Main changes in the Labour Force Survey of the Basque Country 2005

Basque Statistical Office (EUSTAT).
C/ Donostia-San Sebastián 1. Vitoria-Gasteiz. Spain. 01010

Jesús R. Marcos
jesus_rdzmarcos@eustat.es

1. Introduction

In 2003 Eustat, which had carried out a continuous survey on the labour force in the A.C. of the Basque Country since 1983, considered the need to update and improve both the methodology and the technological framework that support the operation.

The changes are based on several reasons; one was to adapt the methodology to international requirements in relation to the demand for information, to take on the social changes that affect the object of analysis from the perspective of researched information and collection methods.

The progressive increase in non-response, the need to review population projections and changes in IT led to an in-depth overhaul. The changes that were implemented in 2005 affected several areas. The following figure shows the main changes.
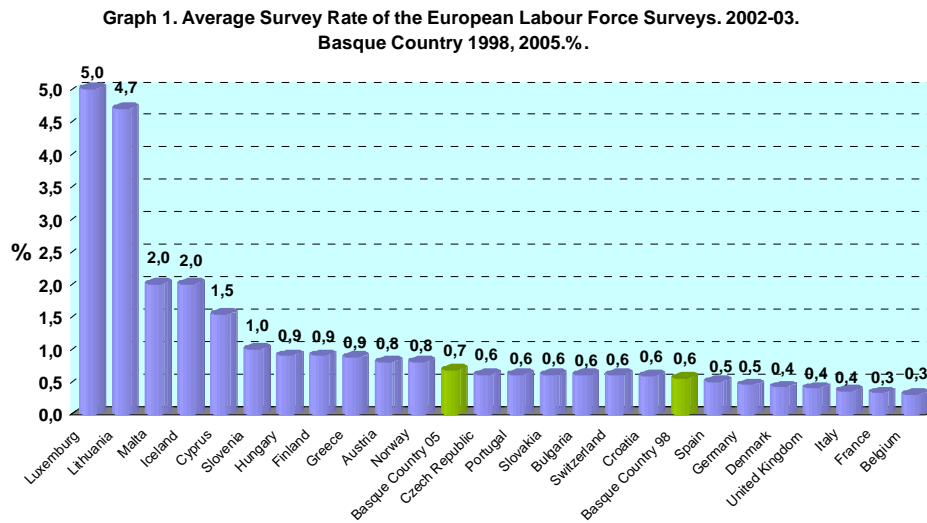
	METHODOLOGY 1998	METHODOLOGY 2005
SAMPLE SIZE	**3,750** dwellings a quarter / **0.55%** Average Survey Rate	**5,088** dwellings a quarter / **0.68%** Average Survey Rate
SAMPLE FRAMEWORK	Housing Directory (Population, Housing and 98 Register Statistics)	Population Register Environment
INFORMATION ENVIRONMENT	No	Nucleated information system based on the Population Register
SAMPLE DESING	**Two-stage**	**One stage**
	1st Selection of sections by stratified proportional system according to typologies (625 sections sampled out of 1,688)	Simple Random Sampling
EXTRACTION	With proportional probability to the size of the sectioin and without replacement.	
	2nd Selection of dwelling by systematic circular sampling with equal probability.	Selection of dwelling by systematic circular sampling with equal probability.
RENOVATION	**1/6** a quarter (1 and a half year permanence). PANEL SINCE 1984	**1/8** a quarter (2 years permanence). NEW PANEL.
COLLECTION METHOD	CAPI-1st interview and dwellings without telephone and CATI for successive.	CATI-except no location by telephone or negative (CAPI)
TECHNOLOGICAL ENVIRONMENT	Plan files	BD Oracle, PL-SQL and SAS applications
	Surveying on Laptop/PC	PC/ PDA Surveying
ELEVATION POPULATION	2010 Eustat Projections. Base 1996.	Projections 2015 Eustat. Base 2001.

2. Design changes and sample size

The progressive and significant reduction in some key object groups for analysis in the survey over the last five years (unemployed, some economic sectors by province, etc.), has inevitably led to a smaller representation in the sample or, which amounts to the same, to an increase in the margin of error in the estimation.

Although there are indirect procedures in the research phase to improve the estimates of these populations (Small Area treatments), Eustat also considered approaching two alternative methods: increase the sample size, from 3,750 family households per quarter to 5,088 (a 35.7% increase) and change from a two-stage

sampling system to a simple random system.

Graph 1. Average Survey Rate of the European Labour Force Surveys. 2002-03.
Basque Country 1998, 2005.%.

Source: The European Union labour force survey: main characteristics of the national surveys. Eurostat. 2005. Eustat

Since the publication of the first results of the LFS in 1985 to 1998, the sample size was similar to the present sample, 5,000 family households.

Two-stage sampling was maintained until that date: the selection of a subgroup of sections using a proportional stratified system according to typology, as a first phase, and the extraction of households by systematic circular sampling with equal probability, as a second. The typology of sections presented two fundamental problems: each Census was reviewed periodically –every five years in the case of Eustat-, which means there was a risk of the sample ageing and, on the other hand, there was a higher level of sampling error.

With the elimination of the first phase of the design, the sample seems to be better distributed in the province and it is possible to use more up-to-date sampling frames. Surveying the 4th quarter of 2004 and the first of 2005 is based on a new sampling framework configured by the Statistical Population Register and the Eustat Territory System.

A medium term aim is to have annually updated frameworks (Survey year –1).

One of the prime objectives of surveys on workforces is to offer information on variations in the study groups over the whole year. This circumstance obliges us to distribute the sample of households over all the weeks in the year and, vis-à-vis offering more consistent evolution data, to build panels of households (permanence in the sample of part of the total of households and constant renewal of the other part).
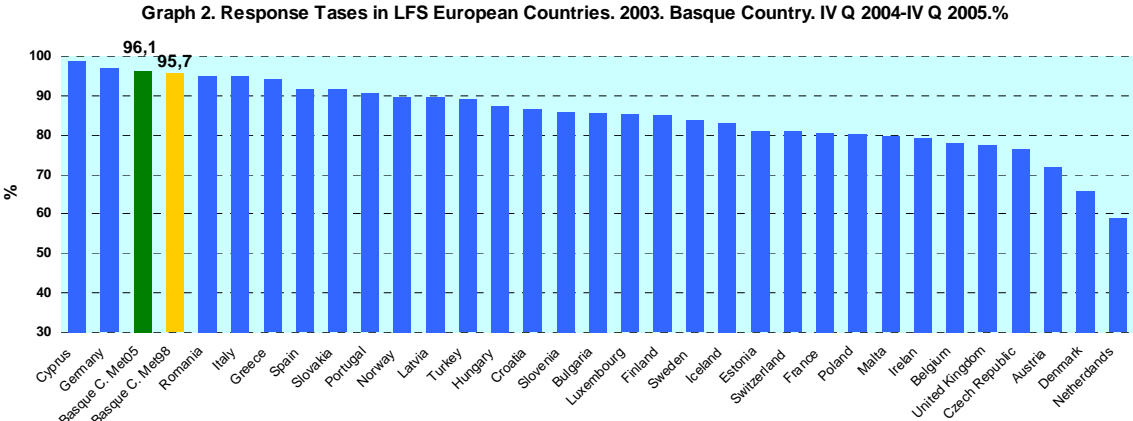
To date families in the LFS sample remain in the panel 6 quarters and 1/6 of the sample was renewed each quarter. In order to reduce distortions which occur when introducing a new sample and returning to the pre-1998 scheme, permanence on the panel is prolonged to 8 quarters and renewal involves 1/8 of the sample each quarter.

The change in the type of sampling and even the increase in size are linked to giving priority in the collection system to the CATI procedure (computer assisted telephone interviewing). To date the first interview (entry in the panel) was made through the

CAPI system (computer assisted personal interviewing) and successive interviews, unless the family wished otherwise or there was no telephone, were carried out using the CATI system. In the new LFS sample we attempted to locate the families' telephone numbers and unless they could not be found, the family requests otherwise or there was a negative telephone response, personal interviewing was not involved.

Through these changes and some other secondary changes in collection procedures an attempt was made to improve the sample coverage level.

3. Effects on the Response Rates

Graph 2. Response Tases in LFS European Countries. 2003. Basque Country. IV Q 2004-IV Q 2005.%

Source: **The European Union labour force survey: main characteristics of the national surveys. Eurostat. 2005. Eustat**

The move to CATI as the main surveying method (CAPI in the case of negative responses or no telephone) did not substantially vary the rates of response of the LFS between 2004 and 2005, staying at 96%, although it is necessary to clarify the following:
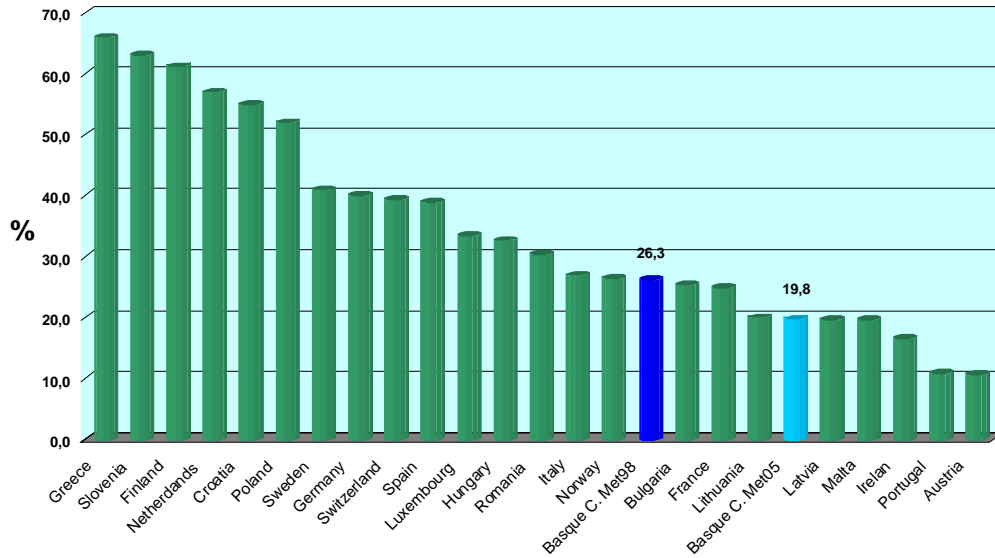
Given that a new protocol to recover negative responses came into effect, we can appreciate a substantial improvement in rejection rates, falling from 26.3% to 19.8%. They have, however, increased by almost the same proportion as prolonged absence calls (persons whom it has not been possible to locate due to absence from the home).

4. Analysis of the effects of methodological changes

4.1- Effects of the change in design

In order to assess the effect of the methodological changes and obtain bridge data, during the 4th quarter of 2004 and the 1st of 2005 two samples of the PRA were taken, the usual sample with 3,750 households and the new sample with 5,088 and using the new sampling system. If both versions are exploited in all cases applying the projections with base 2001, we notice the changes that were introduced to the new design. We must add others, more difficult to assess, and which must lead to their disappearance (effect of the new field equipment, effect of the new sample to 100%, new Questionnaire, etc.).

Graph 3. Refusald/Non responses Tases in European LFS. 2003. Basque Country. IV Q 2004-IV Q 2005.

Source: The European Union labour force survey: main characteristics of the national surveys. Eurostat. 2005. Eustat

	DESIGN CHANGE EFFECTS					
	4th QUART 2004			1st QUART 2005		
	Methodology 1998	Methodology 2005 CONTROL SAMPLE	Dif	Methodology 1998 CONTROL SAMPLE	Methodology 2005	Dif
ACTIVITY RATE						
Basque Country	**55,4**	**55,3**	**-0,1**	**55,4**	**55,3**	**-0,1**
Males	65,6	66,1	0,5	65,4	65,6	0,2
Females	45,8	45,1	-0,7	45,8	45,5	-0,3
Álava	58,0	56,9	-1,1	57,8	56,6	-1,2
Bizkaia	53,8	53,5	-0,3	54,3	54,1	-0,2
Gipuzkoa	57,0	57,7	0,7	56,0	56,8	0,8
EMPLOY. RATE						
Basque Country	**65,0**	**64,9**	**-0,1**	**65,0**	**64,9**	**-0,1**
Males	74,7	75,4	0,7	75,1	75,1	0,0
Females	55,2	54,2	-1,0	54,7	54,4	-0,3
Álava	67,5	67,0	-0,5	67,0	66,9	-0,1
Bizkaia	63,2	62,4	-0,8	63,7	63,0	-0,7
Gipuzkoa	67,1	68,2	1,1	66,3	67,2	0,9
UNEMPLOY. RATE						
Basque Country	**7,0**	**6,9**	**-0,1**	**6,9**	**7,0**	**0,1**
Males	6,4	6,0	-0,4	5,7	5,8	0,1
Females	7,9	8,1	0,2	8,6	8,7	0,1
Álava	5,1	4,0	**-1,1**	5,6	3,4	**-2,2**
Bizkaia	7,7	8,3	0,6	7,7	8,5	0,8
Gipuzkoa	6,7	5,9	-0,8	6,3	6,2	-0,1

Source: LFS-PRA Eustat

Both for the active population aged 16 and over and the working population and the groups considered (totals, sex and province), and for both test quarters, only in the case of a variation higher than 2% (2.1% increase in the working population in Gipuzkoa with the new method–PRA 2005- in relation to the old –PRA 1998- in the data for the 4th quarter of 2004).

Another two groups in this 4th quarter also get close to 2%: a 1.9% reduction in working women which is produced by the new method. Active women in Álava also

appear to be undervalued by 1.8% in relation to the old system. Percentage differences that affect data as a result of the design tend to diminish in the 1st quarter of 2005, except in some cases.

Clearer visions are found for the unemployed group: in the 4th quarter the new method shows 2% less and 1% more in the 1st of 2005. The number of unemployed males fell 5.4% in the first quarter and increased in the last quarter by 1.8%.
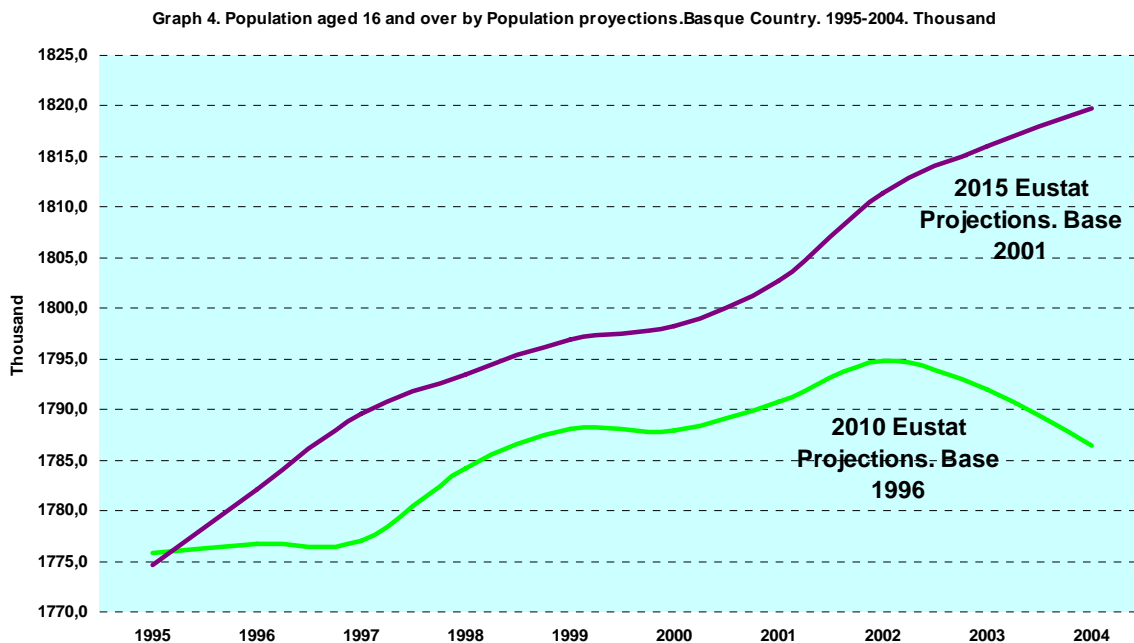
The provinces suffer sharper variations. Percentages, however, must be relativized to absolute figures. The new method offers 22.7% fewer unemployed (1,700) in the 4th quarter of 2004 in Álava than in the old method. This figure shoots up to 42.2% (3,500 fewer unemployed) in the 1st quarter of 2005.

In Bizkaia in the first quarter 2,700 (6,6%) more unemployed were obtained and 4,300 more in the second (10.4%). Gipuzkoa turns out to be the only province that improves from one quarter to another: in the 4th quarter of 2004 the new method goes from giving 10.8% fewer unemployed (2,400) than the old, to giving practically the same figure in the 1st quarter of 2005.

These important variations, above all in the case of Álava, are due to the smaller size of the group and to the effects of methodological changes.

It is foreseeable that the adaptation of the new survey, as seen in some of the variations between the 4th and the 1st quarter used in testing, eliminates some of the undesired differences resulting from the changes.

4.2-Application of projections with Base 2001

Graph 4. Population aged 16 and over by Population proyections.Basque Country. 1995-2004. Thousand

Source: LFS-PRA Eustat

As usually occurs, once the Census on Population and Housing is concluded, updating is carried out, based on the new population and its structure, and an

analysis is made of the components of the population variation, projections which are used to elevate the sampling results.

Previously, projections with base 1996 were used, the year when Eustat produced the Population and Housing Statistics, a census operation.

In short, it may be said that the new projections indicate a reversal of the population variation trends that were presented in projections with base 1996: the population tends to grow (as the figures from register updates appear to corroborate) and the component that to a large extent lies behind this increase is migration. The arrival of foreigners is fundamentally producing positive migration balances in recent years.

This type of population, given its demographic characteristics and, of course, the reason for their movements, directly affect the composition of the population according to the activity.

Projections with base 2001 have been applied to the LFS files for 2001 to 2004 and have been compared to data published with the projections with base 1996. In Tables 1 and 2 we find the estimated series with the new projections and those published to date – base 1996-.

The new projections show growing increases in the population since 2001 (almost 12,000 persons more than in 2001 to 33,400 more on average in 2004).
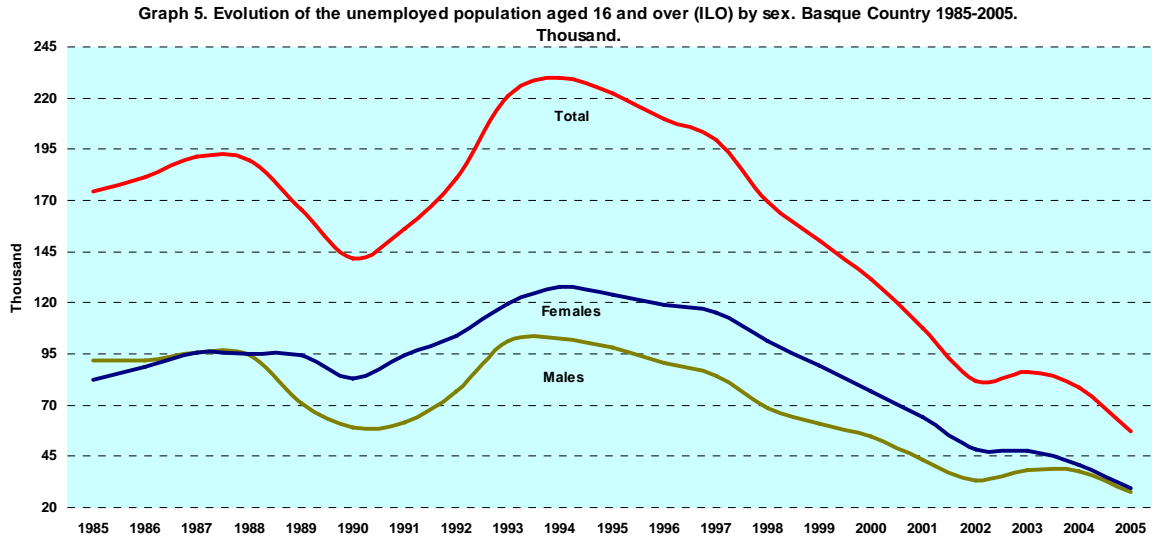
These increases are absorbed by the working population to a large extent: with regard to the 1996 estimates, the new estimates in 2001 add a total of 9,500 workers. This figure came to 24,100 on average in 2004. Unemployment also suffered a slight increase: from 1,200 more in 2001 to 2,000 more in 2004.

Nevertheless, changes in the level of employment and unemployment due to the methodological effect of the application of new projections practically disappear if we take the activity and unemployment rates as indicators: the former varies between point 3 and point 5 and the latter remains the same.

With regard to the variables that are used for the post-stratified phase, it may be said that adjustments by sex and age by province are maintained for the population. In relation to families, the estimated family figures are balanced by the size and province, as this treatment was not carried out until the 1st quarter of 2005 in the new LFS version.
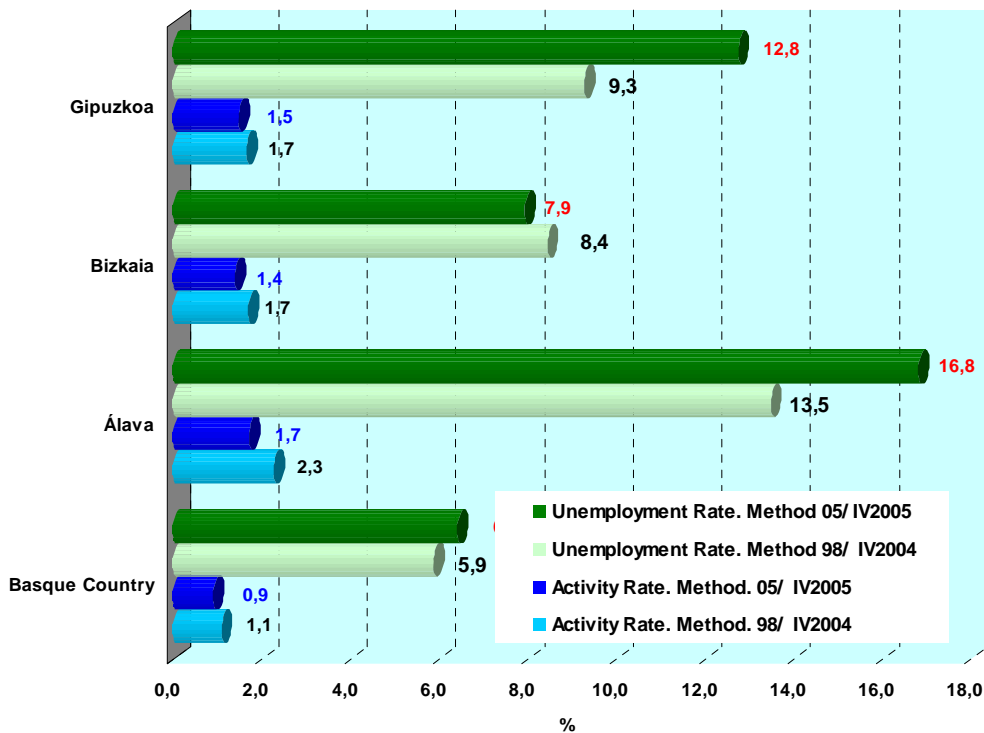

4.3- Effects on accuracy

Although the aim of the changes in the sample (above all in the size and system of sampling) required more precise estimates of small groups. However, a very good performance by the labour market over the last 5 or 6 years, as may be seen in Graph 5, has led to a very considerable reduction in the number of unemployed and therefore a worsening of the sampling errors (coefficients of variation). In Graph 6 we can see this increase in the variation coefficients by point two for the unemployment rate for the whole of the Basque Country (compared to the 4th quarter of 2005 with the new methodology and the 4th of 2004 with the old one. In the case of other provincial disaggregations the loss is much greater.

Graph 5. Evolution of the unemployed population aged 16 and over (ILO) by sex. Basque Country 1985-2005. Thousand.

Source: LFS-PRA Eustat

Graph 6. Variation Coefficient -95‰ of the rate of activity and unemployment, according to method 1998 and 2005. Basque Country. IV quart 04 and IV quart 05.
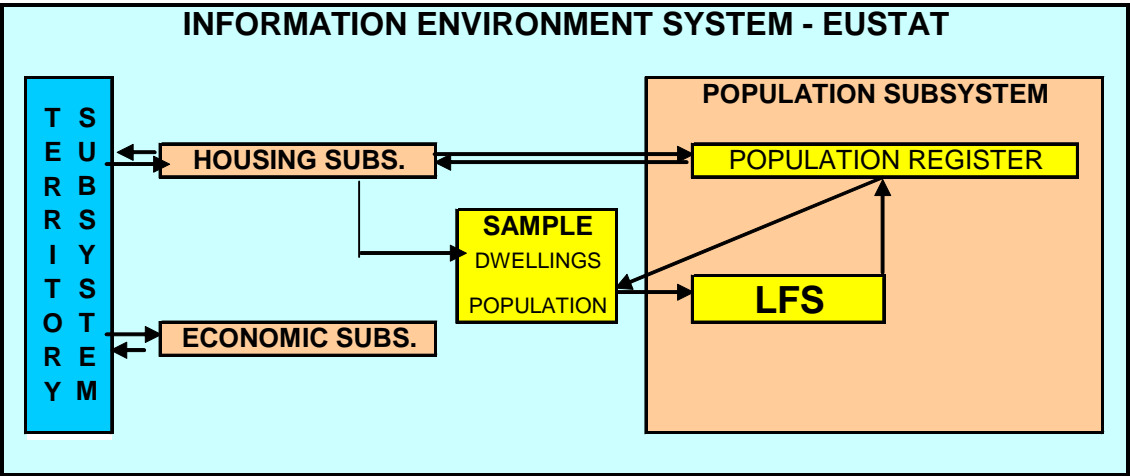

Source: LFS-PRA Eustat

5. A new technological setting for the LFS

Given the speed with which computer tools, programmes and equipment change, in addition to the increasing experience of experts, the PRA applications and information file systems were outdated. Furthermore, we should bear in mind the connections between the operation and the information system that is at the nucleus of the Eustat Statistical Population Register.

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These two factors led to a new design in an Oracle Data Base setting, with PL-SQL programming for applications and SAS for tabulations. In addition all the historic files of the LFS were transferred to Oracle Tables, in order to facilitate future treatment or use of series.

6. Lines of research

Besides keeping a permanent work group responsible for holding periodical meetings to design and apply improvements to each of the elaboration phases of the survey, the lines of methodological work that Eustat has open, in the light of the results of the changes in 2005, are focused on two points: study on change estimators and regression estimators (GREG) with auxiliary information.

For the second section we are analysing the different registered sources that may be accessible: files regarding affiliation to the Social Security and persons who are seeking employment. In addition to problems to access such information we are faced with problems in conciliating definitions, temporary adaptations, the definition of linear models to apply as the case may be and the design of new computer applications. Whether we like it or not the improvement in the quality of employment statistics will depend on taking these external sources into account.