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The representation of ESA95 non market production within an Input-Output table

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Abstract

The most relevant producers of goods and services sold at non-significant prices (i.e. non-market production) belong to general government and non-profit institutions sectors. Istat has recently developed a new method of analysis concerning productive activities engaged by the two sectors, thus leading to an improvement in the quality and detail of estimations. For both sectors a new information set has been built whose reference unit is the *institutional unit* as defined by ESA95. Such data sets result from the matching of information collected by different sources.

The work presented in the paper is principally aimed at the compilation of an input-output table based on ESA95 directives. Nevertheless, because of the detailed information recorded by the new data sets, it is possible to face other kinds of analysis. In particular, we can answer the following questions: who (what kind of unit) produces what (what kind of goods and services) at what prices (market and non-market production). Such information can be intersected per kind of economic operation (intermediate costs, compensation of employee etc.) and according to the amount of labour input employed in the production process.

This paper supplies a preliminary and extreme synthetic view on the works developed by the national accounts department of ISTAT, in order to revise national and sector accounts according to ESA95 directives.

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The work presented in the paper is principally aimed at the compilation of an input-output table based on ESA95 directives. Nevertheless, because of the detailed information recorded by the new data sets, it is possible to face other kinds of analysis. In particular, we can answer the following questions: who (what kind of unit) produces what (what kind of goods and services) at what prices (market and non-market production). Such information can be intersected per kind of economic operation (intermediate costs, compensation of employee etc.) and according to the amount of labour input employed in the production process.

This paper supplies a preliminary and extreme synthetic view on the works developed by the national accounts department of ISTAT, in order to revise national and sector accounts according to ESA95 directives.

1.The General Government sector

Input-output tables show the supply and use of products by industry, according to NACE Rev.1 classification².

General government units behave both as producers and users: outlays connected with the production process cover intermediate costs and reward primary inputs (compensation of employee, fixed capital formation and net operating surplus); outlays on the demand side are finalised to collective consumption or investments.

In order to include general government economic operations in an input-output framework we have to compile the vectors shown in table 1.

Table 1 General government operations within an input-output table

ECONOMIC OPERATION	INDUSTRIES			
	1	101
Supply side:				
Compensation of employees				
Intermediate consumption				
Net operating surplus				
Gross fixed capital formation				
Revenue from market production				
Revenue from non market production				
Indirect taxes on production (outlays)				
Use side:				
Investments				
Collective consumption				

As we explain in more details in the next paragraph, ESA95 introduces several changes in the evaluation and definition of economic aggregates, like a more precise distinction between non-market and market production. For this reason, the compilation of the new input output table has been the occasion for a complete revision of the information set on general government units and activities.

Paragraph 1.1 describes the theoretical framework of the new approach. Paragraph 1.2 focuses on ESA95 new concepts concerning general government units and production. Paragraph 1.3 is about the new data set on general government units obtained by matching available data. Paragraph 1.4 describes the methodological process leading to the estimation of input-output

² NACE Rev. 1: Statistical Classification of Economic Activities in the European Community in accordance with the Council Regulation n. 3037/90 of 9 October 1990.

vectors. Finally, paragraph 1.5 presents a case study (municipalities) in order to show the potential of the new information set in separating market and non-market production.

1.1 A new data set on general government units

The analysis of non-market production in terms of labour force employed, value added generated or type of goods and services produced, requires the building of a data set that matches information collected by different sources. For the building of this multipurpose data set we have followed the approach of social accounting matrices. The idea is that of looking at *subjects* who actually take autonomous decisions in each moment of the economic process (i.e. to the national accounting *institutional unit*). Each unit is observed from several points of view and according to the maximum level of detail allowed by available sources.

The first consequence of this approach is the representation of general government accounting in one framework that has the institutional unit as unit of analysis.

The national accounting system so far in use is based on two different accounting frameworks: input-output tables for information on the flows of goods and services and on the structure of production costs; sector accounts for information on production processes, incomes, expenditures, capital and financial transactions of institutional sectors. Input-output tables have *the unit of homogeneous production* as unit of analysis, whereas, T-accounts have the *institutional unit* as reference unit. The production process is analysed both by branches (input-output tables) and by institutional sectors (T-accounts), but the linkage between the two formats is reached at an aggregated level of detail and through an indirect procedure. The new approach goes beyond this net distinction. There is only one unit of analysis (the institutional unit) that engages different economic operations: the unit of homogeneous production is the institutional unit itself observed in its role of producer. Another important consequence of this approach is that we can obtain macroeconomic variables starting from micro information.

It is important to stress how this approach is possible when the whole population is observed. This is the case of general government whose information are gathered from administrative sources and not from sample surveys.

1.2 ESA95 directives on general government production and units

The new European System of National and Regional Accounts distinguishes three types of output:

- market output, that mainly includes products sold at economically significant prices;
- non market output, that covers output provided free or at not economically significant prices;
- own-account production that consists of goods and services retained by the producer either for final consumption or for gross capital formation.

A price is economically *not significant* if revenues do not cover at least the 50% of costs. The distinction is relevant in that it determines the valuation principles to be applied to output: market and own-account productions are valued at basis prices, while non-market output is valued from the cost side. The distinction has consequences on the classification of institutional units too. Units whose main activity is aimed at the production of non-market products belong either to the general government sector or to the non-profit institutional units serving households (NPISH). The final destination depends on the nature of the unit. A public producer is assigned to general government sector, while a private producer is classified in NPISH sector.

ISTAT has recently defined the boundaries of the general government sector, by applying the 50% criterion to those units whose main activity is not immediately perceived as a non-market one. The situation has not significantly changed with respect to the previous definition. Public corporations still belong to the enterprises sector because their output is sold at economically significant prices. Changes are due to the introduction of new institutions and to the elimination of the ones that have been abolished.

Once defined the institutional unit, the attention focuses on output, as non-market producers can supply market output too. The occurrence of market output is determined by applying the 50% criterion to individual services supplied by secondary activities.

The introduction of the 50% criterion allows a more realistic representation of general government production. The ESA79 directives identified market and non-market activities on the basis of conventions that did not depend on the product prices. Simply, some NACE

ESA95 does not establish strict conventions on general government activities. Non market producers can theoretically produce different types of goods and services and sell them at economically significant or not significant prices.

1.3 Data sources on general government and their matching in a new data set on general government units

Data on general government come mainly from final balance certificates and from the census on enterprises and institutions⁴. The former source collects accounting data and it is principally aimed at the classification of general government outlays according to the purpose (COFOG classification⁵); the latter gathers information on individual and structural characteristics of public entities as the legal status, the taxpayer's code, the number of KAUs⁶ or the number of employees per type of activity.

In order to match data coming from the two sources, we have used *taxpayer's code* as a key variable. From the theoretical point of view the new data set should include as many records as the number of institutions that belong the general government sector. Actually, some institutional units are considered, as a whole, within homogeneous groups that correspond to the national account sub-sectors. This is the case of ministries, regions, provinces and municipalities.

The new information data set gathers the following information on general government institutions and sub-sectors:

- national accounts economic operations;
- non monetary information as the geographic area, the number of local units or the legal status;
- information concerning employment, as the number of employees per type of economic activities.

Monetary data are classified according to the functional classification (COFOG), whereas employment data refer to the ATECO⁷ classification. As input-output industries correspond to the aggregation of ATECO categories, it is necessary to trace back each COFOG category to one or more ATECO partitions in order to analyse economic operation by industry. We subdivide economic

⁴ See references (ISTAT 1991)

⁵ The Classification of Functions Of Government (see references, OECD-1997) classifies general government outlays according to the purpose. The limit of this classification is that it considers general government exclusively as a non-market producer. As a consequence some typical market activities are forced in non-proper COFOG categories.

⁶ The Kind of Activity Unit (KAU) corresponds to one of more operational subdivisions of the institutional unit, which contribute to the performance of an activity at class level (4 digits) of NACE Rev. 1 [ESA95 § 2.106].

⁷ ATECO classification (see References ISTAT 91) is the national version of NACE Rev. 1. The two nomenclatures are equal till the 4-digit level.

operations by industry according to the distribution of employees per kind of activity. For this reason, employment data are extremely important and need continuous updating. The department of national accounts has built a data set on employment that analyses the distribution of employees per ATECO, region of residence and institutional sector. Data concerning general government employment result from the matching of census and administrative information: administrative data updates the level of employment connected to the production activity of an institution or group of institutions (municipalities, ministries etc.), whereas census data show the distribution of the institution's employment per kind of activity. In the case of ministries, the level of employment is updated per type of activity.

1.4 The estimation of input-output transactions concerning general government

This paragraph deals with the statistical procedure leading to the estimation of input-output general government vectors. The most correct method of analysis is that of gathering national accounts variables classified per ATECO directly from the final balances of the institution. This solution is possible for public entities that are engaged in one activity, but it is not always workable for multiple-activity units.

As an alternative approach we could subdivide economic transactions according to the distribution of employees per type of activity. In this case we would attribute the same structure of production costs to the different activities led by the institution. The level of approximation gets worse when we focus on transactions led by groups of homogeneous units: in this case we would assume that units belonging to the same group use the same structure of costs for producing different kinds of products.

In order to solve this problem, we assume that the existing functional classification (COFOG) represents a first classification by activity of the outlays finalised to production.

Successively, we use a “bridge- matrix” in order to spread the amount of money recorded in a COFOG category, to one or more ATECO partitions. The link between functions and kinds of activity (i.e. the “bridge matrix”) is mainly based on a comparison among the definitions adopted in the two classifications.

The procedure allocates each monetary transaction classified in a COFOG category to the corresponding ATECO category, by using the number of employees per function and activity as indicator. Moreover, the procedure estimates economic operations by ATECO category, separately for market and non-market production. This distinction has the advantage of assigning different

production functions to market and non-market activities belonging to the same COFOG category. In order to distinguish market/ non-market economic operations, it is necessary to apply the same distinction to employment data. Therefore, the estimation process generates an intermediate output, which shows the distribution of employees by ATECO and by COFOG, and according to the market/non-market distinction.

Figure 1 describes synthetically the estimation process. Starting from the up-left corner we found two boxes that present respectively the purpose and the method:

- the goal is the estimation of general government monetary transactions recorded in the input-output table;
- the method consists in subdividing economic operations analysed by function (COFOG), according to the distribution of employees classified by kind of activity (ATECO).

The estimation process needs three inputs:

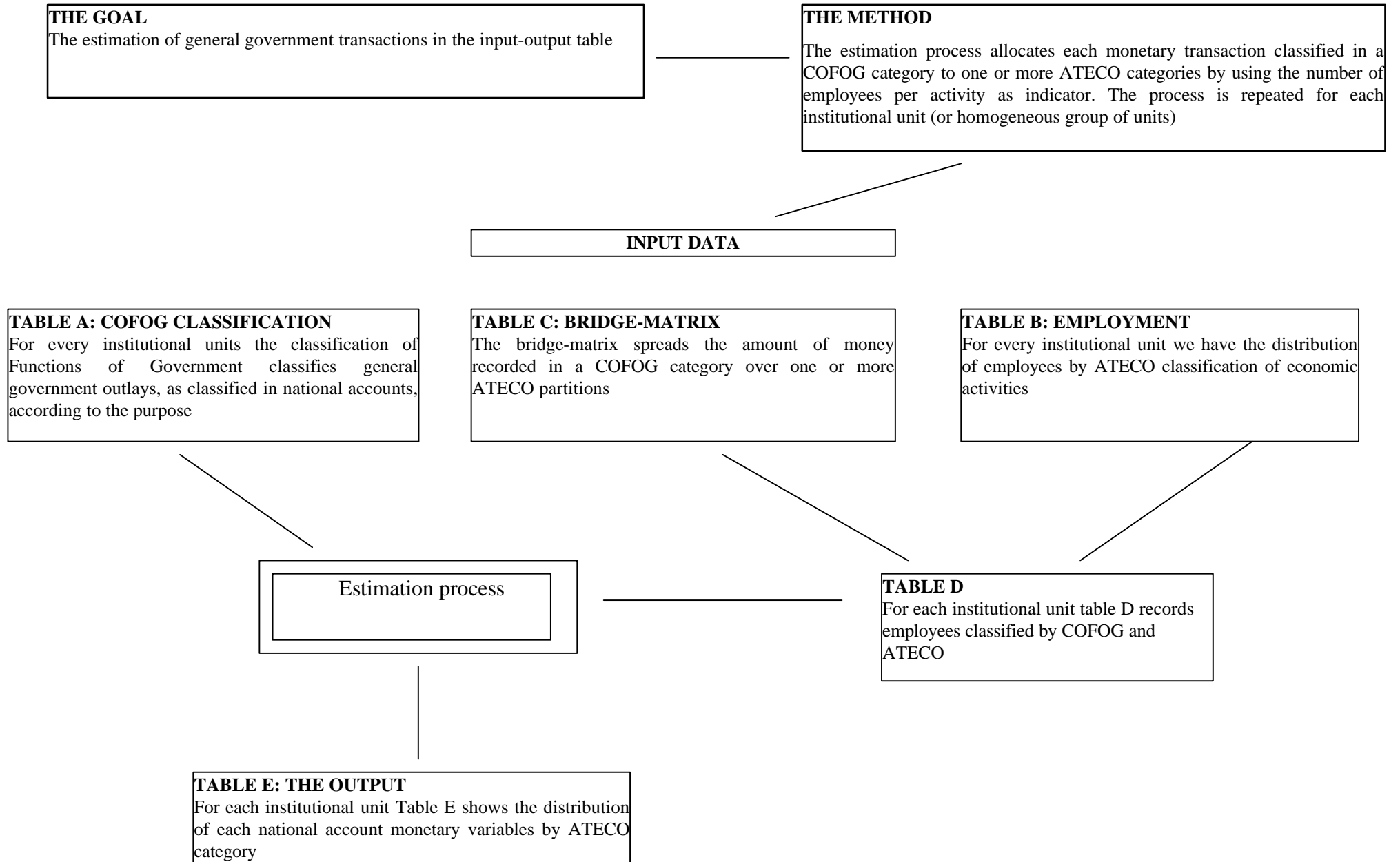
1. the functional classification (COFOG) of general government outlays connected to production (table A)
2. the distribution of employees per type of economic activity (table B);
3. the “bridge matrix” that links functions and economic activities (table C).

The first step consists in calculating table D that records the distribution of employees per function and kind of activity. The estimation process starts from data included in C and B tables and calculates D tables for each institution or group of institutions.

The second step consists in separating general government economic operations (table) per kind of activity. We use as indicator the distribution of employees per activity (table D).

The final output (table E) shows, for each general government sub-sector, the economic operations analysed per kind of activity. Adding up data analysed per ATECO, we get the input-output vectors listed in table 1.

Figure 1: the estimation of general government transactions in an input-output table



1.4.1 The case of municipalities.

Municipalities are the typical case of general government units that produce both non-market and market output. For compiling the input tables we have used the following data sources:

- Census on enterprises and institution
- Final balance sheets certificates
- CISPEL⁸ elaboration on final balance sheets data, concerning specific kinds of activities

The first step is the identification of market services. Through CISPEL estimations and balance sheet information we have rebuilt the structure of production costs per each type of economic activity led by municipalities. Successively, by applying the 50% criterion we have distinguished market and non-market activities.

The estimation of production costs per activity reaches a great level of detail as the activity corresponds approximately to the single service produced by municipalities. Final balance data record municipality's outlays by *sezioni*, *voci economiche* and *rubriche*:

- *sezioni* identify broad expenditure fields as education, public order or health affairs;
- *rubriche* identify the kinds of activities performed by municipalities;
- *voci economiche* correspond approximately to the national accounting economic aggregates.

Final balances present the distribution of economic aggregates by *sezioni* (expenditure fields), whereas do not record the distribution of economic aggregates by *rubriche* (kind of activity).

For this reason we have integrated balance sheet data with other information: CISPEL data concerning the structure of production costs for specific kinds of activities and employment data (taken from the national accounts data set on employment) about the distribution of employees by ATECO. The matching of these data allows estimating the distribution of economic aggregates by *rubriche* so that we dispose of production costs and revenues for each *rubrica* (kind of activity). Successively, we link each *rubrica* to the corresponding COFOG category and subsequently to the corresponding ATECO categories through the bridge matrix.

This method of analysis follows a SAM approach, in that it considers the institutional unit (municipality) as the unit of analysis, on which information is collected at the maximum level of detail. The main benefits of this approach are the following.

- A direct link between macro end micro data: economic macro-variable can be calculated with a bottom up method;

⁸ CISPEL is the Italian Confederation of Public Services supplied by the Local government.

- A more reliable estimation of economic operations analyzed by function or kind of activity;
- The consistency of monetary data with the underlying employment.

The new data set on municipalities' production activities gathers the data necessary for the estimation procedure, as it includes the functional classification of economic transactions and the distribution of employees per activity.

Table 2 shows the output of the estimation process. Municipalities' production is analyzed by ATECO category and type of output (non market production strictly speaking, market production sold at economically significant prices and market production sold at not economically significant prices).

Table 2 Municipalities' production by ATECO and type of output

Activity	ATECO Classification of activity	Non Market Production	Non Market Production sold at not economically significant prices	Market Production sold at economically significant prices
Shambles	15.11.1			
Generation, transmission and distribution of electricity	40.10			
Distribution of natural gas (methane)	40.20.1			
Potable water supply and distribution	41.00.1			
Not potable water supply and distribution	41.00.2			
Building construction	45.21			
Road and highway construction	45.23			
Chemists	52.31			
Colony home	55.23.2			
Other activity concerning water transport system	63.22			
Location	70.20			
Public markets	74.84.4			
Executive, legislative, financial and fiscal activity	75.11.1			
Statistical services and overall planning activity	75.11.2			
Administration of health affairs and services	75.12.1			
Administration of education affairs and services	75.12.2			
Administration of housing and community development affairs	75.12.3			
Administration of recreational, cultural and social affair and services	75.12.4			
Administration of road and highway affairs and services	75.13.4			
Administration of transportation and communication affairs and services	75.13.6			
Administration of others economics affairs and services	75.13.7			
Services activity of support of Public Administration	75.14			
Administration of military defence affairs and forces	75.22			
Administration of law courts and prisons	75.23			
Administration of police forces and services	75.24			
Administration of fire-fighting and fire-prevention services	75.25			
Administration of social security affairs and services	75.30			
Pre-primary education affairs and services	80.10.1			
Primary education affairs and services	80.10.2			
Secondary education affairs and services- Level 2	80.21.1			
Secondary education affairs and services- Level 3	80.21.2			
Vocational and technical education affairs and services	80.22			
Administration of others educational affairs and services	80.42.2			
Welfare services through residential institution	85.31			
Welfare services non delivered through residential institutions	85.32			
Refuse collection and disposal systems	90.00.1			
Sewage systems	90.00.2			
Street cleaning	90.00.3			

Activity	ATECO Classification of activity	Non Market Production	Non Market Production sold at not economically significant prices	Market Production sold at economically significant prices
Production of cultural events	92.31			
Administration of theatres	92.32			
Amusement park activities	92.33			
Administration of libraries activities	92.51			
Administration of museums, art galleries, exhibition halls, monuments, historic house and sites	92.52			
Administration of zoological and botanical gardens, aquariums, Arboreal and so forth	92.53			
Administration of playing fields and courts	92.61.1			
Administration of swimming-pool	92.61.2			
Administration of tennis courses	92.61.3			
Administration of polyvalent courts	92.61.4			
Administration of other courts	92.61.5			
Administration of gymnasiums	92.61.6			
Organisation of sporting events	92.62.3			
Establishment baths	92.72.1			
Other recreational activity	92.72.2			
Funeral home	93.03			
Public baths	93.04.1			
Thermal baths	93.04.2			

1.5 Concluding remarks

The new method of analysis allows a more detailed and reliable representation of general government production activity. With respect to the past there are not conventions concerning the kind of goods or services that the sector produces: general government production spreads over different kinds of activities and can be sold on the market at economically significant or not significant prices. The procedure can be currently repeated, so that we can dispose of a yearly input-output table for general government.

The method is mainly based on the information collected in the national accounting data set on employment (see § 1.3). Thanks to the yearly updating of this data set we can estimate a reliable indicator (the distribution of employees by institutional unit and ATECO) for the analysis by industry of general government outlays. Moreover, the functional classification of economic operations, which is based on final balance data, can give us useful indications about possible changes in the structure of the employment concerning each institution.

2. Non-profit Institutions Serving Household (NPISH)

2.1 Introduction

In the western European economies, the importance of non-profit organizations has gradually increased in the last years, particularly in the sectors serving households, attracting the attention of the scientists and policy-makers. The debate about the definition of economic bodies which form what is generally called “the third sector” is still open and analyses are carried out to explain their behaviour, the main field of their activities and their possible future development.

In Italy, the growing demand of information about non-profit organizations is not completely met. In fact the available statistic information refers to some typologies and regards only some aspects of their activity.

In such context the National Accounts Department (NAD) is trying to define the population of private non-profit institutions (NPI), in order to extract the *non-market* units serving households and to estimate their employment, production, costs and compensation of employees, within the framework of the implementation of ESA95.

The individuation and classification of *market* and *non-market* units within non-profit institutions is particularly delicate and complex. The available information on such economic subjects is fragmented and limited to some activity sectors; besides, the previous experience in the treatment

of such statistic units doesn't provide sufficient elements for comparison. Therefore, it was adopted a procedure based on intersection and integration between more sources, each of them able to provide one or more elements which are useful to estimate the economic aggregates of the sector.

In particular, the 1991 Census of industrial and service enterprises (CIS91) has been chosen as a benchmark, from which has been possible to select, in the single categories of economic activity (ATECO⁹), those units with legal status equivalent to private institutions and the relative number of employees; the same units have been retrieved in INPS (National Institute of Social Security) and VAT (Value Added Tax) archives, in order to determine turnover and labour cost. A structure of costs for such bodies has been obtained for each ATECO using the results of a National Accounts (NA) survey on costs for enterprises and services, carried out to estimate the 1992 I/O Table. The *market* or *non-market* character of each unit and the estimation of the per capita compensation of employees, production and value added have been determined from such elements. The economic aggregates of the sector have been estimated using the above data.

2.2 Non-profit institutions in ESA95

ESA95 defines a non-profit institution as “a legal or social entity created for the purpose of producing goods and services whose status does not permit them to be a source of income, profit or other financial gains for the units that establish, control or finance them. In practice, their productive activities are bound to generate either surpluses or deficits but any surpluses they happen to make cannot be appropriated by other institutional units.” (ESA95 § 3.31).

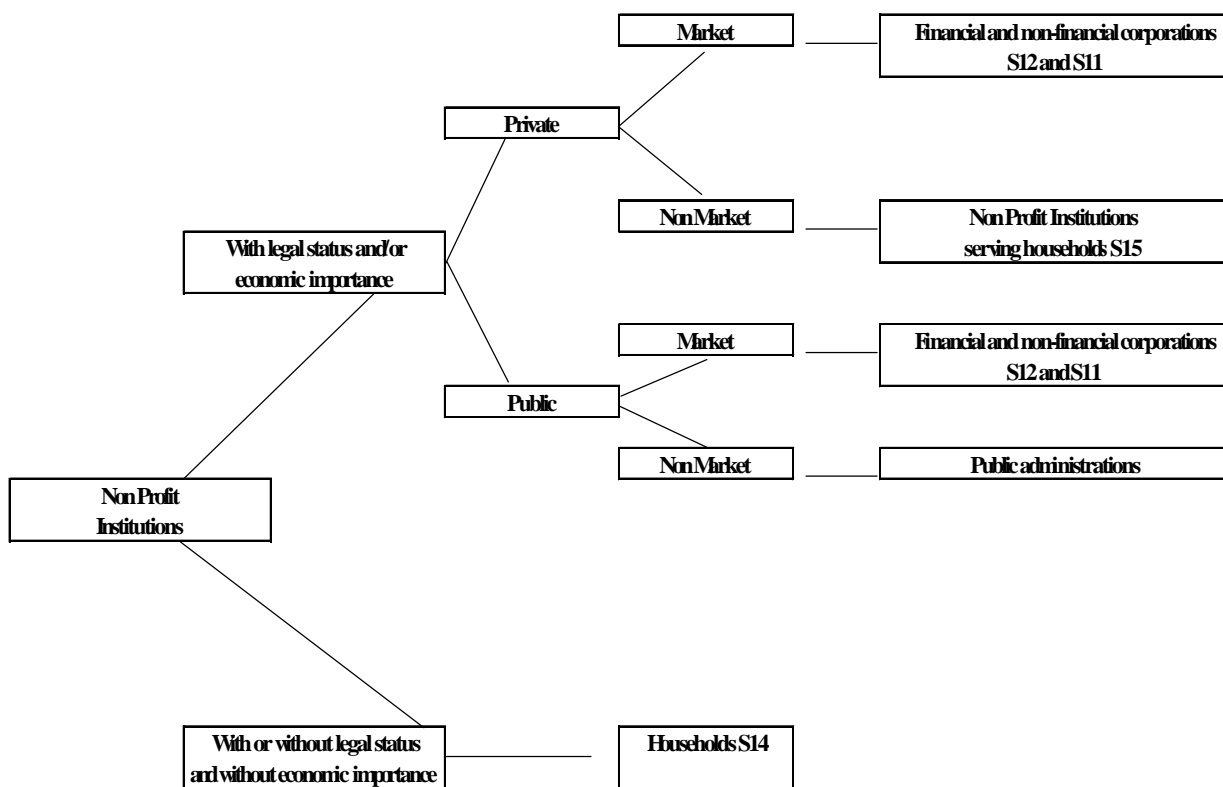
Therefore, the definition of NPI population has to move from the identification of those kind of legal statuses, which are typical of the country's legal system, and whose organization meets NPI distinctive features.

NPIs are in any ESA95 institutional sector. Their classification takes into consideration their economic importance, the source of financing (private or public) and if the *market* or *non-market*¹⁰ nature of their economic activity, as shown in chart 1.

Chart 1 - Definition and classification of Non-profit institutions according to ESA95

⁹ See note 7.

¹⁰ A unit is defined *non-market* when its output is provided free or at prices that are not economically significant to other units, that is when sales do not cover at least 50% of its production costs, over a range of years. (ESA95 § 3.19-3.26)



According to ESA95, an organization system implying legal status is the first element required to define a NPI; anyway economic importance is also required, otherwise the unit is classified in the “Households” sector.

As far as Italian economic reality is concerned, it is difficult to define NPIs if the field of observation is limited to legal entities. In fact, some institutions without legal status could be incorrectly classified in “Households” sector, such as political parties, trade unions and numerous associations widespread all over the country; nevertheless their importance is pointed out in ESA95 (§ 2.88), which includes them among institutions to be classified in sector S.15.

In ISTAT, an inter-institutional working group worked to classify statistical units in institutional sectors according to ESA95. With regard to non-profit units to be classified in “Non-profit institutions serving households (NPISH)” sector, the working group decided to leave aside legal status and to estimate the NPI economic importance on the basis of the two following requirements: a) non-temporariness of the institution; b) at least one employee carrying out the institution principal activity.

Choice of b) requirement is due to the organization characteristics of private institutions in Italy at the beginning of 1990s, as they result from the 7th Census of industrial and service enterprises.

Institutions and employees by size classes in CIS91 (percentage)

Employees' classes									
0		1		2-5		6 and over		total	
institutions	employees	institutions	employees	institutions	employees	institutions	employees	institutions	employees
33.688	0	9.229	9.229	8.668	26.344	5.513	211.980	57.098	247.553
59%	0	16,2%	3,7%	15,1%	10,7%	9,7%	85,6%	100%	100%

About 59% of surveyed institutions (mainly with only one local kind of activity unit (LKAU)) make only use of volunteers; their economic activities mainly belong to “Other community, social and personal service activities” sector (divisions 91 and 92 in NACE Rev. 1) (see table 1 in annex). Units with employees are mostly small size institutions: 16% of them has only one employee, whereas 15% has from 2 to 5 employees; 9.5% corresponds to institutions with more than 6 employees, that is 85.6% of the overall employment. Annex shows the distribution of units surveyed in CIS91 by divisions of economic activity and size classes (table 1): it is worth pointing out that the more the economic unit size grows, the more “Education” and “Health services” sectors increase their importance.

After assessing if a NPI is private or public, on the basis of the nature of the controlling and financing economic body, the final classification in the different institutional sectors depends on the kind of activity (*market or non-market*).

The present work will focus on definition, identification and classification of units in sector S.15 “Non-profit institutions serving households”, within the framework of NPI sector.

In particular, it will be specified how NPIs were identified in CIS91, how the sub-sector of non-*market* units belonging to S.15 sector was determined and how the economic aggregates relevant for NA estimates in 1991-95 were calculated for these units.

The highest feasible disaggregation has been applied, as far as economic activity classification (five digits ATECO) and employment classes (eight classes) are concerned.

2.3 Boundaries of Non-profit institutions sector and corresponding employment definition.

The information source for the determination of NPIs in Italy in the years 1991-95 was represented by the 7th Census of industrial and service enterprises. It is the first-ever census to survey public and private institutions.

The CIS91 is the first attempt of a complete survey on such economic bodies carried out in Italy. The subsequent surveys carried out by ISTAT or other private and public researches centers, were aimed at particular segments of activity or institution classes and did not provide useful results for an integrated analysis. On the other hand, the Tax Register (TR)¹¹ would allow retrieving the active institutions with a legal status corresponding to NPIs; but it is affected by problems related to the use of administrative archives for statistical purposes. First of all, the used classifying variables (legal status and economic activity class¹²) are not verified and so they may be influenced by registering mistakes; secondly, the state of activity of each unit is related to their dates of registration and deletion. The latter does not always reflect a discontinuance of activity, but could depend on a transformation or a territorial transfer of the unit itself. Besides, these variables could not be updated in real time due to the “structural” delay in the archive updating. At the moment, there is not sufficient information available to evaluate the error margin referred to the used classifying variables. This archive has nevertheless been used to collect information on the turnover for each institution selected from the census.

The definition of an “institution” in CIS91¹³ does not completely match ESA95 definition. In fact it limits such units to *non-market* sectors, as defined by ESA79¹⁴. Table 1 shows that units in the census are included in a wider group of activity sectors as well.

CIS91 determines therefore institutions with autonomy of decision, whose economic activity is distinct from those of their owners, regardless legal status¹⁵. Therefore, in defining the NPI population, the following statistic units with legal forms similar to private institutions have been determined: foundations, legally recognized and non-recognized associations.

¹¹ The TR archive records taxable bodies which required the taxpayer’s or VAT (value added taxes) code, for these subjects are required the legal status and the economic activity category (ATECO).

¹² The TR archive adopted the ATECO only recently; thus this variable is still being updated.

¹³ An institution “is a unit that has a complete set of accounts together with autonomy of decision, and whose principal activity is the production of *non-market* goods and services. It finances itself mainly by means of compulsory withdrawals from all other economic units (households, enterprises) or by means of voluntary contributions from households and/or agents who have organised themselves to manage a common interest. The former is a public institutions, the second is a social private institution.”

¹⁴ According to ESA79 the following services are considered *non market*: Government (defence and welfare), social works, trade union activities, religious organization activities, tourism association activities and other welfare services if not otherwise specified), moreover the following services are *non market*: waste disposal services, teaching, research and health if their resources are not mainly from sales, but from public transfers, household voluntary contributions and returns on capital (ESA79 § 313).

¹⁵ The following were not recorded by CIS91: churches and other religious organizations; NPI without “real offices”, that is when offices were the same of the controlling or administering body.

Particularly, as regards religious organizations not surveyed by CIS91, it was necessary to operate integration using the Churches archives, held by the Ministry of Internal Affairs, concerning Churches which asked for a legal status. Moreover, information obtained by different national organizations (CEI, Jewish Communities, Union of the Waldesian Churches, etc.), which control the activity of the main religious organizations in our Country, has been used.

While defining the private institutions, it was possible to determinate the number of employees, correcting and integrating where necessary census data, at a five digit ATECO level and eight dimensional classes.

The employment structure so obtained has been utilised in the calculation of full time labour units within the framework of the model used to estimate employment in NA.

In general the sector is characterised by regular full time employees, except for division 91 “Activities of membership organization n.e.c.” where non-regular workers are employed. The NPIs’ workers are employed mainly in the following sectors: “Education”, “Health services” and “Other community, social and personal service activities”.

2.4 The selection of Non-profit units belonging to NPISH sector

After having identified private institutions, it was necessary to classify them into *market* and *non-market* units on the basis of economic data: private institutions so identified as *non-market* form sector S.15, whose identification is the objective of this work.

As far as non-profit institutions are concerned, ESA95 establishes that, in order to determine the type of producer (market or non-market), a 50% criterion should be applied: if more than 50% of the production costs are covered by sales, the institutional unit is a market producer and classified in the non-financial and financial corporations sectors; otherwise, if less than 50% of the production costs are covered by sales the institutional unit is an other non-market producer and classified in the sector of the “Non-profit institutions serving households”.

The 50% criterion application requires that at least data concerning the turnover and production costs of each institutional unit are known. To define these aggregates, information was in part obtained from administrative archives, in particular as far as turnover and compensation of employees are concerned; whereas intermediate costs were estimated on the basis of information from “Survey on industrial and service enterprises costs” realised by NA to build the 1992 I/O table.

In particular, using the taxpayer’s code as cross-referencing key for each unit extracted from CIS91, the following archives were processed:

1) archive of value added tax (VAT) statements, for the period from 1991 to 1994, to figure out turnover;

2) the National Institute of Social Security (INPS) archive for the period from 1991 to 1995, to establish labour cost.

Thus a sub-sector of the initial census units was determined by an intersection of the three archives (CIS91, VAT, INPS). This sub-sector is characterised by a fairly good coverage degree (in terms of employees) of the economic activity divisions where the census NPIs are included. The classification algorithm was applied only to the units of this sub-sector. The analysed sub-sector is considered representative of the population for what concerns the percentage of *market* and *non-market* units.

The description of both administrative archives used is given below and then the results will be described.

2.4.1 The National Institute of Social Security (INPS) archive

The INPS archive monthly provides the following information: number of employees and their compensation. Information is referred to each institution registering its employees in the Social Security rolls. These data allow defining yearly at micro level¹⁶: 1) the average number of workers and clerks; 2) the average number of total employees (workers, clerks, executives and apprentices); 3) the average compensation of workers and clerks and related social security contributions and welfare contributions inferred from the statistical contribution code (CSC) of the unit¹⁷.

In the annex (table 2) the characteristics of CIS91 Private institutions retrieved in INPS archive are shown and compared with the features derived from census data, as far as NACE sectors are concerned, for years 1991, 1993 and 1995. This sub-sector provides a rather complete picture of census units, both as number of employees and as divisions of the different economic sectors. These institutions are 20% of the total census units and represent 50% of those units with employees. In particular, in these institutions work about 80% of the employees surveyed in 1991. Differences in the total number of employees (for the same institutions) provided by the two archives are mainly

¹⁶ Each observed record of the INPS archive is related to a single economic body, which can be identified through the INPS roll number or through the taxpayer's code. It is possible to find the same *taxpayer's code* more than once, if the economic subject has several LKAUs. Therefore, before cross INPS archive with data in the CIS91 archive, data related to the same taxpayer's code were aggregate and relative frequencies were assumed as proxy of local units for the census institutions included in the archive.

¹⁷ It should be underlined that some distortions may be found in the defined variables. Distortions are due mainly to registration rules applied in the INPS archive management. In particular, the average number of employees could be overestimated. In fact each month, all workers are to be registered in the archive, even though they have worked for a very short period of time (e.g. one day). This means that the yearly average wage per employee could be underestimated, since the recorded total wage is related to the real time worked.

due to the division “Activities of membership organizations n.e.c.” where a difference of 40,000 employees is recorded. As far as the “Education” and “Health services” sectors are concerned, there are small differences in the information provided by the two archives, both in terms of employees and number of LKAU. In the following years there are no remarkable changes in the number of institutions present in the archives (from 1991 and 1995 only 2% of institutions go out of business), thus it can be assumed that the most solid private institutions have been selected, whose structural characteristics are representative of the whole sector.

2.4.2 The Value Added Tax (VAT) archive

The VAT archive allows establishing the turnover of those institutions included in the 1991 Census and which provided a statement for the examined year¹⁸. Thus, it is possible to obtain, for the selected units, the amount of sales¹⁹.

In the annex (table 3) the characteristics of CIS91 private institutions retrieved in VAT archive are shown and compared with the features derived from census data, as far as NACE sectors are concerned, for years 1991 and 1994. Thus, this sub-sector provides a rather complete picture of CIS91 units, both as number of employees and as divisions among the different economic sectors. These institutions are 12% of the census units and represent 30% of those units with employees. About 50% of employees surveyed in 1991 work in these institutions, in particular in the research field (76% of total surveyed), in the educational field (61%) and in health services (73%). “Activities of membership organization” and “Recreational, cultural and sporting activities” have less employees (in both cases the selected institutions represent 28% of total census employees). In 1994 the number of census institutions present in VAT archive has grown by 36%. The growth mainly affected sectors M, N and O of the NACE. This is mainly due to the desultory productive activity that may characterize the economic operators of this specific sector. However, more than 70% of the institutions is recorded in both years. In particular a certain stability is recorded for institutions in the research and health services sectors, while institutions in the education sector appear to be less stable. The greatest increase is recorded in the “91” and “92” divisions (respectively 56% and 82%);

¹⁸ Each observed record of VAT archive is related to a single economic body which can be identified through the taxpayer’s code or the VAT number (they can be the same). Each body is duplicated if more statements for different LKAU were delivered (LKAU should have the same taxpayer’s code or VAT number). The same procedure applied for the INPS archive was followed: data related to the same taxpayer’s code were aggregate, and the resulting relative frequencies were assumed to be proxy of the number of the LKAUs.

¹⁹ Turnover is the sum of all taxable transactions (transfer of goods and services, imports), all non taxable transactions (mainly exports) and tax-exempt transactions (a number of activities carried out by private institutions are included in this set: medical and nursing services, hospitalisation and care provided by hospitals, clinics and nursing homes, educational and teaching services, services provided by founding hospitals, orphanages, nursery schools, retired homes, libraries, discos, museums, galleries, art galleries, etc.) less disposals of fixed assets.

a lower growth rate is recorded in the health services sector (about 20%), in particular in the field of social welfare, where small-sized institutions are the majority.

2.4.3 The distinction between market and non market private institutions

The 50% ESA95 criterion to determine *market* and *non-market* institutions can be applied to census institutions with employees registered in the Social Security rolls and which delivered the VAT statement. For this institutions it has been possible to define the turnover level and labour cost. Table 4 in the annex shows their characteristics with reference to some years. This grouping is rather stable for the observed years: there are not great differences in the distribution of institutions and employees in the Social Security rolls within the NACE sectors.

The intersection of the three archives allows getting a rather complete outline of census units. It includes 20% of surveyed institutions, where 45% of total employees' work. The INPS archive and census data show no meaningful differences in the number of employees and LKAUs.

As far as private institutions are concerned, intermediate consumption were estimated taking into account the structure of production cost by economic activity category of private institutions, defined on the basis of the 1992 survey on production cost of industries and services used for the I/O table.

The provisional results show, in terms of the percentage of *non-market* institutions by five digit ATECO level, two main *non-market* economic activity categories: "Activities of religious organizations" and "Activities of political organizations". A great number of *non-market* institutions are also included in "Activities of trade unions". On the other hand, institutions in "Trade services" and "Other business activities" sectors are completely *market*. A percentage of *market* institutions is recorded in "Health services", "Education" and "Research" sectors.

2.4.4 The estimation of economic aggregates concerning non-market private institutions

The production of *non-market* private institutions is to be calculated by the cost side as the sum of the following items: intermediate consumption, compensation of employees, consumption of fixed capital and other taxes on production. Then the value added of this sector is represented by compensation of employees and consumption of fixed capital, which means that there is no operating surplus. Production valued at *market* price provides an estimate of collective consumption of these economic units.

By the above procedures applied at microeconomic level it was possible to define the distribution of *non-market* private institutions and the related employment by economic activity category and size classes.

With reference to each economic aggregate, an average level per employee were estimated at branch and employee class level. These estimates were applied to the related labour units in order to obtain the total amount of each item for the whole sector.

The average amount of per capita compensation of employees (divided into the following components: wages, social contributions and benefits) is based on information gathered in INPS archive. The estimate of per capita intermediate consumption was based on the structure of costs defined using information from the “Survey on industry and services costs, for the year 1992”. Consumption of fixed capital and taxes were estimated using a sample of units in the survey on small and medium sized enterprises for 1995, with reference to foundations and associations (about 300 units).

Estimates for political parties, trade unions, associations of employers and religious organizations were based also on data from balance sheets or profit and loss accounts.

For the whole sector of NPISH, the new provisional estimates, calculated according to ESA95, show a growth of the collective consumption level with respect to the current historical series of National Accounts. The increase is even greater if ESA79 definitions of the *non-market* sector are taken into account, because, according to new definitions, some units are now classified as *market*.

2.5 Concluding remarks

This study is an important step towards the definition and analysis of the behaviour of Italian non-profit private institutions. In fact, the only available informational sources were not complete and an integrated analysis was not possible on their basis. The adopted estimate procedure is based on cross-referencing different administrative and statistical sources. A number of problems had to be solved: the retrieval, handling and harmonization of different data basis. Procedures adopted in handling data allowed overcoming the main limits of base archives. Therefore it was possible to implement a product complying with the required standard of estimate integration at National Account level.

The detail of the estimates allows analysing several aspects of non-profit private institutions: namely sectors where they play an important role and the nature of their economic activity (*market* or *non-market*). Moreover other aspects are described: size characteristics, the contribution to the

National product and the evolution of their activities in the observed period of time. It should be pointed out that the integration of the information obtained in the processes carried out to estimate NA time series will allow knowing the behaviour of NPI from 1988 to 1997.

Annex chapter 2

Table 1 - Distribution of surveyed units in CIS91 by economic activity division (NACE Rev.1) and employees' classes

Divisions	employees classes																										
	0			1			2			3			4			5			6-20			21 and over			totale		
	INST	LKAU	EMPL	INST	LKAU	EMPL	INST	LKAU	EMPL	INST	LKAU	EMPL	INST	LKAU	EMPL	INST	LKAU	EMPL	INST	LKAU	EMPL	INST	LKAU	EMPL	INST	LKAU	EMPL
01	11	11	0	10	0	10	2	2	4	0	0	0	1	1	4	0	0	0	1	1	7	1	2	23	25	17	48
02	6	6	0	6	7	6	1	1	2	1	3	3	0	0	0	2	2	10	1	1	18	0	0	0	17	20	39
40	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
41	15	15	0	4	4	4	1	1	2	1	1	3	1	1	4	1	1	5	1	1	10	0	0	0	23	24	28
52	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
55	15	15	0	4	4	4	5	6	10	1	1	3	0	0	0	1	1	5	1	1	12	2	2	101	29	30	135
60	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
63	4	4	0	3	3	3	1	1	2	1	1	3	0	0	0	0	0	0	0	0	0	0	0	0	9	9	8
64	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
66	1	1	0	2	2	2	0	0	0	0	0	0	0	0	0	2	2	10	0	0	0	0	0	0	5	5	12
72	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
73	59	59	0	39	40	39	26	30	52	26	29	78	6	6	24	13	15	65	43	59	462	16	23	1134	222	261	1854
74	6	6	0	1	1	1	0	0	0	0	0	0	0	0	0	1	1	5	2	7	19	0	0	0	10	15	25
75	8	8	0	0	0	0	0	0	0	1	3	3	0	0	0	0	0	0	1	1	18	0	0	0	10	12	21
80	400	417	0	399	418	399	521	547	1042	678	699	2034	564	583	2256	409	450	2045	1273	1661	12307	586	3245	42936	4266	8020	63019
85	2186	2388	0	645	727	645	347	452	694	250	340	750	210	317	840	156	186	780	812	1611	8685	424	3463	53554	4820	9484	65948
90	11	11	0	2	2	2	5	5	10	0	0	0	2	2	8	1	2	5	2	3	26	0	0	0	21	25	51
91	12654	13435	0	4368	4722	4368	1600	1858	3200	770	1012	2310	445	628	1780	361	533	1805	1166	2689	11676	450	35080	70609	21369	59957	95748
92	18307	18906	0	3744	3940	3744	1149	1302	2298	511	606	1533	310	382	1240	283	338	1415	633	871	5927	98	445	4456	24725	26790	20613
93	1	2	0	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	4	2
total	33688	35288	0	9229	9872	9229	3659	4206	7318	2240	2695	6720	1539	1920	6156	1230	1531	6150	3936	6906	39167	1577	42260	172813	55559	104678	247553

Table 2 - Characteristics of census private institutions retrieved in INPS archive by economic activity sectors (NACE Rev.1)

Economic activity sectors	1991						1993				1995			
	Institutions	INPS workers and clerks	INPS employees	INPS LKAUs	CIS91 employees	CIS91 LKAUs	Institutions	INPS workers and clerks	INPS employees	INPS LKAUs	Institutions	INPS workers and clerks	INPS employees	INPS LKAUs
A	8	32	33	9	51	11	10	33	34	12	10	36	37	14
E	4	14	15	4	21	4	4	14	15	4	3	1	1	3
H	13	89	91	14	129	14	13	86	87	14	11	72	74	11
I	2	4	4	2	4	2	2	4	4	2	2	5	5	2
J	4	12	12	4	12	4	3	11	11	3	3	11	11	3
K	98	832	841	111	1365	130	98	770	778	114	86	703	712	106
M	3285	54142	54233	6240	55296	6277	3276	50938	51011	6479	3042	48508	48568	6258
N	1883	55067	55173	3068	59591	5824	1989	59429	59546	3393	1931	60464	60566	3373
O	6308	47417	48250	6994	88768	41349	6586	42831	44371	7696	6333	38910	40316	7489
Total	11605	157609	158652	16446	205237	53615	11981	154116	155857	17717	11421	148710	150290	17259

Table 3 - Characteristics of census private institutions retrieved in VAT archive by economic activity sectors (NACE Rev.1)

Economic activity sectors	1991				1994	
	Institutions	VAT LKAUs	CIS91 employees	CIS91 LKAUs	Institutions	VAT LKAUs
A	10	14	31	13	10	14
E	3	3	15	3	0	0
H	9	9	79	9	14	18
I	3	3	3	3	3	3
K	101	109	1407	128	97	104
M	1806	2159	38565	4041	1360	1753
N	1139	1413	48270	2615	1333	1658
O	3914	4134	33962	11726	6543	6937
total	6985	7844	122332	18538	9360	10487

Table 4 - Characteristics of census private institutions retrieved in INPS and VAT archives by economic activity sectors (NACE Rev.1).

Economic activity sectors	1991							1994				
	Institutions	INPS employees	INPS workers and clerks	CIS employees	CIS91 LKAUs	INPS LKAUs	VAT LKAUs	Institutions	INPS employees	INPS workers and clerks	INPS LKAUs	VAT LKAUs
A	5	11	11	26	7	6	8	6	17	17	8	9
E	2	10	11	14	2	2	0	0	0	0	0	0
H	7	30	31	76	7	7	5	8	70	71	8	12
I	1	1	1	1	1	1	0	0	0	0	0	0
K	65	690	695	1196	89	76	65	59	543	546	71	66
M	1502	34185	32255	36215	3674	3747	1209	1100	30301	30344	3256	1457
N	899	43005	43062	46008	2291	1767	944	892	43804	43861	1816	1192
O	2104	21163	21391	27953	9324	2461	1766	2311	18468	18735	2772	2582
total	4585	99095	97457	111489	15395	8067	3997	4376	93203	93574	7931	5318

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