoption of methods for correcting outliers.

Among the methodological improvements, there was also the new system for correcting the under-reporting on value added of companies that, being applied to micro-data covered in Istat surveys, affects all levels of spatial domains.

The new supply-use approach implies that an area of economic activity is a combination between its main activities and secondary production activities.

In the Agriculture sector the new estimates of value added at regional level take into account the economic results for cultivation, livestock and other activities, and they also focus on secondary activities of agricultural companies, such as farm holidays.

Finally the procedure for estimating the value added for construction was subjected to revision considering the regional effects of unregistered workers.

2.4. Transmission to international institutions other than Eurostat

No transmission to international institutions other than Eurostat is planned.

2.5. Accessibility for the Public

All information on regional accounts is available on Istat Web pages.

Data is distributed both at Nuts-2 and Nuts-3 level and is provided in Excel tables.

In addition to the data there is also a press release about main economic results. Likewise the methodology and any further innovations introduced are discussed in detail.

The following data are available at Nuts-2 level:

A) For 24 areas of economic activity (see Table 1.4) (current prices - previous year's prices - chain-linked values):
- Value added at basic prices
- Gross fixed capital formation
- Compensation of employees
- Wages and salaries
- Social contributions
- Employees in full time equivalent units
- Self-employed in full time equivalent units
- Person employed in full time equivalent units
- Employees
- Self-employed
- Person employed

B) At the level of 12 COICOP[2] functions (current prices - previous year's prices - chain-linked values):
   - Household expenditure
C) At the level of 10 COFOG functions (current prices - previous year's prices - chain-linked values):
   - General Government expenditure
D) Goods and services account (current prices - previous year's prices - chain-linked values):
   - Gross domestic product (Gdp)
   - Net imports (imports - exports)
   - Households final consumption expenditure
   - Government final consumption expenditure
   - Npishs (Non-profit institutions serving households) final consumption expenditure
   - Gross fixed capital formation
   - Changes in inventories and valuables
E) Gdp distribution account:
   - Gross domestic product
   - Compensation of employees
   - Net taxes on products
   - Gross operating surplus
F) Per-capita values:
   - Gdo at market prices per inhabitant
   - Gdp at market prices per full time equivalent units
   - Domestic final consumption expenditure per inhabitant
   - Compensation of employees per Employees in full time equivalent units
G) Population
   - Residents (mean at 30th June)

As far as the Nuts-3 level is concerned, the following data are available by 6 industry (see Table 1.5):
   - Value added at basic prices
   - Employees in full time equivalent units
   - Self-employed in full time equivalent units
   - Person employed in full time equivalent units
   - Employees
   - Self-employed
   - Person employed
   - Value added per full time equivalent units
   - Value added per inhabitant
   - Resident population (mean at 30thjune)

As has been stated, data from regional accounts is available on Istat Web pages, via the following address:
http://www.Istat.it/conti/territoriali/.

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[2] COICOP: Classification Of Individual COnsumption by Purpose. International classification (Onu, Ocse, etc), adopted togheter other expenditure functional classifications into SEC95.
[3] COFOG: Classification Of Function Of Government: Functional classification of expenditure General Governments.

The following products are available at a Nuts-2 level in the "Regional economic results" section:

1. *Complete text***:** a Pdf file in Pdf that contains the <u>main</u> results and methodological information.
2. *Information and warnings*: a Pdf file that contains the times and some indications on the differences from the national accounts.
3. *Single archive***:** an Excel file that contains all the data available in time series.
4. *Regional Tables***:** a Zip file that contains 23 Excel-spreadsheets. Each table contains the data dealt with in detail previously, for each Nuts-2, for extra-region and geographical breakdown, in time series.

With regards to the Nuts-3 level, the data is given in the "Employment and value added in the Provinces" section, and includes the following products:

1. *Complete text:* a Pdf file that contains the principal results and methodological information.
2. *Methodology note***:** a Pdf file that covers the principal innovations following general revision.
3. *Tables***:** a Zip file that contains 10 Excel spreadsheets. Each spreadsheet contains the data indicated in detail before in time series.

2.6. Policy for metadata

As amply indicated in the previous paragraph, the public can use the http://www.Istat.it/conti/territoriali website to access press releases, final data distributed, and annexed methodology notes.

Currently no further information is planned on the data distributed.

Chapter 3 - Methodology for the calculation of Regional GVA[1]

The regional accounts, just as the national accounts, are constructed with benchmark estimates and subsequent annual updates. Generally, beyond the simple need of realignment, the general revisions of the national accounts allow revising the regional accounts, especially after method improvements were introduced. The revisions to which the national accounts were submitted in December 2005 lead to some changes in the regional estimates too. More generally, the national estimates precede the regional ones, which are aligned with the binding national values once they have been drawn up; this occurs in the annual updates too.

The main method used is the pseudo-bottom-up due to the insufficiency of data directly drawn from the "Local Kind-of-Activity Units" (hereafter called local KAUs). As we will see further down, the labour inputs are the estimates that mostly allow analysing functionally the producing units; therefore, the national and regional estimates are set in such a way as to consider mainly indications that derive from such aggregate. However, other methods are used too.

The estimates of the value added are treated by the production approach, apart from the financial intermediation, which is dealt with a method based on the income approach.

The estimation method in the production approach considers directly the value added; the output and costs are separately estimated only for some branches (Agriculture and Fishing industry 1 and 2) - Activities of the General Government and Npishs - Domestic Services).

According to the income approach, the value added of the Financial Intermediation is the sum of the compensation of employees and the gross operating surplus.

The value added at regional level is preliminarily based on the producer prices version, which holds the taxes on production and imports. The following operation enables to transform the value added into the basic version (which holds the other taxes on production and subsidies on products):

$$\text{Value added at basic prices} = \text{value added at producer prices}$$
$$- \text{taxes on products}$$
$$+ \text{subsidies on products.}$$

The indirect taxes and subsidies are initially estimated by product. However, the above mentioned operation requires that these groups are transformed from product to economic industry. At national level, the taxes and subsidies are transformed from product to economic industry through the Supply Table.

While at Nuts-2 level, since the Supply and Use Tables are not available, the national Supply matrix is used.

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[1] *Authors are: Alessandro Faramondi Introduction, 3.1, 3.2, Augusto Puggioni 3.1.1.1, 3.1.1.1.1, 3.1.1.1.2, 3.1.1.1.3, 3.1.5.1; Federica Battellini 3.1.1.2, 3.1.3, 3.2.1.1.2; Michele Marotta 3.1.2, 3.1.7, 3.1.8, 3.2.2.1; Antonella Baldassarini 3.1.5.2; Gianna Greca 3.1.4; Paolo Dolfi 3.1.6, 3.2.1.2; Domenico Ciaccia 3.2.1.3, 3.2.1.3.1, 3.2.1.3.2, 3.2.1.3.3, 3.2.1.3.4; Alessandra Milani 3.2.1.1; Giuseppe Lancioni e Giuseppe Sacco 3.2.1.1.1; Angela Forte 3.2.1.4;Teresa Nardone 3.2.1.5; Nadia Di Veroli e Incoronata Donnarumma 3.2.1.6; Francesca Tartamella 3.2.1.7; Susanna Riccioni 3.2.2.2, 3.2.2.2.1, 3.2.2.2.2, 3.2.2.2.3; Sandra Maresca 3.3*

3.1. Principles applicable to all industries

This paragraph will describe some of the main aspects transversally important that are not specific to a sector in particular. First, it will deal with the sources and the information available, then with benchmarks and extrapolations and finally with the handling of ancillary and extra-regional activities. It will also examine the approach to exhaustiveness, the calculation of the Financial Intermediation services and of taxes.

3.1.1 Available sources and information

Now we will present the main sources behind the general method estimations (see par. 3.2), useful to estimate both the value added per labour unit and the number of labour units. The survey on small and medium enterprises, the survey on enterprises with more than 99 workers and the civil business accounts are mainly used to estimate the value added per labour unit, while the other sources are used for estimating the number of labour units.

3.1.1.1 Main sources for estimating the value added per labour unit

3.1.1.1.1 Business data

The business surveys - the Survey on Economic and Financial Accounts of Large Enterprises (Sci) for enterprises with more than 99 workers and the Survey on Small and Medium Enterprises (Sme) for enterprises with up to 99 workers - and the Stock companies' business accounts (hereafter called Bac) are the main source for estimating most economic activities in the field of industrial processing and services, such as labour force, output, value added, labour cost and capital formation, i.e. for most of the supply and use components. The national accountants acquire micro-data from these sources that are then analysed, processed and integrated to obtain the estimate of economic variables and the number of labour force.

There are a number of reasons for treating data differently from the survey standard procedures:

- the need to have estimates for other domains, usually finer, than those object of the surveys;
- the use of a very wide set of variables consisting of many items from survey questionnaires, in addition to the economic aggregates calculated from the surveyed items (output and value added at production prices, intermediate costs, total turnover, capital formation, labour cost);
- the implementation of a value added reassessment model for small and medium enterprises in case of false responses (under-reporting represents one of the major factors of hidden economy and is included in the exhaustiveness estimate - see section 3.1.5.1).

The sources provide results that are sufficiently reliable at Nuts-2 level for the value added and for the other economic groups required by the Regulations. They enable to estimate the economic data of the national accounts based on the data of the local economic activity units.

A. Survey on small and medium enterprises (Sme)

The *Survey on small and medium enterprises, arts and professions* collects the economic accounts of enterprises with up to 99 workers (until 1997, the target population included enterprises with up to 19 workers). It is carried out by a sample of enterprises extracted per industry (Ateco - Italian version of Nace Rev 1.1 - first 4 digits), Region (Nuts 2) and size-class from the Business Register Asia (see paragraph 3.1.1.1.3).

The survey observes all industries except agriculture, zoo-techniques, hunting and fishery, financial activities (except auxiliary activities such as financial intermediation and insurances), General Government and activities of associations carried out by private households with employed persons.

The European Regulation on Structural Business Statistics (Sbs), n.58/97, requires estimates per industry class (4-digit Ateco) without size limits, per industry group (3-digit Ateco) and classes of workers and finally per industry (2-digit Ateco) and Region.

The survey questionnaire contains also a section for regional data, though the questions regard only the number of local units, workers and labour cost. Actually, these data, declared only by a small share of enterprises, are not used in the national accounts while the information on the enterprise in general is used to calculate the value added. The idea is that the small and medium enterprises are uni-located, a fact confirmed by the last 8th General Census of Industries and Services for 2001. There are also some other reasons for not using regional survey data in the national accounts. First of all, there are only few variable at regional level that do not allow an adequate estimation of all economic aggregates at national level. Second of all, the national accounts edit remove outliers, eliminating the representativeness of the survey data at regional level.

While the sample covers averagely 3%, the response rate equals 50%. The sampling fraction however is not low; there are almost 120,000 enterprises versus a target population of about 4,000.000 small medium enterprises.

Since the reference year 2001, the non-respondent enterprises with 20 to 99 workers are integrated by means of business accounts. This integration, which is only carried out for corporations , notably increased the quality of data.

B. Survey on economic and financial accounts of large enterprises (Sci)

The census-like Survey on Economic and Financial Accounts of large enterprises is addressed to enterprises with at least 100 workers, totalling about 9,000 units (Istat, 2005).

It gathers information on employment, investment, personnel costs and certain regional items. The value added is regionalised through the labour cost data. The collected data refer both to the enterprise classified according to its main economic activity, from which the enterprise obtains its largest share of value added, and to the Functional Units (Fu), obtained by separating the main economic aggregates based on the different production lines. The classification of enterprise industries is 5-digit Ateco (national detail level of Nace Rev. 1.1 since 2002)[2] .

Though the survey is to cover the whole target population of enterprises included in the established range, it does experience problems of non-response. Several procedures are used to prevent or integrate the missing data. For example, imputation methods are used to replace the missing value:

"a priori" distribution of the variable based on sets of information coming from a previous survey;

accounting links with other variables of the questionnaire.

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[2] The Sci survey collects information on the economic accounts for each enterprise with different production lines (functional unit – FU) by means of a specific questionnaire listing the main items of the general enterprise questionnaire. The surveyed items allow calculating the production value, intermediate costs and, consequently, the value added. Receipts and costs at functional unit level include the value distributed among the functional units of the same enterprise. Goods sold among the enterprise functional units are valued at producers' prices. Total sales to other functional units per enterprise should equal the total corresponding purchases. Sales and purchases among local units working within the same FU are excluded.
The concept of functional units is similar to that of Local kind of activity (KAU) and the collection of production and intermediate costs by FU follows ESA95 provisions. Paragraph 1.3.4 supplies further details on KAUs and on supply aggregate estimate related to them.

Next, an imputation method is applied to all variables analysed for the non-responses. The population of enterprises is stratified according to three variables: economic activity, size class and geographical area. A donor is randomly taken out from a set of enterprises part of the same stratum as the non respondent unit. The variables for the non respondent units are estimated by multiplying the variables of the donor with the weight, calculated as ratio between non respondent workers and donor workers.

Since 1998, data have been extracting from accounts filed under company legislation (Corporations) for about 650,000 enterprises. These enterprises, the larger ones, are obliged to provide their balance sheets to a Chamber of Commerce, owner of the data. These data are used to benchmark and check the data coming from the ordinary surveys.

Information from accounting sources is used to have an important part of information on non-response units. It was necessary to do several links and checks among the information from administrative sources and from the surveys. The economic information held in administrative sources quite corresponds to the information of the Sci questionnaire. About 70% of the economic variables required by the Sci questionnaire correspond to (or it is possible to calculate them from) the economic variables available in administrative sources.

The survey coverage of large enterprises (Sci) has increased to about 55% over the last years. Respondent enterprises represent a value added share of 68% on total enterprises.

3.1.1.1.2 Stock companies' business accounts

The use of the stock companies' business accounts falls under the issue of using administrative registers for statistical purpose. Once the data have been acquired by Istat, they are carefully analysed for a correct statistical use. This implies selecting the conceptual reference framework related to the information to be treated, and defining the reference universe, survey and analysis units, characters, classifications, updating times and modes as well as rules of transforming the administrative data into statistical information.

Stock companies must submit their balance sheets to a Chamber of Commerce that have to make them public on the "Infocamere" network. The balance sheets have proven to be adequate to represent many variables contained in the Istat questionnaires; more in detail:

- high degree of coherence between information from balance sheets and information surveyed;
- degree of exactness and check of the recorded variables;
- source timeliness;
- considerable reduction of respondent burden;
- alignment of a limited variable set with Eurostat definitions as of EU Regulation 58/97.

As already mentioned, business accounts are used to fill in the total non-response gap of the Sci survey by the structural business statistics unit.

3.1.1.1.3 Statistical Register of Active Enterprises (Asia)

The Statistical Register of Active Enterprises (Asia) collects data from the tax register, the Business Register, Social Security Institutes data (Inps and Inail), and Electric Power Board data (Enel) on electricity consumption for non-domestic use. Administrative sources were then integrated with information from Istat surveys, to avoid asking enterprises data already supplied.

In addition to some information on the number of workers and employed persons, information on the economic activity and turnover is also available.

The Asia register was set up in 1995, to annually monitor the production system of the Country through the knowledge of all economic units operating on the Italian territory. Previously this universe was recorded every ten years during the general censuses and with some

years delay as to the reference date due to the necessary technical time to work out survey forms. The Asia register is available at t+16 months after the reference year.

The statistical units recorded in the Asia register are active enterprises and institutions in economic terms. In 1996 and from 2004 onwards, local units are also recorded in the Asia register annually.

The availability of the Asia register highly contributed to the quality improvement of business surveys that, as already mentioned, are the main source for NA supply-side estimates.

3.1.1.2 Main sources for estimating the labour units

Labour input is estimated at regional level using a wide range of informative sources. Some are annually available, while others (like census) refer only to the benchmark year (2001).

Census data represented the main source of information for 2001 together with the Labour Force Survey. In order to cover the reference population of regional accounts, census data were integrated to include also, for example, workers serving households, part-timers, quasi-subordinate workers, some secondary jobs, and foreign non registered workers. The sources used for this purpose are listed in Table 3.1 under the column "2001": generally available every year, they are used also for the estimation of the current years. They are mainly statistical sample surveys, statistical registers and administrative data.

Table 3.1 reports also the complete list of sources used to calculate the labour estimates for the current years.

Table 3.1 - Main sources used to estimate labour input

	Source	Type of information	2001	Current years
1	Labour Force Survey	Resident persons employed	X	X
2	Population Census	Persons by place of work and place of residence	X	
3	Census of Industry, Services and Institutions	Registered employment, main and secondary jobs	X	
4	Agricultural Census	Agricultural sector, main and secondary jobs	2000	
5	Asia Business Register	Number of registered jobs		X
6	Annual Survey on local units	Registered employment by local units		X from 2004
7	Social Security Registers (on the private sector)	Persons employed by households and businesses, quasi-subordinate workers, foreigners, Wages Guarantee Fund, part-time workers	X	X
8	Annual Survey on Employees in the General Government (Ministry of Economy)	Employees of General Government	X	X
9	Istat Business Accounts Surveys	Registered employment		X
10	Balance-sheet data for specific sectors of activity	Energy, tobacco, railways, post, telephone, credit, insurance	X	X
11	Administrative data for particular sectors of activity	Freight and passenger transport by road	X	X
12	Istat surveys on public institutions	Municipalities, mountain communities, provinces, regions		X
13	Multipurpose Survey	Domestic services to households	X	X

A brief description of the main sources used is provided hereafter, while a description of the use of all sources in the estimation process is provided in paragraph 3.2.1.1.2.

The Census of Industry and Services collected data through statistical questionnaires at the establishment level. Data on employment referred to the date of the 21st October 2001 and allowed to separately account for employees and self-employed. The units included in the reference populations are: enterprises, private institutions and public institutions, whose main economic activity is in some specific activities of section A of Nace Rev.1 (01.25, 01.4, 01.5, 02) and from section B to section O. Census data have been processed at the micro-level in order to classify employment according to the concept of local KAUs (see paragraph 3.1.3).

The Census of Agriculture covered all the units carrying out agricultural and forestry activities and data on employment referred to the number of people engaged in the units during the agricultural year 2000 and the corresponding working days. Census data have been processed at the micro-level.

The Census of the Population has collected data referred to persons (including those living in collective households) permanently or temporarily present on the national territory at the date of the Census (21 October 2001); it also registered the place of residence and place of work for persons employed allowing to estimate commuting flows at the level of Nuts 3. Census data were provided to regional accountants at an aggregated level.

Besides Census data, also the Business Register Asia, the Social Security Register and the Annual Survey on Employees in the General Government are exhaustive with respect to their reference population. Differently from Censuses, they are available annually. The Business Register Asia refers to private units registered by administrative authorities engaged in activities included in sections from C to O of Nace Rev.1. It is based on the integration of a variety of administrative files allowing estimating the state of activity of each unit and, for those resulting active, the number of employees and self-employed, the localisation and the main economic activity of the enterprise.

The Social Security Register is one of the main sources feeding the Business Register for the estimation of employees. It is also used for regional accounts in itself especially for the estimation of labour input for the reference year t-2 and t-1, for which the business register is not available, and for the estimation of wages and salaries. The use of this register for regional estimates requires a series of step allowing to properly classifying units by economic activity and regional localisation, since these variables respond to administrative registration rules. The adjustments are made using the most recent Business Register available and the Census of Industry and Services. A further adjustment is required in order to estimate average figures when provisional monthly data are provided by the Social Security Institute. In particular, the annual average is calculated considering the number of months for which data have been provided by each unit, so that where data are not registered for the full year, no under-estimation is made because of lack of updating.

The Annual Survey on Employees in the General Government is carried out by the Ministry of Economy and it collects data from the units belonging to the public sector (defined as the universe of units where public national work contracts are applied). The universe does not correspond to the General Government Sector as defined by Esa (S13) but data are provided at the micro level, therefore estimates can be calculated with respect to the units belonging to S13. No information is available on the economic activities carried out by each unit. Furthermore, no integration is made by the Ministry with respect to non-response. The integration of non-response is made by regional accountants using the micro data provided by Istat Surveys on Public Institutions (see paragraph 3.2.1.1.2) for units responding to this latter survey or other sources available for non responding units. The Istat Survey on Public Institutions is carried out annually and it covers the entire universe of S13. In the case of non-responses, integration and

grossing up to the total population is made only for some groups of institutions (for example municipalities).

The Labour Force survey is carried out monthly according to the European Regulation Rules. The continuous survey started in 2004 and data are provided quarterly at the micro level, together with coefficients grossing up to total population. Estimates on employment by 2-digit Nace Rev.1 are significant at the regional level. For the previous period (1992-2003), the unit responsible for the survey provided a backward series of employment reconstructed and aligned with the new legal population resulting from the Census of Population 2001. Data referred to the backward series were provided aggregated by status in employment (employees and self-employed), regions and 11 economic activities. For the same period the former quarterly survey was available anyway at the micro level.

The Annual Survey on Local Units started in 2005 and it is aimed at the estimation of Local Units of the Business Register. The universe of the survey varies from one year to the other depending on the availability and quality of administrative sources on local units. For the year 2005 the survey was addressed to all the enterprises bigger than 99 workers (employees and self-employed) and to those enterprises with more than one establishment, engaging between 50 and 99 workers. Economic sectors are limited to those units mainly engaged in industry and services. Data are provided at the micro level to regional accountants.

3.1.2 Use of benchmarks and extrapolations

The reference year (benchmark) and estimating method for the following years in the regional accounts do not really differ from the procedures adopted for the national estimates.

For the labour units, the years after the benchmark year are extrapolated once the regional labour input has been estimated based on census data. It involves considering the annual changes of the labour input, distinguished into professional position, economic activity and size class, drawn from statistical surveys and administrative sources that measure employment.

3.1.3 Treatment of ancillary activities

Regional aggregates are estimated with reference to the local KAUs, i.e. the specific economic activity at Nace Rev.1 4-digit level, which corresponds to each local unit of enterprises.

Producer units were classified in accordance with this statistical concept using the 2001 Industry and Services Census, which allowed to breakdown workers of each local unit according to the various (main, secondary and trade) activities they were assigned to and provided a separate figure for workers engaged in activities supporting production, known as "ancillary activities".

The 2001 Industry and Services Census defines the "ancillary activities" as being activities carried out in the establishment and which lead to producing goods and services not sold on the market but necessary to the entire production process. They include: marketing, data processing, transport, storing, repairing, cleaning, accountability, and safety.

Accordingly with the Esa definitions, workers engaged in "ancillary activities" in a producer unit were classified proportionally by all the economic activities carried out in the enterprise, since their work supports all the economic activities. At the territorial level, however, they were completely classified in the local unit where they actually work and earn a wage.

When "ancillary activities" are carried out by a different legal unit, they are classified according to the economic activity (or activities) of the legal unit itself, since it is properly identified as a separate institutional unit.

3.1.4 Treatment of the extra-regional territory

The extra-regional territory is made up of parts of the economic territory of a country that cannot be directly attributed to a region. The calculation of its value added includes:

- the industry sector, relative to oilfields, natural gas deposits, etc. located in international waters outside the country's continental platform and used by Italy resident's units;

- the country's General Government activities which are carried out in territorial free areas, that is, in geographical areas located in the rest of the world and used thanks to International agreements (embassies, consulates, military bases, research centres).

With regard to the industry sector, this calculation is carried out for the economic activity branch which represents the oil and natural gas extraction.

In order to estimate value added of the "extra-regional" territory an estimation of the off-shore production is carried out, that is the oil and natural gas production which takes place through sea platforms and is thus defined as "extra-regional production". This production, infact, though it can geographically be attributed to the competent territories of certain Regions, must be attributed to a specific "extra-regional" territory based on the definitions, concepts and classifications of the national accounts. Hence, it is necessary to determine the "production" shares of each Region interested by this phenomenon in order to quantify the "extra-regional" production.

The shares of each Region result from the ratio between the oil and gas off-shore production value and the production total value (on-shore + off-shore) obtained from the Region itself.

The production estimation criterion is based on fuel and gas produced quantities, distinguished by type of product, and adequately weighted with a price system that considers the diversity of the products.

Quantities are based on the data published yearly by Ministry of Economic Development in its "Rapporto sullo stato delle attività di upstream degli idrocarburi". These data are distinguished per product (fuel and gas) and per type of production (on-shore and off-shore). The on-shore production is in turn divided per region, while the off-shore production is divided per sea area. Infact, in the most recent years the Ministry has adopted a classification that involves the off-shore extractions in the following areas: *area A* (Emilia Romagna, Marche and Veneto); *area B* (Abruzzo, Marche, Molise); *area C* (Sicilia); *area D* (Tyrrhenian Calabria); *area F* (Ionic Calabria and Puglia). A certain heterogeneity can thus be observed among data available for the on-shore production (available per Region) and the off-shore production (available per sea area). Such issue can be solved through an adequate regional distribution as it was made by the Ministry in its previous classifications. Such distribution allows obtaining the representation of the off-shore production at a territorial distribution level higher than the one of the classifications currently in use.

The price system used for weighting the quantities of each product is based on data collected monthly by Istat (Industrial producer price index).

The data sources currently available for estimating these shares are considered both precise and complete; this makes possible to reach a definition of reliable estimates and a reasonably complete representation of the phenomenon.

Figure 3.1 reports the percentage contribution of the Regions to the "extra-regional" territory per economic activity branch in the fuel and gas extraction for benchmark year 2001.

The data relative to the value added of the "extra-regional" territory at current prices and constant prices are regularly diffused and published together with those of the Regions.

Figure 3.1 - Economic activity "fuel and gas extraction": contribution of the Regions (Nuts-2) in the "extra-regional" value added - Year 2001 (percentage weights)
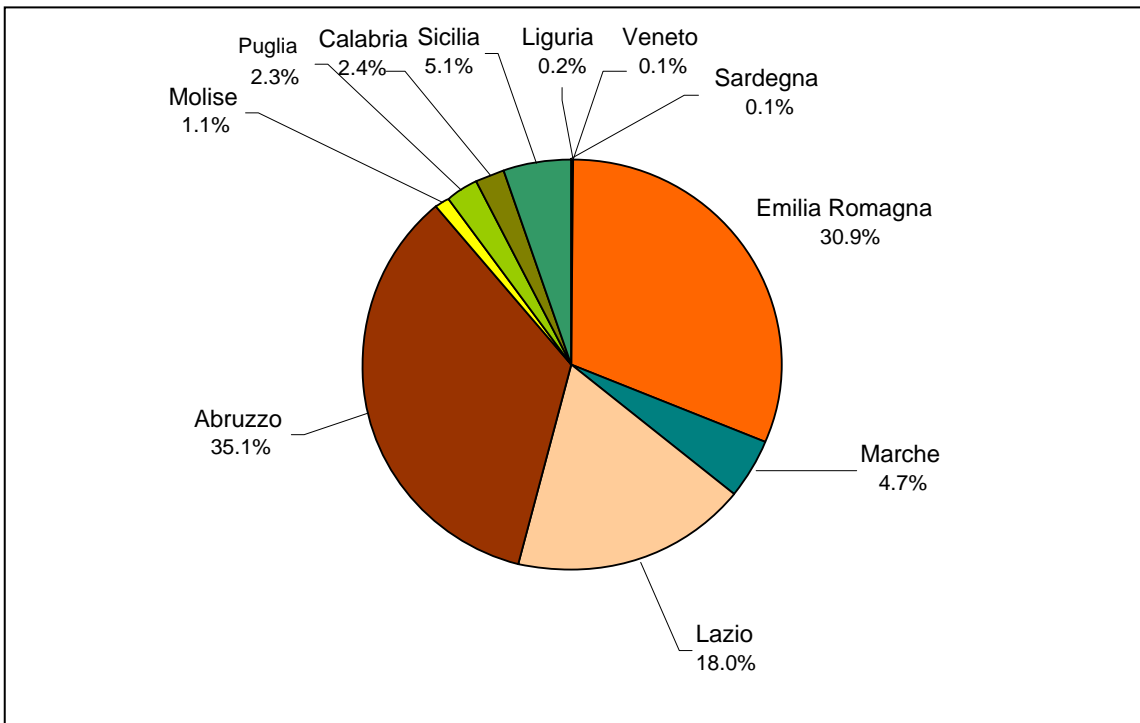
Regarding the General Government, the "extra-regional" territory's value added includes activities that the public operator conducts towards the rest of the world: diplomatic activities, military activities for foreign countries, assistance activities, etc.. As explained in paragraph 3.2, the value added produced by the General Government is based on costs, but mainly on the expense for wages and salaries. It is possible to quantify the amount by identifying the payment mandates issued by the Treasurer's Office of the Ministry of the Treasury for Abroad.

Because the extra-regional territory is dealt with as a separate Region, the Gdp value is published for it too.

3.1.5 Approach to exhaustiveness

In Eurostat, the estimation of the national accounts aggregates at the basis of the labour input is one of the more suitable techniques for reaching data quality and "exhaustiveness" of the Gdp estimates. The approach used in the national and regional accounts takes into consideration the irregular component of the work factor and the voluntary under-declaration of profits by enterprises. This paragraph will analyse in detail the methods adopted for handling these problems.

3.1.5.1 Under-reporting

Figures from enterprises with more than 0 and less than 5 self-employed workers (domain virtually covered by the Sme since, by definition, stock companies with over 50 workers do not present self-employment) are checked with a method proposed by A. Franz: Basic Model in Estimates of the hidden economy in Austria on the basis of official statistics, 1985. This method is based on the principle that the receipts and costs data for an enterprise must be

coherent. It aims at adjusting false declarations by enterprises on receipts and costs. But to be correctly applied, it requires that self-employed persons by enterprises spend their total working time in entrepreneurial activities and do not only play a partner role. For this reason, a threshold on the self-employed number had to be set: in enterprises with more than 5 self-employed workers, it is often not easy to differentiate the self-employment declared by the enterprises between actual self-employed and simple partners. Previously the method was applied considering the worker size class, i.e. Sme data collected from enterprises with up to 19 workers were deemed to be false.

The assumption underlying the reassessment model is that enterprise net income should grant self-employed workers (entrepreneurs, company holders and family workers) wages not lower than the wage of an employee working in the same activity branch with similar skills and working time (cf. A. Franz, Basic Model in Estimates of the hidden economy in Austria on the basis of official statistics, The Review of Income and Wealth, 4, 1985). If self-employed workers should earn less than employees with the same skills, they would prefer to change their employment status from self-employed to employee in order to raise their income. When the economic account data declared by the enterprises are not consistent with the above mentioned assumption, it presumably means that the self-employed persons were reluctant to state their receipts or over reported intermediate costs. Consequently, the interested enterprises are considered as under-reporting and must be revaluated.

The following paragraph analyses the various process stages of the model, from the definition of parameters to the identification of under-reporting enterprises and eventual reassessment:

Stage 1 - calculation of per-capita compensation of employees;
Stage 2 - adjustment of the per-capita as of stage 1 to take into account the different working time of employees and self-employed; the latter indeed register higher average amount of hours worked (from Labour Force survey data);
Stage 3 - calculation of enterprise net income by deducting value added to factor cost from the sum of the following headings: total compensation of employees - interest payable and banking costs - fixed-capital consumption[3].
Stage 4 - calculation of net wages per self-employed person as the ratio of stage 3 result to the number of self-employed workers of the enterprise;
Stage 5 - should stage 4 result to be negative or lower than stage 2, the enterprise net income is calculated again by attributing each entrepreneur per-capita as resulting from stage 2;
Stage 6 - sum of enterprise value added to the amount resulting from the difference between stage 5 and stage 3.

Based on the general model, some alternatives were proposed depending on the type of reassessed enterprises and the method used to implement the various stages. Hereafter a new method is described called "maximum per-capita remuneration by stratum", a further development of the method applied by the Italian national accountants through the 1987 revision[4].

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[3] The figure considered for consumption of fixed capital is that reported by the enterprise, which of course may not coincide with the Na definitions. The reason is that in this procedure, the aim is not so much to quantify the economic phenomenon as to check the internal coherence of the reported balance-sheet data.

[4] The method called "average per capita compensation of employees of single enterprises" was applied to enterprises in size class 1-19 workers. Per-capita income of stage 1 (remuneration by worker) was calculated for each business taking account of the average value between managing directors, managerial staff, white and blue-collar workers and salesclerks. The adjustment to consider the

The new version of the Franz method is based on studies and analysis carried out by the 2005 annual accounts general revision that highlighted the possibility of applying such method successfully within the Italian economic system even to enterprises with more than 19 workers, with the previously mentioned threshold on the number of self-employed. In many enterprises with more than 19 workers, self-employed workers devote their entire working time to the enterprise activity. This is true especially in case of non-stock companies (sole proprietorships and family-run enterprises, self-employed persons, simple partnerships, general partnerships, incorporated partnerships, associated praxis). It should be noticed that cooperatives are excluded from the universe of enterprises to be reassessed due to problems in identifying employees and self-employed workers.

Per-capita income in stage 2 (per-capita reassessed compensation of employees) is calculated per stratum and not per single enterprise according to the method used until the 2005 revision. Moreover, the highest value was considered between per-capita income of managing directors, managerial staff and white-collar workers on the one hand and blue-collar workers and salesclerks on the other hand. The generic average values relating to employees in general are no longer considered.

Strata are defined by the combination of the 3-digit Ateco heading, turnover size class (up to 500,000 Euros, between 500,000 and 5,000,000 Euros, over 5,000,000 Euros), legal form (corporation and non-stock company), enterprise life time (0-3, 4-6, 7-9, 10-19, 20 and over years) and geographical area. Stratification variables were chosen based on the fact that:

- the industry chosen (3-digit Ateco headings) ensures reliable estimates of the average values for the high number of enterprises surveyed on average;

- the turnover size classes are consistent with the threshold chosen by the tax authority in its sector studies[5];

- the chosen legal form is consistent with the universe of valuated enterprises;

- the variable "life time" was introduced to standardise enterprises based on the different development stages;

- the geographical areas were considered in order to take into account the various local situations.

Table 3.2 shows the results obtained in 2000 Sme (Small and Medium Enterprises) data by applying both the previous and the current reassessment methods. The reassessment coefficients relate to value added and are calculated both on sample data and on grossed up data.

The method calls for re-evaluating the proceeds, the production's value and the rectification of the intermediate costs in order to guarantee the coherence among aggregates. For these aspects, it is recommended to view the Gni Inventory, edition 2008, paragraph 3.6.2".

The main objective of the labour input estimates is to comply with the economic aggregates to which they refer. The Italian national accountants implicitly reach such objective as they obtain value added by industry mainly by using labour input as raising factors for grossing up the per-capita value added. This approach is applied at regional and national level; it rests on the

different hours worked by employees and self-employed (stage 2) was obtained by multiplying per capita income in stage 1 by an hourly coefficient given from the ratio of the average hours worked by self-employed to the hours worked by employees based on data from the Lfs by industry. If no employees were on the enterprise payroll, the theoretical income of self-employed was compared with the adjusted average compensation of employees calculated by industry according to 3-digit Ateco classification, geographical area and worker size class (1-5, 6-9, 10-19 workers) (cfr. Metodologie di stima degli aggregati di contabilità nazionale a prezzi correnti – Italia – Inventario Sec95, Istat, Metodi e Norme n.21, 2004).

[5] Sector studies have been established by the Tax Authority since 1998 fiscal year to assess the potential of producing revenues by single industries. Sector studies are carried out by systematically colleting tax data and other "structural elements" characterizing the enterprise economic activities (turnover under 10 billion Liras). The underlying idea is to define a threshold below which the Tax Authority performs a checking procedure. The algorithm used in sector studies is based on some indicators not recorded by Istat business surveys.

belief that much unobserved activities can be captured in terms of work volume, thereby ensuring exhaustiveness of the corresponding supply-side aggregates.

The European system of national accounts states that production may be carried out by workers who may be resident or non-resident, with a formal or an informal arrangement, observed (registered) or not observed (unregistered) to fiscal or social security institutions, as a unique, main or second activity. At the time, the production is to be carried out on the economic territory of the country concerned and for the resident producer units (businesses, institutions, households).

Various major aspects relating to the principle of exhaustiveness are taken into account when estimating employment in the national accounts at regional level. They include: 1) data adjustment arising from the transition from survey definitions to "national accounts" (NA) definitions; 2) coverage of the producer units which make up the NA universe and associated employment; 3) comparison and integration of employment data gathered by socio-economic statistics and surveys to obtain labour input estimates in the NA framework.

Overall, the transition from survey data to Esa95 concepts is very complex. Two such examples are the boundary of the NA domestic employment concept and the fact that the output analysis units generally differ from the reporting units in household surveys (Population Census and Labour Force survey) and enterprise surveys. Such conceptual alignment is made possible by developing estimation methods for treating and integrating the sources and for the statistical problems associated with using different sources.

Another difficulty is that basic data have to be supplemented with information on employment that is not directly observed. Such employment is dealt with in different ways depending on whether it is not observed for statistical reasons or for economic reasons. In the first case, the volume of work is considered to be registered by national accountants that use integration techniques, while in the second case, the labour input is considered to be unregistered, since it takes place outwit the law. In the latter case, the unregistered volume of work is identified partially through the statistical survey addressed to households and partially by means of integrated data using indirect sources of information and methods.

According to the Italian approach, data not directly observed for economic reasons fully represent the unregistered dimension of employment. Estimates of the various types of registered and unregistered employment are published regularly, so that the contributions of the above types of labour input to the output of the labour factor of production can be measured and monitored over time.

Table 3.2 - Value added reassessment coefficient (2000 Sme Survey)

	Previous method	Current method
Sample		
Reassessment coefficient	8.9%	14.6%
Reassessed value added by worker (thousands Euros)	38.0	39.9
Grossed up data		
Reassessment coefficient	23.8%	27.2%
Reassessed value added by worker (thousands Euros)	33.4	34.3

Registered labour input may be defined as the sum of:

1) employment under a formal, full-time, open-ended contract;
2) employment under a formal, full-time, fixed-term contract;
3) employment under a formal, part-time contract;
4) multiple jobs performed in compliance with the tax legislation.
   Unregistered labour input is the sum of:
1) resident persons in full-time or part-time employment who are not entered on businesses payrolls or are not statistically observable;
2) resident housewives, students or pensioners who perform occasionally some hours of work;
3) non-resident, unregistered foreigners;
4) unregistered multiple jobs.

3.1.5.2 Labour input

Labour input is estimated by constructing a base year (benchmarking) and then extrapolating the estimates made in that year.

For the base and current years, annual estimates are currently made of the number of persons employed on the national territory, the number of jobs and the number of full-time equivalent labour units. Labour input is measured as the number of FTEs (Full-time equivalence), obtained by adjusting total jobs according to the average number of hours worked in a full-time job in the same economic activity.

The approach is also regarded as implicitly exhaustive in that it allows us to measure jobs and corresponding FTEs for various employment categories, which can be identified by combining and comparing various sources on both the labour supply and labour demand side, or by using indirect estimation methods. Combination and comparison are based on the assumption that each source, if suitably standardised (in terms of period covered, industry classification and target population), can be matched with the others to reveal statistical differences to which an economic significance can be attributed.

In constructing the base year, new sources and more refined statistical techniques allowed minimising the extent to which the statistical system was affected by unregistered work and lack of up-to-date information on producer units, and avoiding the risk of overlap between statistical units.

Since 1996, a business register on active enterprises (Asia) is available. Based on a combination of administrative and statistical sources, it provides better NA coverage of the producers, including those who cannot be identified by a physical location (professionals, consultants, quasi-subordinate workers, itinerant vendors).

Essentially, all the foregoing factors taken together make it possible to reincorporate by regions the statistically underground employment into the registered employment figures and to isolate the unregistered component arising from activity concealed for economic reasons.

The following are the main stages in estimating registered and unregistered employment in terms of numbers of jobs by region in the benchmark year:

   a) harmonisation and integration of various sources to obtain an exhaustive first estimate of job numbers;
   b) comparison of integrated sources on the labour demand side (enterprises and institutions) with those on the supply side (households) to capture specific categories of employment (persons in registered employment, unregistered workers, multiple registered jobs);

c) <u>estimation</u> of employment categories not directly observed by the sources (non-resident unregistered foreigners) and in-depth study of certain economic sectors to capture other types of employment (multiple jobs, number of non-active persons who report that they have performed some hours of work; employment in the informal sector);

d) <u>Conversion</u> of jobs into Ftes.

3.1.6 Calculation of Financial Intermediation Services by user industries

Nationally, the Financial Intermediation Services are separately available for final use (such as households) and intermediate use (such as market and non-market enterprises). It is regionally distributed using the distribution of the regional value added of the relative productive segment (market enterprises, General Government and market and non market enterprises).

3.1.7 Adjustments for commuting

The term "commuting" means the travelling back and forth for work of persons who work in a region other than the one in which they reside.

The method for estimating the regional value added is based on the criterion of localising the local KAUs and the production activity evaluated in the place in which it is physically carried out. The income of the labour force is thus attributed to the region where it is generated and not where it is used/spent (region of residence).

By elaborating these aggregates (production value, labour units) through the localisation of the local KAUs, it enables to avoid commuting-related adjustments of the value added.

Hence, the regional accounts are compiled without such commuting-related adjustments.

3.1.8 Transition from Gva to Gdp

To use data sources for the territorial elaboration of subsidies and taxes it's useful to distinguish the operators: the General Government and the European Union. The first one is divided into: Central Government sub-sector, Local Government sub-sector and Social security sub-sector. With regards to the Local Government, given the nature of its agencies, the regional distribution of the raised taxes and of the granted subsidies is obtained through bottom-up type methods, grouping the basic data from each local administration's balance-sheets. In the other cases, when working on the national territory, it is not enough to use directly basic data for distributing territorially taxes and subsidies. It must be done evaluating the effects of the public operator's economic action on the region.

The taxes on production and imports are regionalised according to the criterion of the "real taxable base", which helps to identify the place in which the economic condition behind the revenue took place. What really counts is the economic deed that gave rise to the taxation, without which the taxes would not be applied. The analysis is conducted for each type of tax, and verifies also the taxing mechanism: if the product that goes beyond the regional limits is already taxed or not, and if the taxing is applied at the moment of the consumption (such as for the excises). The following Table briefly indicates the allocation criterion used.

Table 3.3 - Revenues: method of regional allocation

Details revenues	Method of allocation
Import duties	Production-consumption
Excise duty on mineral oils	Consumption
Excise duty on beer	Consumption
Excise duty on spirits	Consumption
Excise duty on liquefied petroleum gases	Consumption
Excise duty on methane	Consumption
Excise duty on electricity	Consumption
Registration tax	Production-consumption
Mortgage taxes and land registry duties	Production-consumption
Duty in lieu of registration and stamp duties (excl. Insurance tax)	Consumption
Excise duty on tobacco	Consumption
Tax on lotto, lotteries, Totip and others games	Consumption
Motor vehicle duty	Production

The value added tax (Vat) represents a fundamental one among all the indirect taxes on production and imports. It is important first to describe some conceptual aspects before presenting its regionalisation criteria. The reference in the national accounts is made to the concept of the Vat incurred and not the Vat paid; the Vat incurred is drawn from the difference between invoiced Vat and total deductible Vat. For the Vat receipts, it does not matter if the good was produced by national (regional) enterprises: it can be imported from abroad (by other regions) and to generate Vat, since the only condition is that it be destined to final consumptions or uses that do not allow deducting taxes. Such tax allows identifying as main taxable person the consumer: the value added tax indeed is neutral in the intermediate passages among enterprises, traders, professional men or artists, since the Vat paid on purchases can be deducted from the Vat collected on the transfers, with the consequence that the tax to be paid is the positive difference between Vat collected and Vat paid. Therefore, the tax mainly weighs on the final consumption (weight equal to 70% of the overall receipt) and on gross capital formation (15%), while the residual share weighs on the intermediate exchanges among enterprises (12%) and on the costs of the General Government (almost 3%). For each one of these components, the Vat receipt is regionalised using proxy variables. For the Vat on intermediate exchanges, we use the regional distribution of the enterprises' value added for the share that weighs on them, and the regional distribution of the General Government's value added for their share. For the share of the gross capital formation, we use as proxy variable the regional distribution of the gross capital formation per owner branch, drawn to compile the good and services account.

As previously mentioned, the main part weighs on the final consumption. The Vat is applied on consumption goods at different rates according to the type of good or service used. Thus, a correct regionalisation must be done considering the different consumption expense categories and relative quantities used.

Some information is available nationally for each consumption good relative to the functional Coicop classification, the relative weight within the basket and rate applied. Hence, it is possible to calculate nationally the average weighted rates for all 24 consumption functions, multiplying the rates of each good by the relative weight in the consumption function considered. Hence:

$$\delta_i = \sum_{J=1}^{s} \lambda_{ij} \omega_{ij}$$

where

δ_i is the average weighted rate of the i-th function;

λ_{ij} is the rate of j-th good classified in the i-th function;

ω_{ij} is the weight of j-th good within i-th function.

Italy currently provides for 3 levels of rates: 4%, 10% and 20%.

The lowest rate (4%) is applied to indispensable goods (food products), books and magazines, while the 10%-rate to goods for satisfying food needs, housing and recreational services.

Table 3.4 summarises the average weighted rate for each consumption function. While doctor, hospital and school expenses are Vat-free, the maximum 20% rate is applied to eleven consumption functions, a rate between 10 and 16,1% is applied to six functions, and a rate between 5,1 and 9,3% is applied to the remaining five functions.

Table 3.4 - Tax rate - 2005

Classification of consumption	Year 2005
Food and non alcoholic beverages	7,8
Alcoholic beverages, tobacco	20,0
Clothing and footwear	20,0
Repair of clothes and footwear	20,0
Fuels, gas for dwellings	12,4
Housing (actual and imputed rentals, water, electricity, other services related to dwellings)	5,1
Furnishings, electric appliances, tools and equipment for house and garden	20,0
Glassware, Tableware, household utensils	20,0
Repair of furnishings, electric appliances, domestic services	6,5
Medicines, medical appliances	10,5
Medical and hospital services	0,0
Vehicles	20,0
Fuels, lubrificants and accessories for vehicles, repairs	20,0
Transport services	16,1
Telephones and related equipments+repairs	20,0
Postal and telephone services	9,3
Durable goods for recreation+repairs	20,0
Non durable goods for recreation+repairs	10,4
Recreation services	8,1
Education	0,0
Hotels, cafès and restaurants	10,0
Jewellery and watches +repairs	20,0
Other personal effects (suitcases, article for babies, for smokers,…)+repairs	20,0
Other services (social protection, insurance, finacial services, personal care,…)	11,0

The next step is to provide a first estimation of the regional Vat receipt derived from the product between weighted average rate of the i-th consumption function and the corresponding regional consumption.

$$VAT_i^r = \delta_i C_i^r$$

where

C_i^r indicates the consumption, for the region r-th, of the goods classified in the i-th function;

VAT_i^r indicates the estimation of the receipts of the region r-th and of the i-th function.

A correction coefficient is then applied to the provisional estimation of the Vat per region and per function, which results from the ratio between the overall data obtained through the aforementioned method and the national data estimated while compiling the national economic accounts. Hence, a regional data is obtained by consumption function and by region that is coherent with the national data.

Just as for the taxes, where possible the same procedure was done at each level of subsidies. Even in this case, the attention was mainly paid to the subsidies granted by the General Government. The main items regard the subsidies granted to farm holdings by the Agea (Italian Agency for Agriculture Payments), with regard to their production and food storage activities; the subsidies to the Italian State Railways, to the Post Offices, etc. Though these enterprises are active on the national territory, their registered office is mainly located in one region. The criterion for regionalising the General Government's subsidies is based on the territorial allocation of the fund-granted enterprises' workers. The European Union also grants a relevant contribution, the European Agricultural Guarantee Fund (Eagf), as part of its community agriculture policy. Their location by industry is based on the data provided by the Agea, which pays on behalf of the European Union.

3.2. Specific methods and sources for compiling Regional GVA

The overall value added per economic activity both at national and regional level is the result of the sum of the following productive segments:
- Market enterprises
- Market General Government
- Non-market General Government
- Market Non-profit institutions (Npis)
- Non-profit institutions serving households (Npishs).

This paragraph will describe the method for estimating the value added for market productive segment (Par. 3.2.1) and the non-market productive segment (Par. 3.2.2).

The most commonly used method in the "Market enterprises" is to estimate the value added by giving to the full-time equivalent units by industry and size class a specific per-capita value, estimated by means of enterprise surveys.

Such method will be defined as "general approach" because it is applied to all cases in which the necessary information is available, that is, the full-time equivalent units and the value added per full-time equivalent units. Hence not only will the general approach be explained but for the market segment, the methods and sources of the branches that adopt specific methods will be described.

Paragraph 3.2.2 (non market) presents the method for estimating the value added of the General Government and Npishs.

Table 3.5 reports briefly the industries and respective method, distinguished into general approach and specific approach.

Table 3.5 - Methodology used by industries and productive segment

	Productive segment				
	Company	General Government		Non-profit institutions	
	Market	Market	Non market	Market	Serving households
Industries					
Agriculture, hunting and forestry	*This estimation isn't calculated as summary of "Company", "Government" and "Npishs", but it's obtained as price by volume*				
Fishing	S	-	-	-	-
Mining and quarrying of energy producing materials	G	-	-	-	-
Mining and quarrying, except of energy producing materials	G	-	-	-	-
Manufacture of food products, beverages and tobacco	G	-	S	S	-
Manufacture of textiles and textile products	G	-	-	S	-
Manufacture of leather and leather products	G	-	-	S	-
Manufacture of pulp, paper and paper products; publishing and printing	G	-	-	S	-
Manufacture of chemicals, chemical products and man-made fibres	G	-	-	S	S
Manufacture of coke, refined petroleum products and nuclear fuel	G	-	-	-	-
Manufacture of other non-metallic mineral products	G	-	-	-	-
Manufacture of basic metals and fabricated metal products	G	-	-	-	-
Manufacture of electrical and optical equipment	G	-	-	S	-
Manufacture of machinery and equipment n.e.c.	G	-	-	S	-
Manufacture of transport equipment	G	-	-	S	-
Manufacture of wood and wood products	G	-	-	S	-
Manufacture of rubber and plastic products	G	-	-	-	-
Manufacturing n.e.c.	G	-	-	S	S
Electricity, gas and water supply	G	S	S	S	-
Construction	G	-	S	S	-
Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	G	S	-	S	S
Hotels and restaurants	G/S	S	S	S	S
Transport, storage and communication	G	-	S	S	-
Financial intermediation	S	-	S	S	-
Real estate, renting and business activities	G/S	S	S	S	S
Public administration and defence; compulsory social security	-	S	S	-	-
Education	G	-	S	S	S
Health and social work	G	S	S	S	S
Other community, social and personal service activities	G	S	S	S	S
Activities of households	S	-	-	-	-

G = General approach
S = Specific approach

3.2.1 Productive market segment

3.2.1.1 General approach

The approach used to estimate regional value added of market enterprises is based on output data declared by enterprises. This estimation method is carried out for the industry and services sectors, except for financial and domestic services branches, whose estimation is carried out using different methodologies that will be described further on. With regards to the branch of hotels and restaurants and the one of real estate activities, the estimates obtained by this methodology are respectively integrated with the estimation of tips and building rents, as we will see in the next paragraphs.

The main sources used to calculate regional value added evaluated at producer prices are the annual surveys on enterprises ("Survey on economic and financial accounts of large enterprises**"** and "Survey on small and medium enterprises") and the labour input data represented in terms of full-time equivalent units (par. 3.1.1.1).

The statistical treatment of survey data of enterprises (par. 3.2.1.2) provides an initial estimate of regional value added evaluated both at producer prices and at original prices coherently with the concepts and definitions of national accounts. The per-capita value is the ratio between the value added and the enterprise workers.

The value added considered is that evaluated at producer prices which includes taxes on products and other production taxes net of Vat. On the contrary, for the branches of tobacco and for those of the energy sector, the value added considered is at original prices and it corresponds to the one evaluated at producer prices net of taxes. The reason is that for these branches the tax component represents a significant share of the value added and therefore, in order to ensure coherence and accuracy, the tax component is considered apart and the one used is that calculated using administrative sources.

The initial estimate of regional per-capita value added is then analysed at a level of 30 branches of economic activity, of regions (Nuts2) and of enterprise size class in terms of workers (1-5 workers 6-19, 20-99, 100-249, 250 and more), to obtain domains coherent with those of labour units.

Further processing on survey data has been carried out. One of the reasons of these elaborations is to control the value added trend over time. In fact, while the analysis is based on value added per-capita values for the benchmark year (2001) - in order to define a regional structure for each branch and size class - for the following years, per-capita variations are analysed to ensure coherence over time.

An analysis aspect is the replacement of missing values. Some domains (region, branch, size class) are not represented by the survey and this means that no enterprise that belongs to that domain is included in the sample. In such cases of lack of information not explained also in terms of labour units, it is therefore necessary to integrate these missing values. The branch, region and size class missing data are integrated by analysing data of other size classes and of wider geographical domains (centre-north and south).

Another analysis aspect is the identification of outliers. The Regions are grouped in wider geographical areas (centre-north and south) and the 5 size classes are grouped in 2 classes (small/medium and large). Homogeneous groups are formed in terms of geographical area and size class and confidence intervals are constructed for each group; a value is to be considered an outlier in relation to its own group. Outliers are then replaced by the average group value of observations included within the confidence interval.

The resulting estimates of per-capita value added for each domain (region, branch and size class) are then weighed with the corresponding full-time equivalent units in order to obtain value added estimates:

$$_b Va_c^r = _b Vpc_c^r \times _b Ula_c^r$$

where:

Va = value added
Vpc = layer per-capita value added
Ula = full-time equivalent units
r = region
b = economic activity branch
c = size class of enterprise

The use of full-time equivalent units within the estimation procedure of regional value added is very important since it allows analysing data referring to enterprises in data classified according to local KAUs.

The sum of regional value added for each branch and size class is then aligned to the national value added by class and branch. The branch value is therefore calculated as a sum of branch size classes values. However, the branches of energy and construction sector are aligned to the total branch value and not to the classes branch values since at national level they are not estimated by class using the procedure "per-capita x labour unit".

The respect of the national constraint is not obtained by simple balancing. To eliminate the gap between the national value and the value given as a sum of regional estimates a different weight is assigned to each region according to its sample coverage, measured in terms of workers in relation to full-time equivalent units. Smaller is the weight of the region, wider is the difference between the regional unbalanced and balanced value.

The estimate of value added of market enterprises is then added to that of the other productive segments (General Government and Private social institutions), divided into market and non-market (market General Government and market non-profit institutions are described in par.3.2.1.2, while the non-market component is described in par.3.2.2).

Table 3.6 points out that for the benchmark year (2001) the regional value added computed by the above mentioned general procedure represents a high proportion (66%) of regional value added; the proportion is even higher (78%) if we consider only market enterprises.

It is to stress that Eurostat considers highly the quality and the "exhaustiveness"[6] of national account estimates obtained using procedures that are based on labour units.

Table 3.6 - Percentage method contribution to estimate value added - Year 2001

	Value added	
	Market productive segment	Total economy
"Per-capita x labour unit" method	78%	66%
Other methods	22%	34%
Total	100%	100%

3.2.1.1.1 Estimation method of the layer per-capita value added

This paragraph presents the estimation method of the per-capita value added used in the general approach. It is not a univocal method but depends on the enterprises' size class.
Specific estimation methods are used in the case of enterprises with 1 - 99 workers (being a sample survey), methods that are then adapted in the case of small areas.

For enterprises with more than 99 workers (exhaustive survey), attention is paid to correcting any outlier and estimating the value added of multi-located and multi-function units.
The value added is directly calculated in the case of small and medium enterprises (Table 3.7), without considering separately the production and the costs.

Enterprises with 1 - 99 workers

The survey on small and medium enterprises and on arts and professions (sample survey on enterprises with less than 100 workers) represents a main statistical source for estimating the value added relative to their size class, together with the archives "Asia" (Statistical Archive of Active Enterprises) and "Business accounts" (which contains all civil balance-sheets of joint-stock companies). The estimations are done by using the information held in the Asia archive, available at t+16 months after the reference year, on the number of workers, and on economic

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[6] For Eurostat, an estimate is considered "exhaustive", and thus of acceptable quality for European standards, if it considers both the "formal" and the "hidden" economy (European Commission, 1994).

activity and turnover. Asia 2004 included about 4,355,000 enterprises with less than 100 workers.

The business accounts data rightly represent many of the variables contained in Istat questionnaires, even if they concern only joint-stock companies.

In the national accounts estimations, the basic data of the sample survey on small and medium enterprises were submitted to an editing process to identify any outliers in a different way than the one adopted in the traditional survey procedures. In particular, the necessity to ensure an internal coherence among the economic variables surveyed and an external coherence among the different sources calls for an analysis at different levels.

Outliers are still identified and removed by deterministic and probabilistic filters. Compared to the previous revision, data were validated with information drawn from the business accounts, which allowed identifying enterprises that presented significant differences in the two sources. The variables are output and value added and the comparison thresholds measured to ensure the rule of statistical prudence (differences in the values per work higher than a defined parameter based on the sample numerousness). A deterministic criterion was introduced by analysing the relation between "turnover" and "costs". The logical thing to do is to put in relation turnover and costs of the enterprise with the average values of the domain to which it belongs. The simultaneous presence of a turnover at least ten times the average and of costs at least ten times under the average was considered as not feasible. Analytically, the model is based on the definition of the two following indexes, that is, turnover and costs:

$$(I\_fatt)_{ij} = (K^*)_j / (K)_{ij}$$
$$(I\_cost)_{ij} = (C)_{ij} / (C^*)_j$$

Where

K_{ij} = turnover per worker of the i-th enterprise part of layer j
K^*_j = average turnover per worker of enterprises part of layer j
C_{ij} = intermediate costs per worker of the i-th enterprise part of layer j
C^*_j = average intermediate costs per worker of enterprises part of layer j
j = layer index: 2 digit Ateco, worker class, geographical area, starting class, legal form, and value added class.
A data is deemed as outlier when:

$$(I\_fatt)_{ij} <= 0,1 \ e \ (I\_cost)_{ij} <= 0,1$$

The editing controls lead on average to a 6%-7% reduction of the units in the Sme sample. The probabilistic filter is based on the definition of a confidence interval that depends on the layer's numerousness. The variables of interest are the value added per worker, the labour cost per employee and the value added on output. The layer is defined at a 2-digit Ateco and worker classes 0-9, 10-19, 20-49 and 50-99. If the numerousness of the layer is lower than the threshold established (5 enterprises), it is extended starting from a 2-digit Ateco. The filter cuts the enterprises that are outside such variable width interval centred on the variable's average value.

After the editing is done, the data of the survey on small and medium enterprises are submitted to a correction procedure of the production, turnover, value added and costs, often characterised by problems of bias due to the tendency that enterprises have in under-declaring profits or indicating a value of costs higher than the effective value (see section on exhaustiveness, par. 3.1.5.1).

Subsequently, the next step involves estimating the value added. The domain of interest is represented by the combination of modalities of the following variables:

- Economic activity classes (30 branches),

- Worker classes (1-5, 6-19, 20-99),

- Legal form (non joint-stock companies, joint-stock companies).

- Region (21 Nuts2)

Since the domains are not planned, an indirect estimation method was adopted to use better the sample information not only of the domain object of estimation but also of the survey in general. An ad hoc estimator was realised, defined as Sample Error Dependent Estimator - SEDE.

This estimator lies between the composed estimator and the *Simple Size Dependent* estimator, since it considers both the sample size and the measurement of variability in the respective domains. The idea is to consider the direct estimator only in the case in which the sample size enables to obtain, with a certain degree of confidence, an error under the pre-established level. Should this not take place, a weighted average between direct estimator and synthetic estimator is considered where the weight is function of the sample size and of a pre-established "threshold".

The estimator can be formulated as follows:

$$_{new}\hat{Y}_{mijk} = \alpha_{mijk} \; _{dir}\hat{Y}_{mijk} + (1-\alpha_{mijk}) \; _{S}\hat{Y}_{mijk}$$

where:
m = region index,
i = branch index (1=1,…, 30),
j = worker size class index (j=1, ….., 3),
k = legal form index (k=1, 2),
n= sample workers
N= workers grossed up to the universe (Asia workers)

$$_{dir}\hat{Y}_{mijk} = \frac{N_{mijk}}{\hat{n}_{mijk}} \sum_{l \in mijk} Y_l \text{ is the direct estimator of domain "mijk"}$$

l = index of the sample enterprises contained in domain "mijk"

$_{S}\hat{Y}_{mijk}$ is the synthetic estimator of domain "mijk" (per region, branch and size class)

$$\alpha_{mijk} = \begin{cases} 1 & \text{if } n_{mijk} \geq n'_{mijk} \\ n_{mijk}/n'_{mijk} & \text{otherwise} \end{cases}$$

where

n_{mijk} = sample size observed of the domain object of interest;

n'_{mijk} = is the theoretic sample size, determined according to the efficiency of the direct estimator (maximum error of 33%, at a confidence level of 0.95).

A specific estimation procedure was followed for the administrative region "Trentino-Alto Adige", made up of two Nuts2, Trento and Bolzano. While the direct estimator remains the same, the synthetic estimator is based on estimations per branch and size class, constructed on

the region's data in general. In case of no data, the estimation selected is that per branch and class constructed on the data of the macro-region "North-East", made up of regions "Trentino-Alto Adige", "Veneto" and "Friuli-Venezia Giulia". The additional step involves the data of this macro-region, based on data classified per branch, in case they are not available per branch and class. The theoretical sample size is established, setting a 25%-error at a 0.95 confidence level. It is calculated by means of Asia, the only census type archive for enterprises with less than 100 workers. In particular the economic variables of the turnover were taken into consideration, being strongly correlated with the main economic aggregates of the national accounts.

Workers from the Asia archive are taken to calculate the coefficients to carry over to the universe. This archive, infact, allows to define the universe of enterprises with up to 100 workers, stratified according to the domains.

The last step is to integrate with the "Business accounts" archive as regards joint-stock companies. In particular, for the variables common to sample survey and "Business accounts" archive, among which the value added, the sample estimations are substituted with the administrative data from the "Business accounts" archive. Because it contains a very high number of joint-stock companies (85% of the total in 2004), it virtually represents an exhaustive universe affected by an almost negligible estimation errors as it also has a non-exhaustive share surveyed. The level of the value added is the sum of the levels of both legal forms considered according to the domains (region, 30 branches and size class). One such legal form is the joint-stock companies, whose level is the sum of the value added data of all enterprises included in the "Business accounts" archive and corrected in order to consider also the enterprises not included in the archive. The other form is the non-joint stock companies, whose level is drawn from the sample data of the survey and to which the afore-mentioned estimator is applied.

Table 3.7- Main aggregates derived from the survey that contribute in determining the production and intermediate costs

Proceeds =
 (+) sales of enterprise's manufactures
 (+) sales of goods acquired and resold without transformation
 (+) manufacturing for third party
 (+) manufacturing to order of third party
 (+) intermediation activities
 (+) gross traffic receipts
 (+) services to third party
 (+) increase in the fixed capital formation for internal works
 	
 (change in the stock (final without intiial) =
 (+) finished products
 (+) products under manufacturing
 (+) goods to be resold without transformation
 	
 Production at producer prices =
 (+) proceeds
 (+) change in stock
 (+) receipts for Royalties and patents
 (-) purchase of goods to be resold without transformation
 (+) processing tax
 (+) other production taxes
	Purchase of goods =
	 (+) raw, subsidiary and consumption material
	 (+) energy products
	 Purchase of services =
	 (+) manufactures performed by third party
	 (+) other manufactures
	 (+) transport of goods
	 (+) other transports
	 (+) intermediation services
	 (+) advertisement and propaganda
	 (+)studies and researches
	 (+) consultancy
	 (+) computer services
	 (+) $q *$ insurance premiums [a]
	 (+) disposal of refuses
	 (+) bank expenses net of interest allowed
	 (+) other services
	     Costs sustained to benefit from goods of third party =
	 (+) rents
	 (+)leasing shares
	 (+) license fees to use royalties and patents
	 (+) other rents
	 (+) lease fees of industrial goods
	
	 Other management costs =
	 (+) personnel training
	 (+) remunerations to the kl,
	     Change in stock (initial without final) =
	 (+)raw, subsidiary and consumption material
	
	 Intermediate costs
	 (+) purchases of goods
	 (+) purchases of services
	 (+) costs sustained to benefit from goods of third party
	 (+) other management costs
	 (+) change in stock

VALUE ADDED AT PRODUCER PRICES = (+)PRODUCTION AT PRODUCER PRICES (–) INTERMEDIATE COSTS	

Enterprises with more than 99 workers

The survey on Enterprises' System of Accounts is an exhaustive survey with regards to the considered observation domain (enterprises with at least 20 workers until 1997 and with at least 100 workers since 1998). Theoretically speaking, this universe coincides with the one required by the national accounts schemes, since there are no such large "hidden" enterprises.
This survey is used for two purposes:

1. to estimate the value added per-capita and the levels for the benchmark year;
2. to estimate the change between year t-1 and year t of the per-capita values of the value added referred to the current year.

Enterprise imputed data (due to total non-responses) through the causal donor method were not considered when estimating the value added and economic variables in general. However, they were used for estimating the total number of workers (employees and self-employed); its information is indeed considered as reliable, based on many real sources (statistical and administrative) and not statistically calculated. The editing criteria setting cannot be separated, if not for simplicity of description, from the estimation method. The elements considered are the following:

− the imputation of the non-responses through the ordinary business accounts, allows for a high though not total coverage per branch and allows level estimations in each reference year,
− the availability of datasets in both *time series* and *cross section* allows a very detailed data analysis.

Given the census nature of the survey, there are no problems linked with sampling errors. However this survey presents other critical elements. First of all the necessity of underlining the detail of the national accounts analyses, second of all the necessity to correctly survey the functional units of the enterprises with several economic activities. It is even more difficult to measure the "true" economic activity units of enterprises that register frequent and numerous events of mergers and acquisitions. Often the presence of an outlier in a domain of analysis is due to a non-observation of a company event in the survey's reference year.

To consider non-balanced panels has helped to fully use survey information and overcome the difficulties that come from the trend of the enterprises' parcelling out events. This has enabled to faithfully represent the economic aggregates' levels, as drawn from the survey variables and trend variable among economic sectors, as perceived from the questionnaires handed out to the enterprises. The procedure provides for the following steps:

1. *Accounting admissibility filter*

   - the negative values are admitted only for the change in stock;
   - if items other than the change in stock are negative, they are considered as missing data;
   - the statistical units with negative output are removed from the analysis so that they are considered only when carried over to the universe.
   -

2. *Smoothing*

The statistical validation regards the aggregates of interest (turnover, output, labour cost, value added at enterprise prices) and includes these three steps:

- regularisation of the changes relative to the per-capita, by means of a function that controls if it diverges from the norm;
- reconstruction of the levels referred to year t, starting from the changes as explained here before, conditionally at the definitive data t-1 and under the minimum distance constraint compared to the quantities observed in t according to a less thin stratification;
- reconstruction of the elementary variables, addends of the aggregates to guarantee the non-negativity of the trade margins.

Considering the stratification variables i,j,k, the procedure can be formalised as follows.

Given $X_{..kt} \gg 0$, $X_{.jkt} \gg 0$, $X_{ijkt} \gg 0$, $X_{.jkt}$ is the interest width.

Moreover $f\left(\left|a_t\right|,\delta\right)$ e $g\left(b_t \cdot c_t, d_{t-1}, \eta\right)$ are two functions that:

$$\forall a_t, \ \exists \zeta > 0 : f\left(\left|a_t\right|, \delta\right) \in \left\{ f : f\left(0\right) = 0, \ f\left(+\infty\right) = \delta < +\infty, \ \frac{df}{d\left|a_t\right|} = o\left(\left|a_t\right|\right) \ \forall \left|a_t\right| > \zeta \right\}$$

$$\forall \ b_t, c_t, d_{t-1}, \eta > 0, \ g\left(b_t \cdot c_t, d_{t-1}, \eta\right) = \begin{cases} b_t \cdot c_t & se \quad \dfrac{b_t \cdot c_t}{d_{t-1}} \leq \eta < +\infty \\[2ex] c_t & se \quad \dfrac{b_t \cdot c_t}{d_{t-1}} > \eta < +\infty \end{cases}$$

$$r = \frac{X_{ijkt}}{X_{\cdot jkt-1}}$$

Then, once   defined, one obtains

$$\hat{X}_{ijkt} = \bar{X}_{jkt-1} \cdot \left[1 + f\left(\left|r-1\right|, \delta\right) \cdot sign\left(r-1\right)\right]$$

The reabsorbing of the discrepancies between $\hat{X}_{.kt}$ and $X_{.kt}$ makes it necessary to adopt a repetitive procedure:

$$\begin{cases} \hat{X}_{jkt}^{(k)} = \hat{X}_{jkt} & per \ h = 0 \\[2ex] \hat{X}_{jkt}^{(k)} = g\left(\dfrac{X_{.kt}}{\hat{X}_{.kt}^{(k-1)}} \cdot \hat{X}_{jkt}^{(k-1)}, X_{jkt-1}, \eta\right) & per \ h > 0 \end{cases}$$

The estimation of interest is obtained as:

$\hat{X}_{jkt}^{H}$ so that $\hat{X}_{.kt}^{(H)} \cong X_{.kt}$

− because the addends make up an articulation of the width quantified as such, they are obtained by maintaining the proportionality between elementary and aggregated items, observed in the survey data.

Under the hypothesis that the total non-response does not depend on the intensities of the characters object of survey, a ratio estimator is used for the quantifications of interest; for the national accounts, the reference domain is the combination of these modalities:

- Region (21 Nuts2)
- economic activity class (30 branches),
- worker class (100-249, 250 and more workers).

Hence the estimator can be expressed as:

$$\hat{Y}_{ijkt} = \frac{N_{ijkt}}{n_{ijkt}} \sum_{l \in ijkt} Y_l$$

where:

i = Region index
j = Economic activity branch index,

k = Worker size class index (j=1, 2 – corresponding to the modalities 100-249, 250 and over),

t = Reference year,

l = Index on the enterprises part of domain "ijkt",

n= Workers of the enterprises surveyed or imputed by business accounts,

N= Workers referred to the target population (workers of the enterprises surveyed, workers of business accounts imputed enterprises, workers of enterprises imputed with the casual donor method).

3.2.1.1.2 The estimation of labour input

The approach which characterises the estimation of labour input at the national level is also at the base of the methodology used for elaborating regional estimates. It involves estimating the labour input (persons employed, jobs and full-time equivalent units) for a benchmark year, identified as the year for which a set of exhaustive informative sources is available. It also requires updating the estimations for the following years, by means of indicators of employment trends.

Though the informative set that led to the national estimations is the same as that for the regional estimations, the elaboration of the basic data at territorial level did not guarantee the automatic convergence of the regional estimations with the corresponding estimations at national level. Infact, when compiling the national accounts, it was necessary to integrate, elaborate and manipulate the basic data in order to guarantee the coverage of the observation field and express the estimations in terms of annual average. This occurred at the mesodata level, that is, on basic data already aggregated at a national level.

The estimations on the labour input at regional level were thus based on a top-down method, except for some specific sectors. The informative sources were used in order to calculate structural indicators by region. The methodology was applied at a detailed level that allowed distributing the different segments of the labour input already classified by economic activity, by means of suitable and specific indicators.

Despite being a top-down approach, its steps repeat those of the method applied at the national level, which can be summarised as follows:

  a) harmonisation and integration of the different informative sources on employment surveyed on enterprises, institutions and households in order to obtain a first non-exhaustive estimation of the number of registered and non-registered persons employed and jobs;

  b) estimation of specific employment categories, such as non-resident non-registered foreigners, multiple jobs not directly observable (especially in some economic sectors), jobs not directly observable related to maintenance of dwellings;

  c) transformation of jobs into full-time equivalent units.

The first step is to elaborate an informative set to estimate separately persons employed and jobs and to identify the non-registered component. This first step is mainly based on census data, in particular for the benchmark year. This allows to obtain quite exhaustive estimations of the labour input, though it is necessary to integrate the results with other important ad hoc components as indicated under point b).

The estimation of persons employed and jobs: first step

This first step aims at measuring the registered jobs (including the multiple-jobs) and persons employed (the primary registered and non-registered jobs).

The 2001 Industry and Service Census represents the best database to estimate the registered jobs for the benchmark year, though some additional informative sources have enabled to reach exhaustive estimations with respect to the observation field of the regional accounts.

This Census was provided at a micro-data level by the competent division. This allowed to conduct a detailed analysis of the units and their classification coherently with the accounting rules of the Esa95 and the regional accounts manual.

First of all, the Census is divided into two universes: one relative to the General Government and one to the Private sector.

As described in paragraph 3.1.1 and 3.1.3, for the Private sector, the Census allows to measure employment per local KAU, and to classify the units and employment working coherently with the concept of units as defined by the regional accounts manual. For the regional estimates, the Census was elaborated at a 2-digit level of the Nace Rev.1 (59 divisions). Moreover the availability of the data at the individual level allowed to group the data at a 2-digit level of the Nuts classification, considering Trento and Bolzano as two different regions. Finally the data were grouped for the 3 status in employment (employees, self-employed and quasi subordinate workers) and 6 enterprise size class (1-5, 6-19, 20-49, 50-99, 100-249, 250+ workers). For employees, the breakdown concerned also the distinction between enterprises and private institutions.

The Census data grouped, according to these criteria, represented the basis for distributing at the regional level the registered jobs estimated at a national level (at the same level of detail, except for the territorial level), separately for primary and multiple jobs.

However two important steps had to be taken before using the regional indicators.

The Census data, surveyed with reference to 21 October 2001, were reported into annual average data. Coefficients based on the Asia Register and the Inps register allowed to transform census data - disaggregated by status (employees and self-employed), region and economic activity – into data expressed in annual average.

A further step had to be taken in order to guarantee the coverage of the economic activities. As for the national estimates, Census of Industry and Services was integrated with the Agriculture Census for employees and self-employed. The latter surveys data on the work relatively to the agrarian year 2000; hence here too, it was necessary to carry over the data at 2001 annual average values, using coefficients drawn from the Labour Force survey.

By using the same informative sources for both national and regional estimations, it was possible to reach a satisfying convergence of the regional data with the constraint to be distributed while the entity of the calibration resulted rather low.

The registered jobs were finally estimated by entering the estimations of the General Government sector (S13).

In this case for the benchmark year and for the following years, the national estimates are obtained as the aggregation of the regional data, i.e. they are obtained through a bottom-up approach. Every year, the Ministry of Economy provides data on the personnel of the public sector for each institution. This informative source, suitably integrated for non-responding institutions, makes it possible to estimate the employment of all institutions included in the sector S13 as listed every year by Istat. Because individual data are available on the institutions and their territorial distribution, the estimations are produced at a regional level, including a separate estimate for employment engaged extra-regionally. In particular, the latter employment includes public servants who work abroad, such as:

- Employees of Ministries and of the Foreign Trade Institution (Istituto Commercio Estero – ICE) located abroad;
- Employees of Italian embassies and consulates
- The army abroad on missions.

National estimates are drawn by aggregating the regional estimates.

Employment in sector S13 is estimated at regional level using both the data surveyed by the Annual account, provided by the Ministry of Economy, and data surveyed by the Industry and Service Census regarding public institutions. The Census represents indeed the only informative source that surveys the economic activity of each local unit of institutions part of sector S13 and their corresponding employment: it is the informative basis for calculating employment indicators by economic activity. The grid of indicators was elaborated according to the following breakdowns: regions, economic activity (5-digit of the Ateco classification) and 35 groups of institutions of sector S13. The number of employees for the benchmark year and following years is estimated by means of the data gathered from the Annual Account, integrated with the institutions not responding to the survey. The estimate is calculated for each institution, then grouped by region and by the 35 groups of institutions. Such estimates are distributed per economic activity through the grid of indicators estimated from the 2001 Industry and Service Census.

As far as persons employed are concerned, the estimation of primary registered and non-registered jobs was based on data from the Labour Force survey. In particular these latter data refer to the series of persons employed estimated according to the new continuous survey started in 2004 and to the backwards series estimated by the division responsible for the survey at regional level and for 11 economic sectors. Based on these data, indicators allowed to breakdown persons employed by region. The analysis detail is here less in-depth than the one allowed by the census sources: it provided for 2 status in employment (employees and self-employed), 21 regions (though the series of the Labour Force was reconstructed for the total of Trentino Alto Adige, the survey's previous series enabled to separate out Trento and Bolzano according to 2-digit set by Nuts regulation), 11 economic activities and no information on the size class.

Starting from the regional estimates so obtained, the non-registered segment could be identified using the characteristic ratios of the pre-existing regional series: in fact differentials among regions in terms of incidence of non-registered jobs were maintained unchanged.

This methodology provided estimates for the benchmark year 2001 for the employment segments analysed up until now. A different method and different informative sources were used to update the estimates for the following years (except for the General Government sector).

As for the national estimates, the methodology is based on updating by means of trend indicators applied to estimates related to the starting year in order to obtain estimates for the current year. For the territorial estimates, it was necessary to submit the regional estimates to weighting procedures to calibrate final figures to national constraints.

The Labour Force survey still represents the best source for updating the estimation of persons employed. From survey data, trend indicators on the number of persons employed are elaborated by status in employment, region and economic activity (the available detail is 59 divisions since 2004).

As far as registered primary and secondary jobs are considered, trend indicators are based on sources annually available: the Asia register of active enterprises, social security records provided by enterprises to the Social security institute (Inps), and the Survey on economic and financial accounts of large enterprises (Sci). This latter survey represents a good source to estimate the big-sized units because it surveys functional unit of enterprises located in different regions. But it is available only for estimation of jobs for year t-3 (definitive year) and for

enterprises with more than 99 persons employed. The Asia register is used when this survey is not available (that is, for small enterprises and for large enterprises for year t-2). Asia registers only the location and economic activity of the enterprise ad not of its local units. Therefore the allocation of units by region and economic activity is defined for the benchmark year and the information derived from the register provide approximate indications on the phenomenon by economic sector. Finally, the indicator allowing to update estimates related to all enterprises, for the year t-1 and to non-profit institutions for all the three years, is based on the administrative data provided by Inps. Since this register follows the same classification criteria as the Asia register, the indicator drawn from it makes up a proxy of the sector trends.

As regards the agriculture sector, the lack of significant informative sources on the enterprises' side does not allow to estimate specific indicators for the registered component of the labour input. The employment trends drawn from the Labour Force survey represent the main indicator for updating jobs in this sector. However, to consider also the relevant share of marginal work (own-production and small family farms), the Labour Force indicator is weighted with the production trend in the sector at regional level.

The estimate of particular sectors and components of persons employed and jobs: second step

In order to guarantee the exhaustiveness of the estimates on labour input, estimates on persons employed and jobs produced by the methodology described until now, are further enriched with estimates on the labour input in specific economic sectors. Direct information is indeed lacking on some kinds of non-registered work in the sectors in which it is particularly relevant. Moreover, it is necessary to integrate the observation field in relation to the units involved in the surveys that directly measure employment. These surveys indeed do not cover non-resident non-registered persons employed (excluded from the sample of the Labour Force survey and excluded from persons employed declared by the enterprises being non-registered), nor households in their function as employers.

As for non-registered jobs, estimates must be integrated in order to include the hidden employment that cannot be fully and directly surveyed. Hidden employment is mainly carried out in the following sectors: construction, hotels and restaurants and transport on behalf of third parties.

Methods, sources and indicators used in order to estimate non registered jobs in these sectors at the national level are different depending on the sector to which they belong. At the regional level, the top-down method is mainly used to identify direct and indirect indicators allowing to describe the phenomenon in its territorial distribution.

The labour units in the hotels, restaurants and construction sectors are indirectly estimated at the national level from the data on households and/or enterprises final expenditure disaggregated by the kind of service considered. Generally, the estimation of the labour units is higher than that obtained by means of statistical-administrative sources on employment. Such difference proves there is a further non-registered job form classified and that this amount can be classified as multiple non-registered jobs. Different indicators must be used in order to distribute these estimates by region.

The indirect indicator in the Hotel sector is represented by the number of Italian and foreign visits in accommodation facilities: information available among the tourism statistics that every year Istat publishes. The indicator in the Restaurant sector is based on the territorial distribution of restaurants drawn from the Asia register. Finally the territorial distribution indicator for the Construction sector accounts for the number of dwellings completely built by region and the

construction cost index of a residential dwelling: these data are, also, published every year by Istat among the Construction sector statistics.

In the Transport sector, estimation of full-time equivalent units in freight transport and transport of persons by road on behalf of third parties is based on the number of circulating vehicles (adequately classified per type of vehicle) provided every year by the Italian motorists' association (Aci). These information are available also at the regional level and are therefore used in order to disaggregate national estimates by region.

The exhaustiveness of the regional estimates requires the coverage of the observation field in relation to the economic sectors making it necessary to estimate persons employed by households for personal services (class 95.00 of the Nace Rev.1). This sector is characterised by the high presence of non-registered employment and thus the estimation of employment requires using several informative sources. The method used follows the one used at the national level as the sources used are also available at regional level.

Registered persons employed by households are estimated through the returns that households are to present to Inps (the Social Security Institute for the Private Sector) for persons employed in the family and for those working as concierge of residential buildings. These data allow to identify the localisation of the employer; this indicator is used to distribute by region the amount of registered jobs in this sector estimated at the national level. At the same time, the multi-purpose survey addressed every year to a sample of about 20 thousand households, allows to survey information on households as employers. Just as for the national estimates, the information gathered by the survey is elaborated to estimate the overall volume of the labour input in this sector (registered and non registered), here at regional level. Once the total volume of jobs and the registered component have been distributed by region, the non-registered component is estimated, subtracting from total jobs (estimated through the statistical survey) the number of registered jobs only (estimated through the administrative source).

A final component of employment to be estimated regards the foreign non-resident persons working without being registered. Here too a top-down approach was applied to distribute national estimates (disaggregated by economic activity) by region.

The territorial distribution indicators were obtained from administrative sources, that is, from the analysis of the authorisations admitted for each region by the 2002 law that allowed to regulate foreign persons employed non-registered on the economic territory. Thanks to this law, employers have progressively sent contribution returns to Inps. These employees progressively "emerged" in the Inps register allowing to localise their presence and to identify the economic sector in which they are involved. By using this information together with the incoming flows of foreigners authorised by law, it is possible to estimate the territorial distribution of non-registered non-resident foreigners.

In 2004 and in 2006, additional laws were issued defining incoming flows for non-resident foreigners. The distribution by region and by economic activity estimated for 2002 was further verified and updated, where necessary, for estimates related to these years.

Transformation of the jobs into full-time labour units

The total amount of jobs constitutes the basis to estimate the corresponding full-time equivalent units, which enables to account for the actual contribution in the production process of especially three work categories:
- part-timers;
- employment temporarily not at work for reduction in economic activity (benefiting of the wage guarantee fund);

• registered and non-registered multiple jobs.

Part-time jobs at regional level are estimated through the same informative sources as for the corresponding national estimates. For the private sector, Inps provides the number of part-timers and the corresponding number of hours worked. This enables to distribute part-timers by region and economic activity and to calculate coefficients to transform them into full-time labour units: coefficients are estimated as the ratio between hours worked and number of hours to be worked by a full-time job as defined by national contracts. Since Inps provides individual data on enterprises, they are classified correctly by economic activity and region.

The Annual survey on employees in the public sector provided by the Ministry of Economy provides similar information allowing to estimate part-timers in the General Government sector by region.

In order to estimate the number of full-time equivalent units on wage guarantee fund, Inps provides the number of hours effectively paid by the Institute to each enterprise and/or establishment over the years. Because data and identification codes for each productive unit are available, it is possible to link Inps register with Istat sources on enterprises and local units (2001 Industry and Service Census and Asia register of active enterprises). Hence, it is possible to associate the economic activity code of the Ateco classification to each production unit.

The multiple jobs of all economic sectors, except for Agriculture, were transformed into full-time equivalent units thanks to the information from the Labour Force survey on persons carrying out a secondary job: in particular using the ratio between hours worked in the secondary activities and hours worked in the main job, separately estimated for self-employed and employees by economic activity.

In some specific sectors jobs are differently transformed into full-time equivalent units. In the Agriculture sector the number of days worked is available for the different jobs identified in the Agriculture Census. The corresponding labour units are obtained through the ratio between the number of days surveyed and the average number of days worked during the year by a full-time worker.

In other productive sectors, such as Hotels, Restaurants and Transport, data for the whole sector are estimated through indirect methods that directly provide estimates on the amount of full-time equivalent units.

Finally, full-time equivalent units in the Households sector are estimated multiplying all the jobs by a coefficient resulting from the ratio between the estimated amount of hours actually worked (derived from the multi-purpose survey) and the average number of hours worked by a full-time registered worker (provided by Inps).

3.2.1.2 Value added of non-profit institutions and General Government of the market productive segment

Table 3.8 presents the weight in terms of labour units of the non-profit institutions and General Government compared to the total of the productive segments, for Italy and per geographical area (Centre-North and South).

Table 3.8 - General Government and Npis market full-time equivalent units on total full-time equivalent units (as percentage) - Year 2001

	Center-North (%)	South (%)	Total (%)
General Government market	0,5	0,3	0,4
Npis market	2,1	1,4	1,9

At national level, the estimates of the two productive segments are based on the availability of basic data from direct sources (see *Gni (Gross national income) Inventory*, edition 2008), while at regional level, such estimation method cannot be repeated because of missing information at territorial level.

Therefore, the regional value added is obtained by preliminarily estimating indicators that distribute the national value added among the regions.

The per-capita regional value added drawn from the estimation of the market enterprises' segment is extrapolated to the universe of labour units of the General Government and the non-profit market institutions segments through the following formulas:

market General Government:

$$Vapam^r_b = pcim^r_b * ulapam^r_b$$

where:

- $Vapam^r_b$ = value added of the General Government's market segment of region r and branch b;
- $pcim^r_b$ = per-capita value added of the enterprises' market segment of region r and branch b;
- $ulapam^r_b$ = workers in term of full-time equivalent units of the General Government segment of region r and branch b;

market non-profit institutions:

$$Vaism^r_b = pcim^r_b * ulaism^r_b$$

where:

- $Vaisam^r_b$ = value added of the non-profit market segment of region r and branch b;
- $pcim^r_b$ = per-capita value added of the enterprises' market segment of region r and branch b;
- $ulaism^r_b$ = workers in term of full-time equivalent units of the non-profit market segment of region r and branch b.

The regional distribution of the value added thus obtained, per economic activity branch and for each of the productive segments, is used to distribute the corresponding national data.

The next Table reports the corresponding weights in terms of value added.

Table 3.9 - General Government and Npis market Gva on Total Gva (as percentage) - Year 2001

	Centre-North (%)	South (%)	Total (%)
Government market	0,5	0,3	0,4
Npis market	2,1	1,4	1,9

3.2.1.3 Agriculture, Hunting and Related Service Activities (A)[7]

The regional accounts are constructed on the basis of the same information used for elaborating the national accounts.

Just as for the national accounts, the institution responsible is Istat/Dccn/Obs/A the Italian Eaa (Agriculture economic accounts) unit. The regional accounts system is substantially the one described in the national accounts inventory.

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[7] The value added of the agriculture, forestry and fishing branch is not estimated by adding the different productive segments, since it is exhaustively done through the estimation "quantity per price". However it is justified to put it in this chapter as about 99% of the production is obtained from market enterprises.

3.2.1.3.1 Main sources

Just as for the national accounts, the following sources were also used for the regional accounts, together with those already used in the past:

- Experimental survey on the economic results of farm holdings (Rea) years 1998 – 2001
- 5^{ft} 2000 Agriculture Census
- Survey on the Structure and production of farm holdings (Spa) year 2003
- New (revised) survey on intermediate costs, distribution and production of fertilizers, feeding stuffs, seeds and plant protection products.
- Sample survey on ornamental farms in Tuscany (preliminary elaboration) (Tuscany Region)
- Administrative data from associations of producers and institutions including: Unima (the Italian National Union of Machinery and Equipment for Agriculture), snail breeders, and others.

3.2.1.3.2 Outlines on the system of surveys in Agriculture: system view

Just as for the national accounts, this paragraph will very briefly analyse the system of surveys in the Agriculture sector, valid also at regional level.

The still ongoing deep revision of the surveys in Agriculture, started at the beginning of the 1990s, mainly regards the methods adopted and an increasingly sustained use of administrative sources.

Compared to the past, this leads to a reference scheme to be adopted for constructing the system of agriculture statistics, with both structural and trend various surveys, and currently used in constructing the accounts.

Unlike the other economic sectors, the Agriculture sector is interested by many specialist sector surveys aimed at providing surface and production data. Many surveys result from regulations and decisions taken by the Commission and are conducted by member States on precise dispositions of the European Union (Eu). Now all informative sources used will be analysed.

One of the new surveys is the Annual survey on the economic results of farm holdings (Rea), created to deal with the new cognitive needs suggested by the Community regulation n. 2223/96 that sets a detail of the accounts, both for the production estimation by product and the estimations by branch.

A specific card enclosed (Is3a) describes the survey characteristics.

As regards the other sources, please see the illustrated cards of each source. For example, the sample survey on farm holdings' structure and production (Is2) is currently conducted every three months while the production means surveys (Is11, Is12, Is13, Is14) have greatly improved both in their informative contents and for the number of respondents.

For the Agriculture Census, data from the 5th 2000 Census were used (updated with card Isi).

Istat's survey on agriculture prices, whose cards (Is6, Is7) were already included in the previous edition of the inventory, has been extended and its range of products surveyed has been improved. Weights have been updated with the new estimations of the national accounts and the year has been changed (2000).

3.2.1.3.3 Methodology

The estimation methods of the main variables (production, intermediate costs, and value added in national and regional accounts) are mainly linked to available sources and can substantially be traced back to two calculation methods:

- direct survey of costs and profits.
- aggregation of estimates on quantities and prices.

Because of its many particular, specifical, economical and socio-political implications (more than 50% of the Eu Balance is dedicated to it), the Agricultural sector needs a database that allows in the future for the method currently in use (quantity per price aggregation) to coexist with the sources (direct survey of costs and profits).

During the year, these information are integrated with sowing, harvest forecasts and current productions data so as to gather elements useful for constructing the quarterly accounts of agriculture, elaborated in national accounts and coherent with the central framework of accounts.

Just as for the first application of the Esa95, the traditional approach of quantity per price aggregation system was maintained based on regional data and, in many cases, provincial data. For the first time and only for few aggregates, it was supported by the direct survey costs and profits of the Rea to control the levels and coherence of the data, as well as the overall impact of the sector value added estimations, aimed at constructing an annual supply and use Table.

The peculiarity and specificity of the Agriculture sector justifies the need of using several calculation methods. It is necessary, on the one hand, to guarantee accuracy and dis-aggregation of the estimates for each production while on the other hand, to ensure gradually the passage to the direct surveys on the farm holdings that, in the case of agriculture, correspond to the local economic activity unit. Gradually going from estimative basis estimations to company-based estimations allows completing the integration process of the agriculture accounts estimates.

The current agriculture statistics are following this direction by now. The company-based estimates Agrit are about to arrive in addition to the traditional sample survey on cattle, to the Rica Rea and the Spa. The company-based estimates Agrit are particularly important at regional level and will gradually substitute, in the future, the tradition estimative provincial-basis statistics.

3.2.1.3.4 Outlines on the revision carried out for the fishing and forestry branch Statistics on forestry

The revision for the Forestry and Fishing sector was limited to forestry-related services and to the evaluation at the prices of the previous year, in addition to the series expressed at chain-linked value compared to the reference year 2000.

Currently, the phenomena, object of survey at regional level, are inherent to the consistency of the forest resources and actions for the preservation of the wood patrimony.

As regards the forest production, the data refer to:

- wood uses outside the forest by assortment;
- work wood and fuel wood;
- main forest non-wood products gathered in the forests;
- evaluation of the production;
- average prices of the work wood and value added of forestry;
- average prices of the wood to be burnt and coal by wood essence.

These surveys are currently conducted by the Italian national forest corp, partly through administrative sources (wood uses) and partly through estimative sources (non-wood products, prices) or by means of direct surveys for the forest area.

The level and entity of the new forest inventory will be improved in the future as from the next years, thanks to its availability.

Statistics on fishing

Estimations in the fishing branch has greatly improved and been integrated. In the past, they were limited to the activities of the Harbour offices; following the revision, the sample survey of the Irepa (the Italian Economic Research Institute for Fishery) was for the first time integrated in the national accounts estimates.

The survey conducted by the Irepa appears for the first time in the national statistical programme (so-called Psn). Following some years in which it was experimented, it now substitutes the previous surveys already present in the Psn with code IST-00182 and IST-00187 and conducted previously by the Istat on harbour offices and fish markets. The Irepa survey was set by Istat together with the Irepa methodology office and provides accurate and complete results.

3.2.1.4 Hotels and restaurants

As at national level, the regional value added concerning the activities of Hotel and Restaurant sector is obtained by adding to the value added estimated on the basis of enterprise surveys' data, the value of the tips gifted by the clients. The total value of the tips, calculated at national level[8] and distinguished into Hotels and Restaurants, is regionally distributed based on two regional indicators. The tips given to the restaurants' personnel are estimated on the expenditure of households for outdoors consumptions (in bars, restaurants, canteens, etc.) as provided by the regional household balance survey. The indicator used for estimating the tips in the Hotel sector is constructed considering hotel presences and average daily prices index at regional level.

3.2.1.5 Financial intermediation

The regional value added of the financial intermediation was estimated through the income approach according to the rules settled by Esa95 (chapter 13 paragraph 13.27). It is as the sum of compensation of employees and gross operating surplus: each component has to be allocated to regions according to specific indicators.

Compensation of employees[9] must be attributed to the local KAUs where the staff is employed; gross operating surplus of credit institutions is allocated to local KAUs on the basis of the sum of deposits raised and loans granted in each region.

As to compensation of employees, a separate estimation is made for the share paid by the Central Bank, the banks and the other financial intermediaries, insurance companies and financial auxiliaries. In general, for each one of the above mentioned activities, a regional structure of compensation of employees is derived by applying to the relevant full-time equivalent units an appropriate per-capita value.

The main sources are:
- data on the regional distribution of the bank personnel classified by professional qualification as provided by the Italian Banking Association (Abi);
- data on the regional distribution of the Central Bank personnel provided by the Bank of Italy;
- per-capita gross wages, according to collective agreements, expressed by professional qualification surveyed in Istat "Gross wages, working hours and annual wages on an accrual basis according to collective agreements". These wages are

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[8] Paragraph 3.3 National Inventory
[9] Compensation of employees is the sum of wages and social contributions.

available separately for the employees of the Central Bank, of banks and of insurance companies;

- as to wages of financial auxiliaries per-capita regional values are drawn from Inps data on model DM10; by this specific form the employer reports the monthly wages paid to the workers and the contributions due.

As no direct information is available on per-capita compensation of employees paid by financial intermediaries on a regional basis, an indirect estimation is necessary: the national average per-capita compensation of employees of each activity is broken down by region on the basis of an adequate indicator. Such an indicator has been set starting from the composition of employment by professional status and by region to which the corresponding contractual wage, as derived from Istat survey on "Gross wages, working hours and annual wages on an accrual basis according to collective agreements" have been applied. This allows ensuring a regional differentiation of per-capita compensation of employees, reflecting the more accentuated presence of managers in the regions where the central directions of banks and insurances are located compared to the regions in which affiliate offices and peripheral offices are mainly located.

As to financial auxiliaries, per-capita values derived from Inps data are applied to the regional structure of the relevant full-time equivalent units.

The gross operating surplus of credit institutions is allocated to regions on the basis of the sum of deposits raised and loans granted in each region: such information is available from supervisory data collected by the Bank of Italy, with reference to the location of the bank counters on the territory. As to insurance companies, their gross operating surplus has to be attributed to regions according to the relevant amount of gross premiums earned, as provided by Isvap, the Supervisory Agency on Private Insurance Enterprises..

The gross operating surplus of the financial auxiliaries is allocated to regions on the basis of the regional structure of gross operating surplus as estimated for the total financial institutions and insurance companies. The rationale of this choice lies in the nature of the financial intermediation's auxiliary activity, whose performance is closely related to the one of credit and insurance institutions in each region.

3.2.1.6 Real estate, renting, computer, research, other business activities

The value added of the "real estate, renting, computer, research, other business activities" is calculated in two parts. The first part regards the economic activities net of renting while the other regards the estimation of the value added of the real estate renting and sub leasing activity.

The general method "labour unit per per-capita" is applied for estimating the economic activities net of renting, based on data from the enterprise surveys (see par. 3.2.1.1).

The value added of the real estate renting and sub leasing activity was estimated according to an ad-hoc method, distinguished into residential dwellings and non-residential buildings. The indicator used to divide the estimates at territorial level is based, in both cases, on data regarding households, enterprises and institutions' renting expenses.

Residential dwellings renting

The estimation of the value added of the residential dwellings is distributed territorially through an expense indicator constructed as quantity per price product. The housing stock of the estimation year for each Italian region and for the autonomous provinces Trento and Bolzano was multiplied by the relative average renting fee.

The housing stock and sum of the renting fees are stratified according to the same criterion as for the national estimate, using information deriving from the 14th 2001 General population and dwelling census 2001.

The average renting fee is estimated on the basis of the data coming from the household balance survey. The survey information allowed constructing variables necessary for stratifying the dwellings; the characteristics that most determine the rent prices were taken into account for each dwelling. They include the dwelling's construction year, surface, presence of a garage and the geographical position and demographic size of the municipality in which it is located.

Afterwards the different housing categories are identified and distinguished according to the entitlement (ownership, social rent10 and market rent11, free of charge and empty).

Each individual stratum provides for calculating the average fee as centred average of the survey data relative to the year of elaboration, the previous one and the next one.

The average fee of each stratum is multiplied by the housing quantity that makes up the 2001 housing stock. The value of the rent expenditure is determined for each stratum concerning the dwellings and then grouped per region.

For the years after 2001, the changes in quantity relative to the number of dwellings at regional level are calculated by updating the housing stock with the data from the "construction authorisations statistics"12:, so newly-constructed dwellings are added to the housing stock estimated for the previous year. After calculating the new regional shares, they serve as basis for distributing the value added of the residential dwellings rent estimated at national level.

Changes in quantity are used to update the series at the prices of the previous year, applying the change in housing stock to the current values of the previous year.

The value of the residential rent at current prices is obtained applying the change in regional average expenditure (calculated from the household balance survey) to the sum calculated at the prices of the previous year,.

Non-residential buildings renting

The value added of non-residential building renting activities is obtained breaking down the value of the national estimates at regional level through an indicator constructed on the rent costs sustained by the enterprises. The value of the average costs per worker, collected by the business account surveys (Sci, Sme) and regionally elaborated, is grossed up to the target population with the full-time equivalent units (in market sector).

An indicator was constructed for the agriculture activity, which is not in the observation field of the business account surveys, in order to distribute at territorial level the national estimate based on information held in the agriculture farm structure survey regionally elaborated.

3.2.1.7 Activities of households as employers of domestic staff
This industry includes the activity of employer performed by household for domestic staff such as home helpers, carers, baby sitters and janitors. As for the national estimates, the value of household services provided by staff employed by households and institutions equals the corresponding compensation of employees. This figure is then attributed, on the demand side, to the final consumption of households. The estimate is thus based on the compensation

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[10] Dwellings rent and sub-leased owned by a public Institution
[11] Dwellings rent and sub-leased owned by a proprietor other than a public Institution
[12] Istat - Monthly construction authorisations survey. The basic data provided by the Municipalities regard the construction authorisations for realising new buildings or extending pre-existing buildings.

components of the employees (wages and salaries in cash or in kind and actual and imputed social contributions), separately estimated by region.

Regional compensation of employees is estimated by attributing the average regional compensation per full-time worker to the full-time equivalent units in registered employment and wages and salaries only to workers in unregistered employment, whose employers do not comply with the rules for workers' social security.

National and regional estimates of compensation of employees are computed separately for doormen and strictly domestic staff. Doormen are identified in the Inps-Dm10 through a specific tax code. Estimates of the regional per-capita wages and salaries are obtained from the internal processing of register data. Each regional per-capita value is multiplied by the registered and non registered regional full-time equivalent units.

As regards the domestic staff (home helpers, carers, baby sitter), the national per-capita value of wages and salaries was regionally differentiated through the consumer price index for hourly-paid domestic staff. This price index represents the change in the average market hourly rate and is calculated on a regional basis.

Regional social security and health contributions, provisions for severance pay and imputed contribution are calculated by applying the national actual rate to wages and salaries of registered workers. These three components are computed separately for janitors and domestic staff.

3.2.2 Non-market productive segment

3.2.2.1 General Government

Just as for the other economic operators, the value added of the General Government is calculated as the result between output[13] and intermediate consumptions, that is: value added as sum of the compensation of employees, consumption of fixed capital and other taxes on production.

Even with reference to taxes and subsidies it is necessary to distinguish if the production activity of the public operators is realised by the Central Government or the Local Government along with Social security funds. In the first case, it could occur that the production place does not exactly coincide with the place of payment by the institution. The method setting for compiling the regional accounts indicates in the criterion of the local economic activity unit the way of evaluating the production activity to be attributed to the region in which the unit is located. The value added is to be regionalised giving attention to the location of the production factors.

The components of the value added are territorially distributed by type of institution and economic function. Bridge matrices allow going from a classification by economic function to one by industry, necessary for the aggregation with the rest of the economy[14].

A source used for State is "La spesa pubblica regionalizzata", providing a regionalisation of wages and salaries. Istat, instead, regionalises compensation of employees on the base of similarity of distribution with wages and salaries, presuming the territorial uniformity of employers' social contribution. However, data on gross wages provided by this source do not equal the one of national accounts for different reasons. The national accounts of the General Government are elaborated on an accruals basis, while the data elaborated in the "La spesa pubblica regionalizzata" are on cash-basis. Moreover, the national accountants reclassify to

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[13] The public production mainly regards the not-for-sale services that make up the main activity of the General Government. There is, however, also a market-type production activity relative to the secondary production of some public institutional units.
[14] The reference classification of the economic activities is the Nace–Rev1.

approximate better the definition of the transactions and the accounting criterion on an accrual base established by Esa95. Therefore, the data from the source "La spesa pubblica regionalizzata" make up a fundamental parameter to estimate the compensation of employees by function at regional level.

The compensation of employees for the others institutions of the General Government, which count for about 3% of the expenditure for final consumption, are allocated both on the regional distribution of the employees, according to the Annual survey on employees in the General Government, and on the regional distribution of compensation of employees from the balance-sheets.

Given their location on the territory, the value added of the local administrations is estimated by region without having to adopt specific distribution hypothesis. The most important problem, however, is related to the regional administrations. Due to the lack of standard balance-sheet scheme, the functional and economic attribution is based on the distribution by purpose, correcting any classification error. For example, the compensation of employees are generally attributed to the general administration; the real allocation among the expenditure functions in which the employees work is not considered.

By using the State General Accounting Department, it is possible to distribute the consumption of employees by region for the Social security funds. Here the functional distribution and consequent association to the economic activities do not present particular difficulties given the mono-functional nature of the institutions.

The consumption of fixed capital are regionalised on the gross fixed capital formation realised by each institution in each region.

The other taxes on production, mainly Irap (regional tax on activity production paid by the General Government) are regionalised, on the base of the compensation of employees, since they are the tax base to pay Irap in the General Government

The estimation of the consumption of employees, consumption of fixed capital and other taxes on production allows to estimate the regional value added per economic function. The next step is to elaborate the compensation of employees by industry, since the value added is estimated per economic industry.

The bridge matrix of the incomes reports per row the Cofog functions and per column the economic industry. Hence, schematically, we have:

where
- V_{ij} indicates the incomes of function i-th of industry j-th;
- $V_{i.}$ Indicates the total of the incomes of function i-th;
- $V_{.j}$ indicates the incomes of branch j-th.

Table 3.10 - Bridge matrix: incomes by functions and by Industry

FUNCTIONS COFOG	Economic industry					
	1	...	J	...	r	Total
1	V_{11}	...	V_{1j}	...	V_{1r}	$V_{1.}$
...		...	...		...	...
I	V_{i1}	...	V_{ij}	...	V_{ir}	$V_{i.}$
...		...	...		...	...
K	V_{k1}	...	V_{kj}	...	V_{kr}	$V_{k.}$
Total	$V_{.1}$	...	$V_{.j}$	...	$V_{.r}$	$V_{..}$

The matrix evaluates how the incomes estimated by function are distributed among the economic industry. Reporting each cell to the total of the row, we obtain a weight matrix where the sum per row of each cell equals the units. Analysed per row, this weight matrix quantifies per each function the incidence of the incomes in the different economic industry.

The General Government is made up of eleven groups: State, Research Institutions, National Economic Institutions, Institutions providing Cultural Services and Assistance at central level, Regions, Municipalities, Provinces, Institutions providing Education, Cultural services and Assistance at local level, Local Health Institutions and other economics bodies at local level. A bridge matrix[15] of incomes is available for each one of these groups, which allows obtaining the regional incomes by economic industry.

Applying the same matrix to the different regions implies consequently to assume an inter-regional constancy of the weight of the economic activities within the functions.

The method described in the estimation by economic function is used also for evaluating the consumption of fixed capital by industry.

After the value added by industry has been estimated for each institution, the regional value added of the General Government is estimated as sum of the value added of the institutions.

3.2.2.2 Non-profit institutions serving households (Npishs)

3.2.2.2.1 Main sources

The estimates were carried out crossing information from census sources and statistical-administrative archives, together with specific sources for particular categories of operators. The sources mainly include:

a. The 1999 census of Non-profit institutions (from now on Cnp99).

Its informative content was used to estimate the economic size of non-profit institutions, to classify the units into market and non-market and to valorise the economic aggregates. It represents the first census survey of private institutions and non-profit units in Italy. Conducted by Istat in 2000, Cnp99 surveys the number of institutions active in 1999, their legal form, organisational structure, kind of social asset, their size and the economic sectors where they perform their activity. The survey unit is the institution. Sometimes it only consists of one unit that insists on the territory (sport clubs, culture clubs, recreational clubs, trade-union sections, etc.). Other times it represents an head office of an institution operating in several sites also located in different municipalities, provinces or regions (complex organisational structures such as churches or religious societies, universities, hospitals, therapeutic communities, social cooperatives, etc).

The questionnaire is made up of 4 theme sections for a total of 20 questions. Thanks to the questions on the availability and uses of the resources, it was possible to survey four fundamental kinds of information relevant for the estimates of national and regional accounts, such as the overall volume of revenues and outlays and the percentage composition of their main components.

b. The 8th Census of Industry and Services 2001.

It represented the starting point to identify the universe of non-profit institutions active in Italy in 2001 and the relative number of workers and volunteers. The local units were surveyed according to their region of residence and to Istat Economic Activities Classification Ateco 1991. The legal-economic units were distinguished into enterprises, public institutions and private or public non-profit institutions. The non-profit institutions include non-governmental organisations (law 49/1987), volunteer organisations (law

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[15] The bridge matrices are elaborated distinguished into market activities and non-market activities.

266/1991), social cooperatives (law 1991) and other non-profit socially useful organisations (so-called Onlus), political parties, trade-unions, religious bodies civilly recognised and religious organisations including dioceses and parishes.

The field of observation of <u>Census of Industry and Services</u> 2001 excludes the religious organisations closely oriented to cult (sees and vicariates, parishes, churches, convents, church institutions, orders, canonically constructed congregations and institutions). For these data, it was necessary to integrate the Census data with direct information drawn from administrative archives (Inps)[16].

The <u>Census of Industry and Services</u> 2001 allows to estimate the sector's employment matrix (in Fteus), distinguished by Ateco and size class.

    c.   The Inps archives relative to wages and social contributions.

3.2.2.2.2 The method approach

The activities of the Non-profit institutions serving households (Npishs) mainly concentrate in sections M, N, and O of the economic activities classification Nace Rev.1.1 and they present only some marginal components in the other sections.

Because their activity is non-market, their production must be evaluated as sum of the costs sustained for its realisation. The sector's value added is thus the result of the sum of the remunerations of the productive factors used that is the sum of the compensation of employees, the consumption of fixed capital and the other taxes on production net of subsidies on production. In the perspective of regional accounts, each component was estimated separately, according to the information available.

The estimation method adopted was the same for all economic activities in which the Npishs are present. The following paragraphs thus refer to a general approach that involves the total of the non-market non-profit units.

For each region, average values per worker, economic activity category (2-digit Ateco classification) and per size class were defined for each aggregate. These average values differentiated by region, were then applied to the regional structure of the labour units of the Npishs to obtain the total value of each aggregate in each region.

3.2.2.2.3 Regional value added relative to the Npishs and updating of the estimates for the years after 1999

As previously seen, the estimation of Npishs regional value added require the preliminary valorisation of its components that is compensation of employees, consumption of fixed capital and other taxes on production net of subsidies on production, whose estimation method will be described in the following paragraphs.

Compensation of employees

The compensation of employees paid by Npishs were estimated on a regional base through a bottom-up procedure divided into three phases:

1. Definition of regional employment matrices

Such matrices (expressed in Fteus) are constructed for the whole non-profit sector, both market and non-market. At a 2-digit Ateco classification level, by size and region of residence of the different local economic units that make up the institution, based on the information drawn from the <u>Census of Industry and Services</u> 2001 (see par. 3.1.1.1.1).

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[16] The Institute for the Clergy Sustenance provided the number of religious men with an assignment in dioceses and relative remunerations per region.

2. Estimation of the regional distribution of the employment for the Npishs.

To identify the weight of the non-market component of all labour units, it was necessary to use the information on the economic values drawn from the Cnp99. By comparing the revenues and costs and applying the 50%-criterion to the statistical units surveyed (see Esa95 par.XX), it was possible to define the regional weight, at a 2-digit Ateco level and per size, only of the non-market non-profit units (Npishs)[17].

The regional weight was then applied to the labour units of the non-profit sector for each region. Due to the lack of statistical information on Npishs economic flows for the years other than 1999, it was hypothesized that the structure surveyed for that year remains stable over time.

3. Valorisation of the aggregate for a basic year and updating the estimate.

The compensation of employees per worker paid by Npishs per region, 2-digit Ateco and size are only available using Cnp data for year 1999. To update the average values for the following years, information provided by the Inps database was used only referring to non profit non market units that is to Npishs; changes in the values of the wage per worker paid are instead calculated by Ateco (2-digit level) and by region. Because of the lack of specific information on the territorial distribution of the incidence of social contributions relating only to the Npishs[18], it was hypothesized as being equal to the one estimated for the enterprises present in the region having the same size class and Ateco.

The overall level of compensation of employees was finally valorised applying the average values per worker to the regional labour units.
The sum of the levels estimated by region represents, on average, the 90% of the national amount. Its coherence with the national data was ensured by submitting the regional values aggregated by economic activity to a re-proportioning algorithm.

Consumption of fixed capital

Because no specific territorial indicator is available, Npishs consumption of fixed capital is allocated by region through a top-down procedure. This procedure considers exclusively the presence of these units on the territory: the national amount of consumption of fixed capital is allocated by region on the basis of the regional composition of employment expressed in full-time equivalent units.

Value added

As mentioned above, Npishs value added is the sum of its components (compensation of employees, consumption of fixed capital and other taxes on production net of subsidies on production) estimated on a regional basis. The national amount of taxes on production net of subsidies on production (D29-D39) is allocated by region proportionally to the weight - by economic activity - of the sum of compensation of employees paid and consumption of fixed capital previously estimated on a regional basis.

3.3. Regional GVA at constant prices and regional growth rates

The Esa95 does not establish that the regional aggregates at constant prices be estimated. For years, Italy has been producing estimates as such and since 2007, these estimates are produced with the chain index system adopted in the national accounts.

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[17] Since the survey unit in Cnp99 is the institution, but the estimation of the value added per economic activity must refer to the local economic activity unit as surveyed in the Census of Industry and Services 2001, it was necessary to cross these two sources to obtain the detail required.

[18] The irregular employment is not present in the Npishs.

In accordance with the standards defined by community regulations, the general revision of the national economic accounts in 2005 introduced the chain index method for measuring the real trends of the annual economic aggregates[19]. This new method substitutes the previous fixed base system.

Thanks to the annual updating of the weighting system, the measurements in volume obtained by means of the chain link technique present growth rates that best represent the real trend of economic growth.

Just as in the regional accounts at current prices, the net imports in the regional accounts at constant prices are the difference between the regional Gdp and the aggregates that make up the uses. That said, this paragraph analyses the deflation method of the regional Gdp or, better yet, the components that make up the regional Gdp: value added at producer prices, product and production taxes and subsidies, Vat and import taxes.

The value added at producer prices is deflated at a 30-industry level of the Nace Rev.1.1 through different methods for the 5 productive segments (market enterprises, General Government market services, market non-profit institutions, General Government non-market services, and non market non-profit institutions).

The value added for agriculture is calculated by means of the "double deflation" method, where the value added at constant prices is defined as the difference between the production measured at the prices of the previous year and the intermediate consumptions measured at the prices of the previous year too.

Thanks to the availability of wide regional historical series in the basic prices version for each product and/or aggregate of the agriculture accounts, it is possible to use a more analytical approach compared to the indexes deflated for groups of products or aggregates, used for the rest of the national accounts.

It was indeed possible to do the evaluations with the direct method, applying the prices of the previous year to the current year's quantities. Obviously this is true for the more elementary cases. To construct various aggregates and higher indexes entails to carefully analyse the economic variable and evaluate the volume and prices components of each series elaborated at the previous year's prices.

However, the statistical information is often available only at a more aggregated level and no longer considers the homogeneous products. In that case, the Esa95 (paragraph 10.32) suggests to estimate the changes in volume, deflating the current year's value with a price index.

As regards the industrial transformation sector, the regional value added at current prices is estimated per industry and size class (1-5, 6-19, 20-99, 100-249 and 250 and more workers). It is deflated at that detail level with a corresponding national implicit deflator. It is constructed taking into account the different goods characteristics of the products and their different propensity to exports within each industry, according to the size of the enterprises. The latter information is obtained using the survey small and medium enterprises and on arts and professions relative to the question on the shares of "product sales according to the destination". When deflating the regional value added of the Manufacture sector, it is assumed that the different structure per industry and size class is a significant element of the territorial differentiation of the deflator, since production price indicator at regional level are missing.

The regional deflator of the value added for the construction sector is estimated by applying to the national deflator the regional differentiation coefficient of the construction cost indexes of residential dwellings, surveyed by Istat in the capital cities of the regions.

An indirect procedure is used for the trade branch, which requires constructing a volume indicator. The latter is obtained by calculating the impact of the commercial service cost in the

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[19] SNA 1993, SEC 1995, Community Decision 98/715.

previous year on the total of the flows exchanged and applying to the intermediate flows calculated at the constant prices for all the other years.

The method used for the financial intermediation requires extrapolating the value added of the previous year through a synthetic sector volume indicator. The latter is obtained based on the regional distribution of the bank deposits and uses and of the insurance premiums adequately deflated with the regional deflator of the domestic use.

The national value added deflator per industry is used for all other market services and for the energy industry.

The non-market value added at constant prices is estimated for the General Government and for non-profit institutions by extrapolation, applying a quantity index to the regional value added produced during the previous year.

For each one of these two sectors, the quantity index, represented by the changes in the full-time equivalent units, is applied to the value added produced during the previous year and evaluated at the producer prices. This allows to obtain an evaluation in real terms of the non-market value added for these two sectors that considers the different employment trend at territorial level.

The taxes and subsidies are deflated by applying to the value added at constant prices, the impact of the taxes/subsidies on the value added at current prices.

This too is done for each region at a 30-branch level, except for Agriculture in which the taxes and subsidies deflation is done according to different criteria. The product and production taxes and subsidies are divided in a volume component and a price component, as required by the Agriculture's Economic Accounts Manual.

The volume index of the product taxes and subsidies must coincide with the volume index of the production at the producer prices of the product of interest (here the advantage is that this index does not dependent on the evaluation method), while the price index is implicitly calculated by dividing the value index by the quantity index determined as such.

The production taxes and subsidies are dealt in the same way.

The Vat and taxes on the imports are dealt with as single aggregates, whose deflation is obtained with the extrapolation method, that is, by applying the same incidence on the overall regional value added observed in the base year, the value added at constant prices (regional total) of the elaboration year.

The Gdp at market prices is calculated according to the definitions of the Esa95, adding to the value added expressed at basic prices, the Vat, the other product taxes, the import taxes and subtracting the product subsidies.

For the 21 regional territories (Nuts-2), the data of the value added at basic prices and Gdp both at the previous year's prices and in chain-linked values with reference year 2000 are published. The sector desegregation published considers the 24 economic industries.

Italy publishes not only data on the value added but also the good and services account per region, the final consumptions, per sector and category of goods and service, and gross fixed-capital formation.

Chapter 4- Quality assessment and improvement

4.1. Self-assessment of the methodology for the compilation of Regional GVA

The regional and the national accounts are obtained by a complex estimation process on many economic aggregates. Each aggregate belongs to a wider system, where the coherence among components is crucial to assess the quality and reliability of estimates.

Therefore, in a multi-factor context, if on one hand single quality measurements are rather reductive and misleading, on the other hand analyses carried out considering all dimensions improve the quality in terms of reliability, efficiency, validity and coherence of the whole picture. More exactly, an integrated system of indicators is proposed: singularly they are not able to provide exhaustive information about quality but when considered all together, they allow gathering different but complementary aspects.

Two indicators were used to assess reliability. One is closely related to the different methods adopted. As indicated by the Esa95, the best methods for a reliable estimation of regional accounts are surely the direct ones, known as Bottom-up and Pseudo bottom-up. Hence, more these methods are spread and better will be the degree of reliability of the estimates. Table 1 reports the percentage weight per branch of the four methods: (1) Bottom-up; (2) Pseudo bottom-up; (3) Mixed method; and (4) Top down. The Pseudo bottom-up method prevails (66.1%), followed by the Mixed method (19.2%) and the Bottom-up method (13.0%). The Top-down method is the least used (1.6%).The sum of Bottom-up and Pseudo bottom-up methods (i.e. the best methods), enables to reach a weight of about 80%.

Another factor of efficiency is the degree of discrepancy between "preliminary" estimates (i.e. not aligned with national data) and the national data. In particular, if the capacity to reproduce the national data as a sum of the territorial data is satisfactory, the balancing effect will be less important.

Table 4.2 reports the difference in percentage terms between the sum of preliminary territorial data and the national value added. To fully indicate the effective degree of efficiency, this information should be considered together with the information about the method adopted. A low value does not indicate a high degree of reliability, since it tends to be smaller in the indirect estimates while it tends to zero in the top-down method. This measurement thus makes sense only when evaluated by the direct estimation method, such as the bottom-up, pseudo bottom-up or mixed-methods. In the direct method, a small difference between pre and post balanced estimates considered as positive implies that the preliminary estimates, object of analyses and correctness controls, are marginally changed by balancing.

Authors are: Michele Marotta e Alessandro Faramondi 4.1; Claudio Pascarella 4.2

Table 4.1 - Value added at producer prices per estimation method (Nuts 2) - Year 2005

Prog. numbers	Computational level - 30 economic activities	Bottom-up	Pseudo bottom-up	Mixed method	Top down	Total
1	Agriculture, hunting and forestry	100	0	0	0	100
2	Fishing	100	0	0	0	100
3	Mining and quarrying of energy producing materials	0.2	99.9	0	0	100
4	Mining and quarrying, except of energy producing materials	2.7	97.3	0	0	100
5	Manufacture of food products, beverages and tobacco	21.8	78.2	0	0	100
6	Manufacture of textiles and textile products	21.4	78.6	0	0	100
7	Manufacture of leather and leather products	14.5	85.5	0	0	100
8	Manufacture of pulp, paper and paper products; publishing and printing	10.6	89.3	0	0	100
9	Manufacture of chemicals, chemical products and man-made fibres	23.7	75.9	0	0.4	100
10	Manufacture of coke, refined petroleum products and nuclear fuel	40.2	59.8	0	0	100
11	Manufacture of other non-metallic mineral products	33.4	66.6	0	0	100
12	Manufacture of basic metals and fabricated metal products	21.2	78.8	0	0	100
13	Manufacture of electrical and optical equipment	18.3	81.7	0	0	100
14	Manufacture of machinery and equipment n.e.c.	18.5	81.4	0	0	100
15	Manufacture of transport equipment	30.1	69.8	0	0	100
16	Manufacture of wood and wood products	25.9	74.1	0	0	100
17	Manufacture of rubber and plastic products	41.2	58.8	0	0	100
18	Manufacturing n.e.c.	15.5	84.5	0	0	100
19	Electricity, gas and water supply	31.7	67	0.4	0.8	100
20	Constructions	3.5	95.9	0.5	0.1	100
21	Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	7.5	92.3	0	0.2	100
22	Hotels and restaurants	4.8	87.6	0.3	7.3	100
23	Transport, storage and communication	15.9	82.3	1.6	0.2	100
24	Financial intermediation	0	0	99.8	0.2	100
25	Real estate, renting and business activities	4	40.5	1.8	53.7	100
26	Public administration and defence; compulsory social security	0	0	99.9	0.1	100
27	Education	0.3	9.2	86.8	3.6	100
28	Health and social work	6.3	27	54.5	12.3	100
29	Other community, social and personal service activities	21.3	48.2	11.9	18.6	100
30	Activities of households	100	0	0	0	100
	Agriculture	**98.5**	**0**	**1**	**0.5**	**100**
	Industry	**21.1**	**78.7**	**0.1**	**0.1**	**100**
	Service	**7.1**	**62.7**	**27.8**	**2.3**	**100**
	Total economy	**13**	**66.1**	**19.2**	**1.6**	**100**

According to Table 4.2, the difference between pre and post-balanced estimates compared to the national data averages 13.7%. It is null in the agriculture sector, almost null in the industry sector but it rises to 21.6% in the service sector. These percentages show that just in the service sector the balancing effect is not quite limited.

To assess their validity, the indicators were built considering different aggregates. In particular, Table 4.3 considers the ratio between the compensation of employees and the value added at factors' cost, Table 4.4 considers the ratio between the value added and the labour unit and Table 4.5 the ratio between the compensation of employees and the employee full-time equivalent units.

As shown in Table 4.3, the ratio between the compensation of employees and the value added at factors' cost never exceeds 100%. This is particularly significant since the income is part of the value added, so clearly must result inferior to it.

Another outstanding element to show the coherence within the macro-economic context, is the high degree of correlation between the compensation of employees and the value added; indeed, a high value added per labour unit level (Table 4.4) corresponds to a high level of

compensation of employees per labour unit (Table 4.5). In particular, the central-Northern regions, traditionally richer than the Southern regions, present averagely higher income and value added per labour unit values.

Table 4.2 - Regional grossing up difference to total national values (%) (Nuts-2) - 2005 Year

Progressive number	Computational level - 30 economic activities	Grossing up difference (%)
1	Agriculture, hunting and related service - Activities	0.0
2	Fishing, fish farming and related service - Activities	0.0
3	Mineral extractions	2.8
4	Extraction of non-energy minerals	9.9
5	Manufacture of food products, beverages and Tobacco	0.7
6	Manufacture of textiles and textile products	0.1
7	Manufacture of leather and leather products	1.3
8	Manufacture of pulp, paper and paper products; publishing and printing	4.7
9	Manufacture of coke, refined petroleum products and nuclear fuel treatment	0.8
10	Manufacture of chemical-pharmaceutical products and of synthetic-artificial fibres	3.4
11	Manufacture of other non-metallic mineral products	4.9
12	Manufacture of basic metals and fabricated metal products	1.0
13	Manufacture of electric machinery and electric, electronic and optical equipment	0.7
14	Manufacture of mechanical machinery and equipment	3.3
15	Manufacture of transport means	0.9
16	Manufacture of wood and wood products	0.3
17	Manufacture of rubber and plastic products	4.2
18	Other industrial manufacture	2.7
19	Electricity, gas, steam and hot water supply and production	3.6
20	Constructions	3.6
21	Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	2.6
22	Hotels and restaurants	1.5
23	Transports, storage and communications	4.7
24	Financial intermediation	33.0
25	Real estate activities, Renting, Computer, Research, Other business activities	44.0
26	Public administration and defence; compulsory social security	0.0
27	Education	5.5
28	Health and social work	4.2
29	Other community, social and personal service activities	1.1
30	Activities of households	2.1
	Agriculture	**0.0**
	Industry	**0.1**
	Services	**21.6**
	Total	**13.7**

Table 4.3 - Compensation of employees on Gross value added at factor cost (Nuts 2) - Year 2005 (val.%)

Regions (Nuts-2)	Agriculture	Industry, including energy	Constructions	Wholesale and retail trade, repair of motor vehicles and household goods, hotels and restaurant; transports and communications	Financial, real estate, renting and business activities	Other service activities	Total
Piemonte	10,4	61,1	26,5	36,7	26,3	69,0	44,2
Valle D'Aosta	23,9	55,9	47,2	36,5	15,0	72,2	43,9
Lombardia	15,7	56,8	41,1	41,7	26,3	68,0	44,9
Trentino Alto Adige	15,6	55,9	36,1	40,5	22,3	73,8	44,2
Bolzano	13,3	55,5	38,5	40,5	20,8	77,3	43,8
Trento	19,2	56,3	33,5	40,5	23,8	70,5	44,6
Veneto	15,6	56,9	37,1	38,3	20,2	70,5	43,1
Friuli Venezia Giulia	23,3	59,8	34,5	43,8	25,5	71,8	47,8
Liguria	11,6	53,7	37,3	40,6	20,4	72,7	42,2
Emilia Romagna	20,2	55,1	37,3	43,5	23,2	69,4	44,4
Toscana	22,5	55,0	39,0	41,2	22,1	71,9	44,0
Umbria	16,5	56,4	40,7	39,4	20,6	70,0	44,4
Marche	23,5	57,0	33,4	38,4	20,6	70,1	44,1
Lazio	22,7	47,9	44,3	42,6	27,6	76,5	47,1
Abruzzo	17,4	59,4	38,7	42,3	21,8	72,0	47,8
Molise	12,6	59,5	42,8	36,3	16,8	67,0	44,6
Campania	40,6	51,1	50,2	42,3	26,0	76,8	50,1
Puglia	51,3	55,8	52,4	36,5	21,0	79,8	49,2
Basilicata	28,8	62,0	45,5	36,4	22,7	73,1	48,4
Calabria	68,6	37,8	42,1	43,0	19,1	71,8	47,5
Sicilia	43,4	46,5	49,6	44,1	22,7	70,9	48,5
Sardegna	33,4	47,9	49,4	46,3	23,5	70,2	48,0
Extraregio	-	12,7	-	-	-	99,2	47,1
ITALY	**28,3**	**55,6**	**40,8**	**41,1**	**24,1**	**72,3**	**45,7**
Max / min	6,6	1,6	2,0	1,3	1,8	1,2	1,2
Coefficient of variation	0,58	0,10	0,16	0,07	0,14	0,04	0,05

Table 4.4 - Gross value added at basic price by full-time equivalent units (Nuts-2) - Year 2005 (data in euros)

Regions (Nuts-2)	Agriculture	Industry, including energy	Constructions	Wholesale and retail trade, repair of motor vehicles and household goods, hotels and restaurants; transports and communications	Financial, real estate, renting and business activities	Other service activities	Total
Piemonte	15.887	54.550	42.524	46.769	97.276	40.740	53.144
Valle D'Aosta	13.016	63.497	43.276	39.469	125.258	47.902	52.664
Lombardia	24.480	60.587	45.761	53.098	106.619	41.694	60.252
Trentino Alto Adige	25.144	55.672	49.682	46.318	116.592	45.605	53.945
Bolzano	25.904	53.731	50.205	45.167	121.987	46.191	52.972
Trento	24.064	57.283	49.071	47.923	111.666	45.032	55.017
Veneto	24.102	52.054	42.985	46.852	115.516	41.448	53.996
Friuli Venezia Giulia	18.960	49.229	48.144	43.371	97.137	45.705	52.181
Liguria	28.559	54.933	39.703	48.383	113.620	42.033	55.271
Emilia Romagna	24.476	55.264	45.588	42.983	106.057	40.351	53.349
Toscana	25.673	49.992	39.036	43.147	108.691	41.662	52.022
Umbria	19.079	47.510	41.511	39.684	97.138	39.639	47.237
Marche	17.108	40.931	42.122	39.696	107.417	39.790	46.520
Lazio	24.526	68.216	37.012	53.889	107.258	44.854	59.269
Abruzzo	16.667	46.109	37.965	38.115	99.841	44.565	46.096
Molise	16.605	41.300	36.998	35.955	91.870	43.915	42.838
Campania	20.509	43.405	36.973	39.928	82.749	41.237	44.918
Puglia	19.336	41.440	33.938	38.967	95.669	41.977	43.921
Basilicata	18.757	40.857	36.350	38.210	82.156	45.557	42.551
Calabria	15.022	46.577	35.516	36.697	95.006	45.441	42.860
Sicilia	21.673	49.613	36.803	36.620	96.878	45.084	46.436
Sardegna	18.906	51.407	36.204	37.301	92.723	42.448	45.051
Extraregio	-	459.536	-	-	-	60.584	121.377
ITALY	**20.997**	**53.702**	**40.822**	**45.328**	**103.195**	**42.570**	**52.571**
Max / min	2,2	1,7	1,5	1,5	1,5	1,2	1,4
Coefficient of variation	0,20	0,15	0,12	0,13	0,11	0,06	0,11

Table 4.5 - Compensation of employees by full-time equivalent units (Nuts-2) - Year 2005 (data in euros)

Regions (Nuts-2)	Agriculture	Industry, including energy	Constructions	Wholesale and retail trade, repair of motor vehicles and household goods, hotels and restaurant; transports and communications	Financial, real estate, renting and business activities	Other service activities	Total
Piemonte	20.076	37.316	29.740	29.916	42.804	33.967	35.038
Valle D'Aosta	17.300	38.386	29.823	28.160	46.280	39.644	35.065
Lombardia	20.073	37.873	30.415	33.955	44.671	32.903	36.185
Trentino Alto Adige	18.779	35.740	31.583	30.618	46.269	36.702	34.850
Bolzano	18.778	36.222	31.949	30.461	47.743	38.524	35.255
Trento	18.780	35.369	31.105	30.833	45.047	34.936	34.433
Veneto	17.973	33.419	29.167	30.524	44.305	33.825	33.315
Friuli Venezia Giulia	18.884	34.642	30.810	30.178	38.543	36.988	34.369
Liguria	17.419	37.306	28.836	31.069	41.833	34.530	34.222
Emilia Romagna	20.269	36.107	32.543	30.537	40.215	32.665	33.894
Toscana	19.443	32.789	27.736	30.262	42.758	34.630	33.181
Umbria	18.640	32.036	27.802	28.347	40.295	32.203	31.459
Marche	19.074	30.014	26.818	28.556	41.974	33.444	31.420
Lazio	16.660	40.614	27.433	33.464	46.492	37.454	37.156
Abruzzo	17.608	30.656	24.312	27.011	38.764	37.050	31.779
Molise	17.882	28.750	22.167	26.158	31.328	35.078	30.026
Campania	16.992	29.348	23.251	27.054	33.092	34.344	30.215
Puglia	18.660	27.526	23.296	26.444	33.887	37.976	30.391
Basilicata	17.250	27.354	23.607	26.142	36.796	37.582	30.283
Calabria	17.591	25.110	20.045	25.698	30.935	35.518	28.326
Sicilia	17.972	29.919	23.452	26.857	34.767	36.595	31.179
Sardegna	17.341	31.836	23.591	27.397	34.929	34.171	30.558
	-	65.250	-	-	-	60.562	61.276
ITALY	18.230	34.739	27.108	30.336	41.360	35.032	33.628
Max / min	1,2	1,6	1,6	1,3	1,5	1,2	1,3
Coefficient of variation	0,06	0,13	0,13	0,08	0,13	0,06	0,07

4.2. Plans for further improvement

The level of development of the regional economic accounts elaborated by Istat is more than satisfactory and wider than what Esa regulation requires. Given the few resources available for the Central direction of the national accounts, no further improvements according to the timelines and no higher desegregation levels are planned to be introduced in the next future. An exception will be made for the implementation of the estimates about hours worked at Nuts-2 level, allowing the derogation for Italy about this aggregate to lapse in 2010[20].

More advanced estimates of value added will be carried out using tax data both at Nuts-2 and Nuts-3 levels (known as "sector studies") about small enterprises. If on one hand current sample surveys cover only small estimation domains, on the other hand data from sector studies offer an almost census database.

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[20] See paragraph 1.1.

Annex 1. Classification of industries[21]

Table A1 - List of industries corresponding to the level of detail at which we compile Regional GVA to Nuts-2 level - Year 2005

Progressive numbers	Industries label	Share (as percentage) of industry Gva in total Gva (National)
	Computational level - 30 economic activities	
1	Agriculture, hunting and forestry	2.1
2	Fishing	0.1
3	Mining and quarrying of energy producing materials	0.2
4	Mining and quarrying, except of energy producing materials	0.2
5	Manufacture of food products, beverages and tobacco	1.9
6	Manufacture of textiles and textile products	1.5
7	Manufacture of leather and leather products	0.5
8	Manufacture of pulp, paper and paper products; publishing and printing	0.4
9	Manufacture of coke, refined petroleum products and nuclear fuel	1.1
10	Manufacture of chemicals, chemical products and man-made fibres	0.4
11	Manufacture of other non-metallic mineral products	1.3
12	Manufacture of basic metals and fabricated metal products	0.8
13	Manufacture of electrical and optical equipment	1.1
14	Manufacture of machinery and equipment n.e.c.	3.1
15	Manufacture of transport equipment	2.5
16	Manufacture of wood and wood products	1.9
17	Manufacture of rubber and plastic products	0.9
18	Manufacturing n.e.c.	0.9
19	Electricity, gas and water supply	2
20	Constructions	6
21	Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	11.7
22	Hotels and restaurants	3.7
23	Transports, storage and communication	7.7
24	Financial intermediation	4.8
25	Real estate, renting and business activities	22.1
26	Public administration and defence; compulsory social security	6.5
27	Education	4.8
28	Health and social work	5.8
29	Other community, social and personal service activities	2.8
30	Activities of households	0.9
	Total economy	**100**

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[21] The author is Alessandro Faramondi

Table A2 - List of industries corresponding to the level of detail at which we compile Regional GVA to Nuts-3 level - Year 2005

Computational level - 16 economic activities.		
Progressive numbers	**Industries label**	**Share (as percentage) of industry Gva in total Gva (National)**
1	Agriculture, hunting and forestry, Fishing	2.2
2	Manufacture of food products, beverages and tobacco	1.9
3	Manufacture of textiles, leather and shoes	2.1
4	Manufacture of coke, refined petroleum products and nuclear fuel; Manufacture of chemicals, chemical products and man-made fibres	1.7
5	Manufacture of basic metals and fabricated metal products; Manufacture of machinery and equipment n.e.c.; Manufacture of electrical and optical equipment; Manufacture of transport equipment	8.5
6	Mining and quarrying; Manufacture of rubber and plastic products; Manufacture of other non-metallic products; Manufacture of wood and wood products; Manufacture of pulp, paper and paper products; Manufacturing n.e.c.	4.7
7	Electricity, gas and water supply	2.0
8	Constructions	6.0
9	Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	11.7
10	Hotels and restaurants	3.7
11	Transports, storage and communication	7.7
12	Financial intermediation	4.8
13	Real estate, renting and business activities	22.1
14	Public administration and defence; compulsory social security	6.5
15	Education; Health and social work; other services	13.4
16	Activities of households	0.9
	Total economy	100.0

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