



# **Final Quality Report**

## **Survey on Income and Living Conditions Spain (Spanish ECV 2005)**

**Madrid, December 2007**

# CONTENTS

INTRODUCTION .....	3
1. EUROPEAN UNION COMMON LONGITUDINAL INDICATORS .....	4
1.1. European Union common longitudinal indicators based on the longitudinal component of EU-SILC .....	4
1.2. Other indicators .....	4
2. ACCURACY .....	5
2.1. Sample design .....	5
2.2. Sampling errors .....	15
2.3. Non-sampling errors .....	18
2.4. Mode of data collection .....	33
2.5. Imputation procedure .....	35
2.6. Imputed rent .....	37
2.7. Company cars .....	37
3. COMPARABILITY .....	38
3.1. Basic concepts and definitions .....	38
3.2. Components of income .....	46
3.3. Tracing rules .....	49
4. COHERENCE .....	50
4.1 Comparison of income target variables and number of persons who receive income from each ‘income component’, with external sources .....	50

## **INTRODUCTION**

This Report complies with Article 16 of the Regulation of the European Parliament and of the Council of 16 June 2003 concerning Community statistics on income and living conditions (EU-SILC).

Article 16 requires that by the end of the year N+2 Member States produce a final quality report on the longitudinal component of the statistical operation.

To implement Article 16, the Commission made a Regulation on the detailed content of the intermediate and final quality reports. The Commission also drew up a technical document to further specify and clarify the content of quality reports.

This Report provides information on accuracy, comparability and coherence with external sources.

## **1. EUROPEAN UNION COMMON LONGITUDINAL INDICATORS**

### **1.1. European Union common longitudinal indicators based on the longitudinal component of EU-SILC**

Not applicable since 4 years are needed to implement longitudinal indicators

### **1.2. Other indicators**

Not applicable

## 2. ACCURACY

### 2.1. Sample design

#### 2.1.1. Type of sample design

The Survey on Income and Living Conditions (Spanish “ECV”) is an annual survey with a rotational-group design. The sample comprises four independent sub-samples, each of which is a four-year panel. Each year, the sample is rotated in one of the panels.

Each sub-sample is selected following a two-stage design; the first-stage units are stratified. The first stage is made up of census sections. The second stage comprises main family addresses. There was no sub-sampling within those units; all households usually residing in those addresses were surveyed.

#### 2.1.2. Sampling units

The first-stage units are census sections. Each section is made up of around 400 addresses.

The second-stage units are the principal family addresses selected for the sample in the census section.

#### 2.1.3. Stratification and sub-stratification criteria

In each Autonomous Community [self-ruling region], first-stage units were **stratified** by the size of the municipality to which the census section belonged.

The following strata were considered:

**Stratum 0:** Municipalities of over 500,000 population.

**Stratum 1:** Provincial capitals (other than the above).

**Stratum 2:** Municipalities of over 100,000 population (other than the above).

**Stratum 3:** Municipalities of 50,000 to 100,000 population (other than the above).

**Stratum 4:** Municipalities of 20,000 to 50,000 population (other than the above).

**Stratum 5:** Municipalities of 10,000 to 20,000 population.

**Stratum 6:** Municipalities of under 10,000 population.

An independent sample was designed in each Autonomous Community to represent it, because one of INE’s survey objectives is to provide data at this level of disaggregation.

#### 2.1.4. Sample size and allocation criteria

To achieve the survey objective of producing acceptably reliable estimates at both the national and at the Autonomous Community (regional) level, we selected in 2004 a sample of 16,000 addresses spread over 2000 census sections.

We distributed the sample across Autonomous Communities by allocating one part uniformly and another part in proportion to Autonomous Community size. The uniform part accounted for about 40% of sections.

**Table I. Sample distribution by Autonomous Community**

<b>Autonomous Community</b>	<b>Number of census sections</b>	<b>Number of addresses</b>
Andalusia	240	1,920
Aragon	88	704
Asturias (Principality of)	84	672
Balearic Islands	72	576
Canary Islands	96	768
Cantabria	60	480
Castile-León	132	1,056
Castile-La Mancha	96	768
Catalonia	224	1,792
Valencia	156	1,248
Extremadura	76	608
Galicia	132	1,056
Madrid (Community of)	192	1,536
Murcia (Region of)	76	608
Navarre (Autonomous Community)	60	480
Basque Country	120	960
La Rioja	60	480
Ceuta and Melilla (Autonomous Cities)	36	288
<b>Total</b>	<b>2,000</b>	<b>16,000</b>

In each section, besides the eight addresses selected originally, a further eight were selected as substitutes in case any problem arose with the addresses chosen originally.

The number of sections in each Autonomous Community and stratum group was always a multiple of four, to ensure that all rotations had the same notional-sample distribution across Autonomous Communities and strata. Therefore the number of units considered in the new sub-sample in the current survey is  $\frac{1}{4}$  of the figures included in the table above.

In order to achieve the minimum effective sample size included in the Regulation, the initial sample in the new-subsample is 4.000 dwellings. The response rate (including frame invalid addresses – non-residential, unoccupied, etc. -) is about 60%. As substitutions are admitted the final sample in the new-sub-sample is about 4.000 households.

For the other 3 sub-samples (panel component) the estimated response rate was about 85%-90%, using the information of the Spanish ECHP (European Community Household Panel). Therefore the final sample in these 3 groups is  $(4.000 + 4.000 + 4.000) * 85\%$  equal to about 10.200 households

The design effect in relation to the 'risk of poverty rate' variable is about 1,4 (using wave 1 data). Therefore the final effective sample size is approximately  $(4.000 + 10.200) / 1,4 = 10.143$  households. Comparing this figure with the minimum effective sample size included in the Regulation, 6.500, we see that the minimum sample size is achieved by far in Spain.

### 2.1.5. Sample selection schemes

Census sections were selected in each stratum by a probability in proportion to size (family dwellings). In each section, addresses were selected with equal probability by systematic sampling initiated at random. This procedure produces self-weighted samples in each stratum.

### 2.1.6. Sample distribution over time

There is no itemised distribution for sample collection in the period April-Jun 2005. The income reference period is fixed (year 2004).

About the date of interview there has been a problem with the CAPI implementation. The date of the interview has not been correctly recorded in the computers and it has been necessary to construct the variables “day” and “month” of interview after fieldwork, using the information available in the fieldwork process. The error of this information is estimated in a few days.

Sample distribution (household questionnaire) over the time

		Number	Percentage
April	11 to 20	1361	10.5
	21 to 31	1631	12.6
May	1 to 10	2471	19.0
	11 to 20	1747	13.4
	21 to 31	2724	21.0
June	1 to 10	1320	10.2
	11 to 20	1403	10.8
	21 to 31	339	2.6

### 2.1.7. Renewal of sample: Rotational groups

As indicated earlier, the sample design takes the form of four annual panels: individuals in each panel remain in the sample for four consecutive years. Therefore we divided, in wave 1, the 2000 sections into four groups – called rotational groups – corresponding to the four panels of the sample. Each sub-sample had 500 sections

Every year, we replace all the sample of addresses in the sections belonging to a given rotational group (the sections don't change, new addresses are selected). Hence the year's sample has a three-quarters overlap with the previous year's sample.

The number of sections in each Autonomous Community and stratum group was always a multiple of four, to ensure that all rotations had the same notional sample distribution across Autonomous Communities and strata.

### 2.1.8. Weightings

The complete weighting procedure is described: (the numeration for step 2.1.8. hasn't been developed as the one proposed by Eurostat)

#### 2.1.8.1. Weightings in a NEW rotational group

In the first year for the rotational group t, only cross-sectional factors and estimates need be considered. , for t=1, 2, ....

##### Step 1. Design factor

$$\hat{Y}^{(1,t)} = \sum_h \sum_{j,i \in h} \frac{V_h^{(t-1)}}{vt_h^t} y_{hji}^t = \sum_h \sum_{j,i \in h} \frac{V_h^{(t-1)}}{8 \cdot n_h^t} y_{hji}^t$$

Where:

t is the rotational group;

h is the stratum to which section j belongs;

j is the section;

i is a household.

$V_h^{(t-1)}$  is the total addresses in the municipal register file for t-1 in stratum h.

$n_h^t$  is the allocation of sections in stratum h and rotational group t.

$vt_h^t$  is the initial number of addresses in stratum h in rotational group t, which, by design, is  $8 \cdot n_h^t$ .

$y_{hji}^t$  is the value of the study variable in household i, section j, stratum h, rotational group t.

Therefore, for a household i, section j, stratum h, turn t, the design factor is:

$$w_{hji}^t = \frac{V_h^{(t-1)}}{8 \cdot n_h^t}$$

Given that  $n_h^1 = n_h^2 = n_h^3 = n_h^4$ , as indicated regarding rotational groups, the design factor does not depend on the rotational group.

##### Step 2. Non-response adjustments

We adjust for non-response by multiplying the above factor by  $\frac{vt_h^t}{ve_h^t}$ . This provides an estimate of the

inverse probability of response in the stratum, where  $ve_h^t$  is the actual number of addresses in stratum h and rotational group t. We thus have:

$$\hat{Y}^{(2,t)} = \sum_h \hat{Y}_h^{(2,t)} = \sum_h \sum_{j,i \in h} \frac{V_h^{(t-1)}}{ve_h^t} y_{hji}^t$$

##### Step 3. Adjustments to external data (ratio estimator)

Using projected population as at the time of the survey as an auxiliary variable, we obtained a separate ratio estimator the chief purpose of which was to enhance the estimate produced by the previous steps



by bringing the population figure at the time of sample selection up to date to the time of survey performance. The population figure used refers to 15 February of the current year.

The expression of the estimator is:

$$\hat{Y}^{(3,t)} = \sum_h \frac{\hat{Y}_h^{(2,t)}}{\hat{P}_h^{(2,t)}} P_h$$

i.e.,

$$\hat{Y}^{(3,t)} = \sum_h \frac{\sum_{j,i \in h} \frac{V_h^{(t-1)}}{ve_h^t} y_{hji}^t}{\sum_{j,i \in h} \frac{V_h^{(t-1)}}{ve_h^t} p_{hji}^t} \cdot P_h = \sum_h \sum_{j,i \in h} \frac{P_h}{\sum_{j,i \in h} p_{hji}^t} y_{hji}^t$$

Which can be written down as:

$$\hat{Y}^{(3,t)} = \sum_k w_k^t \cdot y_k^t$$

Where the subscript k represents sample households, and:

$$w_k^t = \frac{P_h}{\sum_{j,i \in h} p_{hji}^t} = \frac{P_h}{p_h^t} \text{ if household } k \text{ is in stratum } h.$$

$p_h^t$  is the sample population of stratum h, turn t.

$P_h$  is the projected population of stratum h.

$y_k^t$  is the value of the study variable in household k, rotational group t.

#### Step 4. Adjustments to external data (calibration)

The above factor is weighted to adjust estimated distribution to the population distribution by Autonomous Community, age group and gender provided by the Demographic Projections Unit.

We have also adjusted the estimated distribution of households by size to our estimate in the first quarter of the current year for the Labour Force Survey (*Encuesta de Población Activa* - EPA).

For the calibration we used the CALMAR macro designed by the French Institut National de Statistique et Études Economiques (INSEE). We opted for the truncated Logit method with values LO=0.1, UP=10. We considered the following twenty-two groups: Males and females aged 0-15, 16-19, 20-24, 25-34, 35-44, 45-49, 50-54, 55-59, 60-64, 65-74, 75 years and over.

Household distribution by size was: households of 1, 2, 3 or 4 or more members.

In Ceuta and Melilla adjustment groups were fewer because of the small sample size. Specifically, household distribution was not adjusted, and we only considered the following age and gender groups: males and females aged 0-15, 16-24, 25-49, 50-64, 65-74, 75 years and over.

The obtained factor,  $WH_k^t$ , is the household factor. We allocated to all household members their respective household factor  $WP_i^t = WH_k^t$ , if  $i \in k$ .

#### 2.1.8.2. Weightings in a PANEL rotational group

As in the previous step, where weights in a new rotational group were calculated, the construction of the weights in a panel rotational group is done in several steps.

##### **Step 1. Calculation of the basic panel weight**

This weight is calculated in each rotational group independently. It collects the inclusion probabilities and non-response or attrition of the panel sample.

For households in the component panel (rotating groups already investigated in previous waves) the basic panel weight is only calculated for the panel persons of the household.

It is calculated from the final cross-sectional weight obtained for the household in wave t-1 ( $WP_i = WH_k$ , si  $i \in k$ ), adjusting due to the attrition of the sample. The adjustment is the inverse of the response probability inside the rotational group, region, age group and gender.

Non-panel persons have a basic panel weight equal to zero.

##### **Step 2. Calculation of the household weight in each rotational group**

The household weight of household h is:

$$w_h^t = \frac{\sum_{j \in h} d_j}{n_h}$$

where:

$d_j$ : is the basic panel weight of the panel person j of the household h.

$n_h$ : is the number of persons (panel and non-panel) aged 14 or more in wave 1, of the household h.

The sum is only for the panel persons of the household.

#### 2.1.8.3. Common weightings in NEW and PANEL rotational groups

After having applied the corresponding weightings in the new and panel sub-samples, some other steps need be considered.

##### **Common step 1. Final cross-sectional weights**

The four rotational groups are grouped together. Finally, the factors of the four groups are grouped together by weighting them by the actual number of sample households in each group, by Autonomous Community.

Thus:

$$WH_k = \frac{n_{ca}^t}{n_{ca}} WH_k^t$$

This is the household factor and also the factor for each household member.

Where  $n_{ca}^t$  represents the number of sample households in the Autonomous Community  $ca$  and rotational group  $t$ , and  $n_{ca}$  represents the household sample size in the Autonomous Community  $ca$

$$(n_{ca} = \sum_{t=1}^4 n_{ca}^t).$$

From 2005 onwards  $\frac{n_{ca}^t}{n_{ca}}$  will be  $\frac{1}{4}$  and calibration will be carried out at this stage.

## Common step 2. Factor for persons aged 16 and over

The factor is calculated on the basis of the factor for all household persons, in two steps:

1. Correction of non-response in Individual Questionnaires. Using the factor  $WP_i^t$ , we construct the **factor for persons aged 16 and over completing the Individual Questionnaire**, correcting non-response in Individual Questionnaires:

$$WCI_i^t = \frac{\sum_{j \in G_i} WP_j^t}{\sum_{j \in G_i} WP_j^t \cdot R_j} \cdot WP_i^t$$

Where:

- Variable  $R$  takes the value 1 for individual  $j$  if he/she has completed the questionnaire, and 0 if not.
- $G_j$  is the set of individuals in the same Autonomous Community and age and gender group as questionnaire  $i$ . The age and gender groups considered are the 22 groups mentioned for the general case outlined in step 4<sup>1</sup>.

2. Grouping of the four rotational groups. Finally, the factors of the four rotational groups are grouped together by weighting them by the number of Individual Questionnaires in each group, by Autonomous Community.

The factor for persons aged 16 or over completing the Individual Questionnaire is:

$$WCI_i = \frac{ci_{ca}^t}{ci_{ca}} WCI_i^t \text{ for } t = 2004 \text{ and } WCI_i = \frac{\sum_{j \in G_{ti}} WP_j}{\sum_{j \in G_{ti}} WP_j \cdot R_j} \cdot WP_i \text{ for } t > 2004$$

<sup>1</sup> Except in Cantabria and the Autonomous Community of Madrid, where groups have been brought together owing to the small sample size.

Where  $ci_{ca}^t$  represents the number of sample Individual Questionnaires in the Autonomous Community  $ca$  and rotational group  $t$ , and  $ci_{ca}$  represents the actual number of sample Individual Questionnaires in the Autonomous Community  $ca$  ( $ci_{ca} = \sum_{t=1}^4 ci_{ca}^t$ ).

#### 2.1.8.4. Final longitudinal weights

The longitudinal analysis is done only for adults and for a concrete period of time.

Taking into account the sample design main characteristics, this analysis covers up to 4 years, since this is the maximum number of periods the households stay in the sample.

The longitudinal analysis within two consecutive years limits to the individuals belonging to the sample in both periods.

The elevation calculation process is similar to the one applied in the cross-sectional.

#### 2.1.9. Substitutions

##### 2.1.9.1. Method of selection of substitutions

In the new sub-sample, in each section, besides the eight addresses selected originally, a further eight were selected in the section as substitutes in case any problem arose with the addresses chosen originally.

Hence the common variable of an address selected originally and its prospective substitute is the census section. There is not other common variable.

There has been multiple substitutions in the sense that further substitutions (until the list of eight substitutes is completely used) have been made for failed substitutions.

The total number of households in D-file in the new sub-sample is 6976 (4007 are original households and 2969 are substituted households). This number includes the substituted households not accepted for database (failed substituted units).

Number of original dwellings and original households

	Original units
	Number
Dwellings	4000
Households in same dwellings	7
Total households	4007

Number of original households

	Original units
	Number
Households accepted for database	2276
Households failed	1731
Total households	4007

Number of original households not accepted in database by collaboration of the substituted unit

	Original units
	Number
Failed original households successfully substituted	1403
Failed original households not successfully substituted	328
Total failed original households	1731

Number of substituted households

	Substituted units
	Number
Substituted dwelling accepted in DB	1403
Households in same dwellings	2
Other substituted household accepted in DB	18
Failed substituted household	1546
Total substituted households	2969

There are "Other substituted household accepted in database" because some households initially rejected (and carried out the process of substitutions) were finally recovered. At the end the maximum number of units accepted for database must not exceed 8 (the number of original units selected).

In the tables related to substitutions the original household is linked only to the final substituted household (there can be some intermediate substituted failed households in between).

2.1.9.2. Main characteristics of substituted units compared to original units, by region (NUTS 2), if available

In this point the information is very limited. There are some variables that have been collected using a short questionnaire in field when an original unit has not been accepted, but the non-response rate has been very high.

2.1.9.3. Distribution of substituted units by record of contact at address (DB120), household questionnaire result (DB130) and household interview acceptance (DB135) of the original units

In this table the original household is linked only to the final substituted household (there can be some intermediate substituted failed households in between).

Distribution of substituted units by record of contact at address, household questionnaire result and household interview acceptance of the original units

	Original units		Substituted units	
	Number	Percentage	Number	Percentage
DB120 = 21	82	4.7	68	4.8
DB120 = 22	4	0.2	3	0.2
DB120 = 23	348	20.1	309	22.0
DB130 = 21	678	39.2	559	39.8
DB130 = 22	518	29.9	408	29.1
DB130 = 23	26	1.5	21	1.5
DB130 = 24	74	4.3	34	2.4
DB135 = 2	1	0.1	1	0.1
Total	1731	100.0	1403	100.0

## 2.2. Sampling errors

For 2005 the data is:

Number of observations

	Number of observations before imputation (partial or total information)	Number of observations after imputation
Total disposable household income	11877	12406
T. d. h. income before s. tr. other than old_age and surv. ben.	11804	12395
T. d. h. income before s. tr. including old_age and surv. ben.	11296	12339
Net income from rental of a property or land	719	763
Family/children-related allowances	429	438
Social exclusion not elsewhere classified	78	78
Housing allowances	100	103
Regular inter-household cash transfer received	271	306
Net interest, div., profit from capital invest. in uninc. business	2260	3956
Net income received by people aged under 16	544	546
Regular taxes on wealth	262	422
Regular inter-household cash transfer paid	551	589
Repayments/receipts for tax adjustments	8238	8820

	Number of observations before imputation (partial or total information)	Number of observations after imputation
Net cash or near cash employee income	11681	13251
Net non-cash employee income	124	172
Net cash profits or losses from self-employment	1260	2147
Net pension from individual private plans	139	147
Net unemployment benefits	1472	1555
Net old-age benefits	5660	5921
Net survivors benefits	472	484
Net sickness benefits	380	416
Net disability benefits	629	643
Education-related allowances	543	572
Gross monthly earnings for employees	10517	10517

Number of observations (before and after imputation) by household size

	Number of observations before imputation (partial or total information)	Number of observations after imputation
Total	35676	37147
1 member	1941	2041
2 members	6836	7117
3 members	8557	8896
4 and more members	18342	19093

Number of observations (before and after imputation) by age

	Number of observations before imputation (partial or total information)	Number of observations after imputation
Total	35676	37147
0 le age le 24	9954	10378
25 le age le 34	5081	5274
35 le age le 44	5531	5753
45 le age le 54	4779	5008
55 le age le 64	4091	4325
65 le age	6240	6409

Number of observations (before and after imputation) by sex

	Number of observations before imputation (partial or total information)	Number of observations after imputation
Total	35676	37147
Males	17330	18041
Females	18346	19106

Mean of household income components

	Mean
Total disposable household income	22418
T. d. h. income before s. tr. other than old_age and surv. ben.	21350
T. d. h. income before s. tr. including old_age and surv. ben.	17208
Net income from rental of a property or land	4900
Family/children-related allowances	1999
Social exclusion not elsewhere classified	2190
Housing allowances	4822
Regular inter-household cash transfer received	3790
Net interest, div., profit from capital invest. in uninc. business	769
Net income received by people aged under 16	591
Regular taxes on wealth	995
Regular inter-household cash transfer paid	2796
Repayments/receipts for tax adjustments	-411

Mean of personal income components

	Mean
Net cash or near cash employee income	13242
Net non-cash employee income	2871
Net cash profits or losses from self-employment	9532
Net pension from individual private plans	4486
Net unemployment benefits	3311
Net old-age benefits	9032
Net survivors benefits	5971
Net sickness benefits	4508
Net disability benefits	7535
Education-related allowances	1080
Gross monthly earnings for employees	1384



Mean of the equivalised disposable income by household size

	Mean
Total	12146
1 member	10862
2 members	13058
3 members	12839
4 and more members	11568

Mean of the equivalised disposable income by age

	Mean
Total	12146
0 le age le 24	11392
25 le age le 34	14065
35 le age le 44	12451
45 le age le 54	13167
55 le age le 64	12744
65 le age	9882

Mean of the equivalised disposable income by sex

	Mean
Total	12146
Males	12389
Females	11911

**Mean of household income components**

**Standard error**

<b>Total disposable household income</b>	2,60412
<b>T. d. h. income before s. tr. other than old_age and surv. ben.</b>	2,60250
<b>T. d. h. income before s. tr. including old_age and surv. ben.</b>	2,83355
<b>Net income from rental of a property or land</b>	5,43760
<b>Family/children-related allowances</b>	4,48266
<b>Social exclusion not elsewhere classified</b>	3,43184
<b>Housing allowances</b>	3,78920
<b>Regular inter-household cash transfer received</b>	4,30675
<b>Net interest, div., profit from capital invest. in uninc. business</b>	1,77243
<b>Net income received by people aged under 16</b>	0,84153
<b>Regular taxes on wealth</b>	1,53688
<b>Regular inter-household cash transfer paid</b>	2,11325
<b>Repayments/receipts for tax adjustments</b>	0,32341

**Mean of personal income components**

<b>Net cash or near cash employee income</b>	1,53275
<b>Net non-cash employee income</b>	4,67441
<b>Net cash profits or losses from self-employment</b>	4,84826
<b>Net pension from individual private plans</b>	9,94279
<b>Net unemployment benefits</b>	1,40848
<b>Net old-age benefits</b>	1,43280
<b>Net survivors benefits</b>	3,54937
<b>Net sickness benefits</b>	5,55558

Net disability benefits	4,31523
Education-related allowances	1,42445
Gross monthly earnings for employees	0,18557

#### Mean of the equivalised disposable income by household size

Total	1,30957
1 member	4,16312
2 members	2,87830
3 members	2,67276
4 and more members	1,94068

#### Mean of the equivalised disposable income by age

Total	1,30957
0 le age le 24	1,75047
25 le age le 34	2,60687
35 le age le 44	2,33579
45 le age le 54	2,67108
55 le age le 64	3,40733
65 le age	2,02819

#### Mean of the equivalised disposable income by sex

Total	1,30957
Males	1,47360
Females	1,33420

## 2.3. Non-sampling errors

### 2.3.1. Sampling frame and coverage errors

The sample selection frame was area-based and consisted of the list of census sections used in the Municipal Register (population register).

The new sample for SILC-2005 was obtained with the Register dated 16.3.2004.

The **Municipal Register** [*Padrón*] is an administrative record of the residents in a municipality. The Municipal Register is formed, maintained, reviewed and kept by each municipality. It is continually updated.

All persons residing in Spain must appear in the Municipal Register of the municipality where they usually live. A person living in more than one municipality must register only in the one where he/she lives longest in the year.

Municipal Register entries contain only the following mandatory details on each resident:

- a) Name
- b) Sex
- c) Usual address

d) Nationality

e) Place and date of birth

f) Identity Card Number or, if foreign, an equivalent identifying document

The percentage of addresses does not exist or is non-residential address or is unoccupied is:

Percentage of address does not exist or is non-residential or is unoccupied or not principal residence (DB120 = 23) over the total original address (household) selected

Percentage

8.7

#### 2.3.2.1. Measurement errors

We constructed the questionnaire so as to elicit sufficient information to determine the target variables set forth in the Commission Regulation. We did not include additional questions to cover other areas at the national level.

We applied the experience of 2004 operation to improve the questionnaire. Apart from the 2004 questionnaire, the experience of the European Community Household Panel and, more particularly, the experience of the Pilot Survey on Living Conditions (2002) has helped to the configuration of the current questionnaire.

The questionnaire design was worked on by experts of the originating unit and of the IT and Fieldwork departments. It was then reviewed by experts working on other surveys. The questionnaire was later tested by various people.

We have updated the questionnaire on an ongoing basis in response to the final reports of the 38 Area Heads in charge of fieldwork.

Training followed a cascade pattern. We first ran a four-day course in Madrid for the 38 Area Heads, divided into 2 groups. At their Provincial Offices Area Heads then taught a one-week course to their staff using a range of training manuals.

A section was assigned to each interviewer and fieldwork began. Inspectors revisited some households on the basis of any difficulties found.

#### 2.3.2.2. Processing errors

Questionnaires are completed by CAPI (Compute Aided Personal Interviewing). This procedure has been implemented this year (in 2004 questionnaires were completed by PAPI).

With the new implementation of CAPI there has been a problem with some variables that should have been generated automatically. These variables are 'the date of the interview' and 'duration of the interview' has not been correctly recorded in the computers.

It has been necessary to construct the variables "day" and "month" of interview after fieldwork, using the information available in the fieldwork process. The error of this information is estimated in a few days.

Interview duration has only been correctly recorded in about 15% of the units. For the rest imputation has been needed using IVE software and taking the number of answered questions as a explicative variable.

After data collection, we then apply a range of checks developed at INE to ensure data consistency. The phases of these checks are:

- 1) Households coverage
- 2) Persons coverage
- 3) Inconsistencies among tables
- 4) Control of duplicates
- 5) Household identification check
- 6) Person identification check
- 7) Monitoring of flows, valid values and out-of-range values
- 8) Intra-year inconsistencies check
  - 8.1 Intra-questionnaire inconsistencies check
  - 8.2 Inter-questionnaire inconsistencies check
- 9) Follow-up of households and persons

We convert the data to the format required by Eurostat and apply the set of checks developed by Eurostat.

Due to the mode of collection (CAPI), some of the traditional sources of errors have disappeared or have been reduced.

The main source of error was flow path. Errors in direct questions on income were few.

The estimated percentage of errors and warnings for each phase listed above was:

Phase 1:	
Phase 2:	
Phase 3:	3.5
Phase 4:	
Phase 5:	
Phase 6:	
Phase 7:	51.0
Phase 8.1:	31.1
Phase 8.2:	12.5
Phase 9:	1.9
Total	100

The main inconsistencies prompting warnings under the Eurostat checks were the following (these warnings have been duly accounted for):

PM020 - Year of birth of father. Syntax check: invalid values: 10 errors

Check #123 Structural - Warning: RB210 - Age and basic activity status may be not consistent : 6 errors

Check #156 Structural - Warning: HB090 - Age of Person 2 responsible for the accomodation is below 16: 2 errors

Check #315 Relationship - Warning: RB230 - Child should be at least 15 years younger than its mother : 7 errors

Check #722 Education - Warning: PE010 - Not in education but undergoing education or training : 22 errors

### 2.3.3. Non-response errors

#### 2.3.3.1. Achieved sample size

##### Wave 2004

Number of households for which an interview is accepted for the database (DB135 = 1). Rotational group breakdown:

	Number
Group 2	3844
Group 3	3881
Group 4	3818
Total	11543

Number of persons 16 years or older who are members of the households for which the interview is accepted for the database (DB135 = 1), and who completed a personal questionnaire (RB250 = 11 to 13). Rotational group breakdown:

	Number
Group 2	7799
Group 3	7848
Group 4	7875
Total	23522

##### Wave 2005

Number of households for which an interview is accepted for the database (DB135 = 1). Rotational group breakdown:

	Number
Group 2	3091
Group 3	3136
Group 4	3070
Total	9297

Number of persons 16 years or older who are members of the households for which the interview is accepted for the database (DB135 = 1), and who completed a personal questionnaire (RB250 = 11 to 13). Rotational group breakdown:

	Number
Group 2	7297
Group 3	7453
Group 4	7243
Total	21993

### 2.3.3.2. Unit non-response

Unit non-response. Rotational group

	Group 2 (2004)	Group 3 (2004)	Group 4 (2004)
Ra	0.98	0.98	0.98
Rh	0.65	0.67	0.64
NRh	35.87	34.69	37.56
Rp	0.85	0.83	0.84
NRp	15.41	17.04	16.06
NRp2	45.75	45.82	47.59

Ra-Proportion of address contact

Rh-Proportion of complete household interv. accepted for the database

NRh-Household non-response rate

Rp-Proportion of complete personal interv. within the households accepted for the database

NRp-Individual non-response rate

NRp2-Overall individual non-response rate

Household response rates: Comparison of results codes between wave 2 and wave 1. Rotational group and total

Group 2

	DB130=11 and DB135=1	DB130=11 and DB135=2	DB130=22	DB130=23	DB130=24	DB130=21	DB110=3,4,- 5,6,7	DB110=10	Total
DB130=11 and DB135=1	3029	10	186	22	16	421	159	1	3844
DB110=8 (wave 2)	62	.	17	.	1	9	.	.	89
Total	3091	10	203	22	17	430	159	1	3933

Group 3

	DB130=11 and DB135=1	DB130=11 and DB135=2	DB130=22	DB130=23	DB130=24	DB130=21	DB110=3,4,- 5,6,7	Total
DB130=11 and DB135=1	3060	10	175	27	24	461	124	3881
DB110=8 (wave 2)	76	.	15	1	.	9	.	101
Total	3136	10	190	28	24	470	124	3982

Group 4

	DB130=11 and DB135=1	DB130=11 and DB135=2	DB130=22	DB130=23	DB130=24	DB130=21	DB110=3,4,- 5,6,7	Total
DB130=11 and DB135=1	2990	8	204	16	23	444	133	3818
DB110=8 (wave 2)	80	.	24	.	.	20	.	124
Total	3070	8	228	16	23	464	133	3942

Total

	DB130=11 and DB135=1	DB130=11 and DB135=2	DB130=22	DB130=23	DB130=24	DB130=21	DB110=3,4,- 5,6,7	DB110=10	Total
DB130=11 and DB135=1	9079	28	565	65	63	1326	416	1	11543
DB110=8 (wave 2)	218	.	56	1	1	38	.	.	314
Total	9297	28	621	66	64	1364	416	1	11857

Wave response rates. Rotational group and total. Percentages.

	Wave response rate	No- Refusal rate	No- contacted and others
Group 2	78.59	10.93	10.48
Group 3	78.75	11.80	9.44
Group 4	77.88	11.77	10.35
Total	78.41	11.50	10.09

Longitudinal follow-up rates. Rotational group and total. Percentages.

	Longitudinal follow-up rate
Group 2	84.89
Group 3	84.93
Group 4	84.89
Total	84.90

Follow-up ratio. Rotational group and total

	Follow-up ratio
Group 2	0.87
Group 3	0.87
Group 4	0.88
Total	0.87

Achieved sample size ratio. Rotational group and total

	Achieved sample size ratio
Group 2	0.80
Group 3	0.81
Group 4	0.80
Total	0.81



Personal interview response rates: Rotational group and total.

Group 2

Sample persons (rb100=1 and rb245 in (1,2,3)) from the sample forwarded from last wave (t-1)

RB250 = (11,12,13)		RB250=21	RB250=23	RB250=31	RB250=32	RB250=33	Total
RB110 in (1,2)	7123	6	44	30	42	44	7289

Group 3

Sample persons (rb100=1 and rb245 in (1,2,3)) from the sample forwarded from last wave (t-1)

RB250 = (11,12,13)		RB250=21	RB250=23	RB250=31	RB250=32	RB250=33	Total
RB110 in (1,2)	7282	4	48	34	62	29	7459

Group 4

Sample persons (rb100=1 and rb245 in (1,2,3)) from the sample forwarded from last wave (t-1)

RB250 = (11,12,13)		RB250=21	RB250=23	RB250=31	RB250=32	RB250=33	Total
RB110 in (1,2)	7101	6	47	42	45	47	7288

Total

Sample persons (rb100=1 and rb245 in (1,2,3)) from the sample forwarded from last wave (t-1)

RB250 = (11,12,13)		RB250=21	RB250=23	RB250=31	RB250=32	RB250=33	Total
RB110 in (1,2)	21506	16	139	106	149	120	22036

Personal interview response rates: Rotational group and total.

Group 2

Non-sample persons 16+

	RB250 = (11,12,13)	RB250=23	RB250=31	RB250=32	RB250=33	Total
This wave.No in wave 1	174	3	1	3	7	188

Group 3

Non-sample persons 16+

	RB250 = (11,12,13)	RB250=23	RB250=31	RB250=32	RB250=33	Total
This wave.No in wave 1	171	5	4	4	1	185

Group 4

Non-sample persons 16+

	RB250 = (11,12,13)	RB250=21	RB250=23	RB250=32	RB250=33	Total
This wave.No in wave 1	142	1	6	3	6	158

Total

Non-sample persons 16+

	RB250 = (11,12,13)	RB250=21	RB250=23	RB250=31	RB250=32	RB250=33	Total
This wave.No in wave 1	487	1	14	5	10	14	531

Response rates for persons. Wave response rate. Rotational group and total. Percentages.

	Wave response rate of sample persons
Group 2	97.72
Group 3	97.63
Group 4	97.43
Total	97.59

Response rates for persons. Longitudinal follow-up rate. Rotational group and total. Percentages.

	Longitudinal follow-up rate	Rate (RB250=21)	Rate (RB250=22)	Rate (RB250=23)	Rate (RB250=31)	Rate (RB250=32)	Rate (RB250=33)
Group 2	97.72	0.08	0.00	0.60	0.41	0.58	0.60
Group 3	97.63	0.05	0.00	0.64	0.46	0.83	0.39
Group 4	97.43	0.08	0.00	0.64	0.58	0.62	0.64
Total	97.59	0.07	0.00	0.63	0.48	0.68	0.54

Response rates for persons. Response rate for non-sample persons. Rotational group and total.

	Response rate for non sample persons
Group 2	92.55
Group 3	92.43
Group 4	89.87
Total	91.71

Achieved sample size ratio. Rotational group and total.

	Achieved sample size ratio for sample persons and co-residents	Achieved sample size ratio for sample persons and co-residents
Group 2	91.33	93.56
Group 3	92.79	94.97
Group 4	90.17	91.97
Total	91.43	93.50

### 2.3.3.3. Distribution of households by 'record of contact at address' (DB120), by 'household questionnaire result' (DB130) and by 'household interview acceptance' (DB135)

Longitudinal component. Distribution of households by DB100, DB120, DB130 and DB135

Wave 2004. Distribution of households by DB110

	Number	Percentage
Total	19663	100.0
DB110=9	19663	100.0

Wave 2004. Distribution of households by DB120

	Number	Percentage
Total	19663	100.0
DB120=11 (contacted)	17749	90.3
DB120=21 (can not be located)	259	1.3
DB120=22 (unable to access)	43	0.2
DB120=23 (not exists or non-res.)	1612	8.2

Wave 2004. Distribution of households by DB130

	Number	Percentage
Total	17749	100.0
DB130=11 (household q. completed)	11604	65.4
DB130=21 (refusal to cooperate)	2956	16.7
DB130=22 (temporaly away)	2839	16.0
DB130=23 (unable to respond)	149	0.8
DB130=24 (other reasons)	201	1.1

Wave 2004. Distribution of households by DB135

	Number	Percentage
Total	11604	100.0
DB135=1 (interview accepted)	11543	99.5
DB135=2 (interview rejected)	61	0.5

Wave 2005. Distribution of households by DB110

	Number	Percentage
Total	11860	100.0
DB110=1	10894	91.9
DB110=2	232	2.0
DB110=3	23	0.2
DB110=4	17	0.1
DB110=5	50	0.4
DB110=6	8	0.1
DB110=7	318	2.7
DB110=8	317	2.7
DB110=10	1	0.0

Wave 2005. Distribution of households by DB120

	Number	Percentage
Total	549	100.0
DB120=11 (contacted)	546	99.5
(Missing)	3	0.5

Wave 2005. Distribution of households by DB130

	Number	Percentage
Total	11440	100.0
DB130=11 (household q. completed)	9325	81.5
DB130=21 (refusal to cooperate)	1364	11.9
DB130=22 (temporarily away)	621	5.4
DB130=23 (unable to respond)	66	0.6
DB130=24 (other reasons)	64	0.6

Wave 2005. Distribution of households by DB135

	Number	Percentage
Total	9325	100.0
DB135=1 (interview accepted)	9297	99.7
DB135=2 (interview rejected)	28	0.3

### 2.3.3.4. Distribution of persons for membership status (RB110)

For wave 2005:

Distribution of person for membership status (RB110)

	Number	Percentage
Total	27817	100.0

Current hhd	RB110=1	26070	93.7
members	RB110=2	263	0.9
	RB110=3	599	2.2
	RB110=4	211	0.8
No current hhd	RB120=2 to 4	427	1.5
members	RB110=6	181	0.7
	RB110=7	66	0.2

Distribution of person for membership status (RB110). RB110=5

	Number	Percentage
Total	789	100.0
RB120=1 and current hhd member	256	32.4
RB120=1 and no current hhd member	106	13.4
RB120=2	18	2.3
RB120=3	30	3.8
RB120=4	379	48.0

### 2.3.3.5. Item non-response

Longitudinal component. Item non-response

Wave 2004. Distribution of item non-response

	% households having received an amount	% households with missing values (before imputation)	% households with partial information (before imputation)	% households with total information (before imputation)
Total disposable household income	99.6	6.7	35.6	57.7
T. d. h. income before s. tr. other than old age and surv. ben.	98.7	7.3	34.9	57.7
T. d. h. income before s. tr. including old age and surv. ben.	89.0	11.3	35.6	53.2
Net income from rental of a property or land	5.6	1.8	0.0	98.2
Family/children-related allowances	5.4	3.7	13.7	82.6
Social exclusion not elsewhere classified	0.7	6.1	0.0	93.9
Housing allowances	1.1	2.4	0.0	97.6
Regular inter-household cash transfer received	3.0	5.0	0.0	95.0
Net interest, div., profit from capital invest. in uninc. business	34.9	41.6	14.2	44.3
Net income received by people aged under 16	3.9	0.4	0.0	99.6
Regular taxes on wealth	4.4	5.9	48.7	45.4
Regular inter-household cash transfer paid	5.6	5.4	0.0	94.6
Repayments/receipts for tax adjustments	65.8	4.4	25.8	69.7
	% persons 16+ having received an amount	% persons with missing values (before imputation)	% persons with partial information (before imputation)	% persons with total information (before imputation)
Net cash or near cash employee income	42.9	7.8	0.0	92.2
Net non-cash employee income	0.7	11.0	5.8	83.2
Net cash profits or losses from self-employment	7.1	23.2	45.2	31.6
Net pension from individual private plans	0.5	4.0	0.0	96.0
Net unemployment benefits	5.5	2.1	0.0	97.9
Net old-age benefits	20.8	1.9	0.2	97.9
Net survivors benefits	1.8	0.9	0.0	99.1

Net sickness benefits	1.3	3.9	0.0	96.1
Net disability benefits	2.4	2.0	0.0	98.0
Education-related allowances	1.3	3.3	0.0	96.7

Wave 2005. Distribution of item non-response

	% households having received an amount	% households with missing values (before imputation)	% households with partial information (before imputation)	% households with total information (before imputation)
Total disposable household income	99.6	2.9	43.9	53.2
T. d. h. income before s. tr. other than old_age and surv. ben.	98.7	3.5	43.3	53.2
T. d. h. income before s. tr. including old_age and surv. ben.	89.0	8.3	43.2	48.5
Net income from rental of a property or land	6.2	4.0	15.7	80.2
Family/children-related allowances	3.6	2.1	1.8	96.1
Social exclusion not elsewhere classified	0.7	0.0	0.0	100.0
Housing allowances	0.8	1.3	0.0	98.7
Regular inter-household cash transfer received	2.4	10.9	0.0	89.1
Net interest, div., profit from capital invest. in uninc. business	32.5	39.7	36.5	23.7
Net income received by people aged under 16	4.5	0.2	0.0	99.8
Regular taxes on wealth	3.5	37.0	17.3	45.8
Regular inter-household cash transfer paid	4.9	6.0	8.4	85.6
Repayments/receipts for tax adjustments	69.8	6.0	5.7	88.3

	% persons 16+ having received an amount	% persons with missing values (before imputation)	% persons with partial information (before imputation)	% persons with total information (before imputation)
Net cash or near cash employee income	43.9	10.4	0.0	89.6
Net non-cash employee income	0.6	25.9	0.7	73.4
Net cash profits or losses from self-employment	7.6	32.4	46.1	21.5
Net pension from individual private plans	0.5	4.2	0.0	95.8
Net unemployment benefits	5.2	4.5	0.0	95.5
Net old-age benefits	19.3	2.2	0.1	97.6
Net survivors benefits	1.5	1.8	0.0	98.2
Net sickness benefits	1.4	4.7	0.0	95.3
Net disability benefits	2.1	1.3	0.0	98.7
Education-related allowances	2.0	5.2	0.0	94.8



## 2.4. Mode of data collection

Questionnaires are completed by CAPI (Compute Aided Personal Interviewing). This procedure has been implemented this year (in 2004 questionnaires were completed by PAPI).

The main mode of data collection was personal interview with all household members who were aged 16 and above as at 31 December of the year before the year of interview.

If personal interview was impracticable because the subject was temporarily absent or was unable to respond, we would conduct a telephone interview or interview another household member and later corroborate the information with the subject.

Longitudinal component. Mode of data collection

Wave 2004. Distribution of household members aged 16 and over by RB245.

		Number	Percentage
Total	Total	28062	100.0
	RB250=11	23522	83.8
	RB250=21	84	0.3
	RB250=22	85	0.3
	RB250=23	558	2.0
	RB250=31	144	0.5
	RB250=32	1738	6.2
	RB250=33	1931	6.9
Sample persons	Total	28062	100.0
	RB250=11	23522	83.8
	RB250=21	84	0.3
	RB250=22	85	0.3
	RB250=23	558	2.0
	RB250=31	144	0.5
	RB250=32	1738	6.2
	RB250=33	1931	6.9

Wave 2004. Distribution of household members aged 16 and over by RB260.

		Number	Percentage
Total	Total	23465	100.0
	RB260=1	15107	64.4
	RB260=3	381	1.6
	RB260=4	392	1.7
	RB260=5	7585	32.3
Sample persons	Total	23465	100.0
	RB260=1	15107	64.4
	RB260=3	381	1.6
	RB260=4	392	1.7
	RB260=5	7585	32.3

Wave 2005. Distribution of household members aged 16 and over by RB245.

		Number	Percentage
Total	Total	22567	100.0
	RB250=11	21993	97.5
	RB250=21	17	0.1
	RB250=23	153	0.7
	RB250=31	111	0.5
	RB250=32	159	0.7
	RB250=33	134	0.6
Sample persons	Total	22036	100.0
	RB250=11	21506	97.6
	RB250=21	16	0.1
	RB250=23	139	0.6
	RB250=31	106	0.5
	RB250=32	149	0.7
	RB250=33	120	0.5
Co-residents	Total	531	100.0
	RB250=11	487	91.7
	RB250=21	1	0.2
	RB250=23	14	2.6
	RB250=31	5	0.9
	RB250=32	10	1.9
	RB250=33	14	2.6

Wave 2005. Distribution of household members aged 16 and over by RB260.

		Number	Percentage
Total	Total	21986	100.0
	RB260=2	12556	57.1
	RB260=3	610	2.8
	RB260=4	4	0.0
	RB260=5	8816	40.1
Sample persons	Total	21499	100.0
	RB260=2	12386	57.6
	RB260=3	593	2.8
	RB260=4	4	0.0
	RB260=5	8516	39.6
Co-residents	Total	487	100.0
	RB260=2	170	34.9
	RB260=3	17	3.5
	RB260=5	300	61.6

## 2.5. Imputation procedure

The imputation in the Spanish SILC uses a methodology similar to the one used by Eurostat for the ECHP. The reference of the procedure applied is described in the document SILC136.

The statistical imputation software used has been IVE-ware. This software is easy to use and has been used in ECHP with satisfactory results. The IVE-ware approach consists of a multivariate model involving a multiple regression sequence. For each variable the best regression method is chosen according to the nature of the variable being imputed. The continuous variable, that is the case in income variables, is imputed with a normal linear regression model.

Before imputation, in the checking phase, some points need to be solved. In case that the filter of an income component is "missing", it is checked if there are some other signs, from other variables, to correct this filter. The same procedure is used to determine the number of months that the unit has received an income component.

In the imputation phase the first step is to determine if a variable should be imputed or not determining the value of the filter for the income component. If the filter variable is set to "No" the rule is that no imputation needs to be done. If instead the answer to the filter variable is "missing", after the checking phase, then "No" is imputed to the filter. If the filter is "Yes" and there is not enough information then imputation is needed.

Once the filter is known the following step is the calculation of the amount of the income component. If there is enough information to calculate the target variable then it is calculated. The amounts of the previous wave are used when available. If the amount cannot be calculated then it is imputed with the restriction of an interval. This interval can be specified in the questionnaire or, if this doesn't exist, an interval is calculated using information of the distribution of the collected values. After a logarithmic transformation the imputation is carried out jointly with others components collected at the same level (household or individual). All records with missing values, for income components, are imputed.

The construction of within-household non-response inflation factor (HY025) is based in the imputation of a personal income to the persons without individual questionnaire. The imputed personal income is the mean of personal incomes of the group to which the person belongs. Groups are formed with available information (using R-file) for all persons (sex, age, activity, etc.). When the calculated within-household non-response inflation factor is very high, i. e., there is an important lack of information due to individual non-response, the variable HY025 is set to missing.

Percentage of imputation per household income components (average of the ratio of imputation over all units)

	Percentage
Total disposable household income	12.34
T. d. h. income before s. tr. other than old_age and surv. ben.	12.80
T. d. h. income before s. tr. including old_age and surv. ben.	16.60
Net income from rental of a property or land	0.63
Family/children-related allowances	0.10
Social exclusion not elsewhere classified	0.00
Housing allowances	0.02
Regular inter-household cash transfer received	0.27
Net interest, div., profit from capital invest. in uninc. business	18.25
Net income received by people aged under 16	0.02
Regular taxes on wealth	1.29
Regular inter-household cash transfer paid	0.29
Repayments/receipts for tax adjustments	5.69

Percentage of imputation per personal income components (average of the ratio of imputation over all units)

	Percentage
Net cash or near cash employee income	5.17
Net non-cash employee income	0.16
Net cash profits or losses from self-employment	3.98
Net pension from individual private plans	0.03
Net unemployment benefits	0.27
Net old-age benefits	0.87
Net survivors benefits	0.04
Net sickness benefits	0.12
Net disability benefits	0.05
Education-related allowances	0.10
Gross monthly earnings for employees	2.01

Longitudinal component.

Wave 2004. Percentage of imputation per household income components (average of the ratio of imputation over all units)

	Percentage
Total disposable household income	8.29
T. d. h. income before s. tr. other than old_age and surv. ben.	8.84
T. d. h. income before s. tr. including old_age and surv. ben.	12.74
Net income from rental of a property or land	0.10
Family/children-related allowances	0.58
Social exclusion not elsewhere classified	0.04
Housing allowances	0.03
Regular inter-household cash transfer received	0.15
Net interest, div., profit from capital invest. in uninc. business	16.81
Net income received by people aged under 16	0.02
Regular taxes on wealth	1.67
Regular inter-household cash transfer paid	0.30
Repayments/receipts for tax adjustments	8.33

Wave 2004. Percentage of imputation per personal income components (average of the ratio of imputation over all units)

	Percentage
Net cash or near cash employee income	3.36
Net non-cash employee income	0.07
Net cash profits or losses from self-employment	2.86
Net pension from individual private plans	0.02
Net unemployment benefits	0.12
Net old-age benefits	0.41
Net survivors benefits	0.02
Net sickness benefits	0.05
Net disability benefits	0.05
Education-related allowances	0.04

Wave 2005. Percentage of imputation per household income components (average of the ratio of imputation over all units)

	Percentage
Total disposable household income	10.29
T. d. h. income before s. tr. other than old_age and surv. ben.	10.78
T. d. h. income before s. tr. including old_age and surv. ben.	15.34
Net income from rental of a property or land	0.58
Family/children-related allowances	0.11
Social exclusion not elsewhere classified	0.00
Housing allowances	0.01
Regular inter-household cash transfer received	0.26
Net interest, div., profit from capital invest. in uninc. business	18.44
Net income received by people aged under 16	0.01
Regular taxes on wealth	1.39
Regular inter-household cash transfer paid	0.29
Repayments/receipts for tax adjustments	5.36

Wave 2005. Percentage of imputation per personal income components (average of the ratio of imputation over all units)

	Percentage
Net cash or near cash employee income	4.57
Net non-cash employee income	0.16
Net cash profits or losses from self-employment	3.54
Net pension from individual private plans	0.02
Net unemployment benefits	0.24
Net old-age benefits	0.44
Net survivors benefits	0.03
Net sickness benefits	0.07
Net disability benefits	0.03
Education-related allowances	0.10

## 2.6. Imputed rent

Not applicable.

## 2.7. Company cars

The method used to impute the value to the use of a company car is based in the Spanish Fiscal procedure to tax this non-cash income. We have two cases:

- The car is given to the employee. A market value is assigned depending of the value of the car supposing it is new and the age of the car, depreciating 20 % of this value for each year. The information about the value (supposing the car is new) and the age of the car is asked to the respondent. If the car is 5 or more years old no amount is imputed.
- Only the use of the car is provided to the employee. The imputed income is 20% of the market value of the car supposing it is new. The value is ajusted proportionally with the percentage of private use. The information about the value (supposing the car is new), the age of the car and percentage of use is asked to the respondent. If the car is 5 or more years old no amount is imputed.

### 3. COMPARABILITY

#### 3.1. Basic concepts and definitions

- Reference population. (No differences between national and EU-SILC concept.)

The target population was members of private households residing at main family addresses, and the households themselves.

Although all persons formed part of the target population, not all were surveyed exhaustively: only those who were aged 16 or over as at 31 December of the year before the year of interview.

- Private household definition. (No differences between national and EU-SILC concept.)

An individual or a group of people occupying in common a main family address or a part of it, and consuming and/or sharing food or other goods paid for out of a common budget.

- Household membership.

We have tried to implement in the field the definition of 'household member' given in the Commission Regulation. But, owing to the large number of possible special cases, and so as to reduce the number of related items on the questionnaire, there may be differences in some marginal cases.

To identify those differences, we provide a table below in which the left column itemises groups of people deemed household members under the definition given in the Regulation. On the right of the table we indicate whether such persons are household members under the definition used for the Spanish questionnaire.

Next we provide a reciprocal table in which the left column itemises groups of people deemed household members under the definition used for the Spanish questionnaire, while the right column indicates whether they are household members under the definition given in the Regulation.

**STANDARD DEFINITION OF HOUSEHOLD MEMBER  
ACCORDING TO EU-SILC (under Regulation)**

**DIFFERENCES FROM NATIONAL DEFINITION**

Present: <ul style="list-style-type: none"> <li>- Usually resident at the address</li> <li>- Related to other household members</li> <li>- Share expenses</li> </ul>	(No differences between national and EU-SILC concept.)
Present: <ul style="list-style-type: none"> <li>- Usually resident at the address</li> <li>- Not related to household members</li> <li>- Share expenses</li> </ul>	(No differences between national and EU-SILC concept.)
Present: <ul style="list-style-type: none"> <li>- Resident boarders, lodgers, tenants</li> <li>- Have no private address elsewhere</li> <li>- Share expenses</li> </ul>	(No differences between national and EU-SILC concept.)
Present: <ul style="list-style-type: none"> <li>- Resident boarders, lodgers, tenants</li> <li>- Actual or intended length of stay is 6 months or more</li> <li>- Share expenses</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Have other address they treat as their usual residence.</i> <b><i>Not a member of the interviewed household.</i></b></li> <li>• Otherwise: No differences between national and EU-SILC concept.</li> </ul>
Present: <ul style="list-style-type: none"> <li>- Visitors</li> <li>- Have no private address elsewhere</li> <li>- Share expenses</li> </ul>	No differences between national and EU-SILC concept.

Present: <ul style="list-style-type: none"> <li>- Visitors</li> <li>- Actual or intended length of stay is 6 months or more</li> <li>- Share expenses</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Have other address they treat as their usual residence.</i> <b><i>Not a member of the interviewed household.</i></b></li> <li>• Otherwise: No differences between national and EU-SILC concept.</li> </ul>
Present: <ul style="list-style-type: none"> <li>- Live-in domestic employees, au pairs</li> <li>- Have no private address elsewhere</li> <li>- Share expenses</li> </ul>	No differences between national and EU-SILC concept.
Present: <ul style="list-style-type: none"> <li>- Live-in domestic employees, au pairs</li> <li>- Actual or intended length of stay is 6 months or more</li> <li>- Share expenses</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Have other address they treat as their usual residence.</i> <b><i>Not a household member.</i></b></li> <li>• Otherwise: No differences between national and EU-SILC concept.</li> </ul>
Absent: <ul style="list-style-type: none"> <li>- Temporarily absent owing to holiday leave, work reasons, studies and similar</li> <li>- Have no private address elsewhere</li> <li>- Actual or intended length of stay is less than 6 months</li> <li>- Share expenses</li> </ul>	No differences between national and EU-SILC concept.
Absent: <ul style="list-style-type: none"> <li>- Temporarily absent owing to holiday leave, work reasons, studies and similar</li> <li>- Have no private address elsewhere</li> <li>- Actual or intended length of stay is more than 6 months</li> <li>- Very close ties to household</li> <li>- Share expenses</li> </ul>	No differences between national and EU-SILC concept.



<p>Absent:</p> <ul style="list-style-type: none"> <li>- Children of the household</li> <li>- Receiving education away from home</li> <li>- Have no private address elsewhere</li> <li>- Treat this address as their main residence</li> <li>- Share expenses</li> </ul>	<p>No differences between national and EU-SILC concept.</p>
<p>Absent:</p> <ul style="list-style-type: none"> <li>- Persons with ties to the household away for extended periods for work reasons</li> <li>- Have no private address elsewhere</li> <li>- Must be a household member's partner or child</li> <li>- Treat this address as their main residence</li> <li>- Share expenses</li> </ul>	<p>No differences between national and EU-SILC concept.</p>
<p>Absent:</p> <ul style="list-style-type: none"> <li>- Temporarily absent persons with ties to the household</li> <li>- In hospital, clinic or other institution</li> <li>- Have financial ties to the household</li> <li>- Actual or intended length of absence must be less than 6</li> <li>- Share expenses (financial ties)</li> </ul>	<p>No differences between national and EU-SILC concept.</p>

**Conclusion:**

If a person is a household member according to the definition in the Regulation, he/she is also a household member under the national definition, except in the following group:

- Resident boarders, lodgers, tenants, visitors or domestic servants present at the place of interview
- Actual or intended length of stay is 6 months or more
- Have other address they treat as their usual residence and do not have close ties to household
- Share expenses

Under the Regulation, persons meeting the above conditions are treated as members of the household in which they are present. But they are not considered household members in the Spanish survey because priority is given to the fact that they have another address they regard as their usual residence. Due to the lack of sources is difficult to assess the impact of this difference, but we think it is marginal.

**NATIONAL DEFINITION OF HOUSEHOLD MEMBER**  
**(Cases contemplated in the Spanish version**  
**of the questionnaire)**

**DIFFERENCES FROM STANDARD DEFINITION OF HOUSEHOLD**  
**MEMBERS ACCORDING TO EU-SILC (under Regulation)**

Present: <ul style="list-style-type: none"> <li>- Has no other address he/she treats as usual residence</li> <li>- Shares income or expenditures with the household</li> </ul>	No differences between national and EU-SILC concept.
Absent: <ul style="list-style-type: none"> <li>- In hospital, clinic or other institution, such as nursing home, prison, etc.</li> <li>- Total length of stay to be less than 6 months</li> <li>- Considers this his/her usual residence</li> <li>- Shares income or expenditures with the household</li> </ul>	No differences between national and EU-SILC concept.
Absent: <ul style="list-style-type: none"> <li>- Work reasons</li> <li>- Considers this his/her usual residence</li> <li>- Shares income or expenditures with the household</li> </ul>	No differences between national and EU-SILC concept.
Absent: <ul style="list-style-type: none"> <li>- Study reasons</li> <li>- Considers this his/her usual residence</li> <li>- Shares income or expenditures with the household</li> </ul>	No differences between national and EU-SILC concept.

<p>Absent:</p> <ul style="list-style-type: none"> <li>- Travel</li> <li>- Considers this his/her usual residence</li> <li>- Shares income or expenditures with the household</li> </ul>	<p>No differences between national and EU-SILC concept.</p>
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#### Conclusion:

If a person is a household member according to the national definition, he/she is also a household member under the Regulation definition.

- Income reference period.

The income reference period is the previous calendar year.

- Period for taxes on income and social insurance contributions.

We considered taxes received/paid during the income reference period. For example in 2004 survey, only refunds/payments for tax adjustments (personal income tax – Spanish IRPF) in 2003 were provided. These taxes normally refer to income received in 2002, but there may be instances of income received in previous years.

- Reference period for taxes on wealth.

We considered the period for income tax received/paid during the income reference period.

- Lag between income reference period and current variables.

From 31 December of the year prior to the survey to the time of data collection (April-June). The lag thus ranged from 4 to 6 months.

- Total duration of the data collection of the sample.

April to June of the survey year.

- Basic information on activity status during the income reference period.

We used the definition given in EU-SILC 065/04.

### 3.2. Components of income

3.2.1. Differences between the national definitions and standard EU-SILC definitions, and an assessment, if available, of the consequences of the differences mentioned, for the following target variables:

- Total household gross income.

Not provided for the 2005 survey.

- Total disposable household income.

(No differences between national and EU-SILC concept.)

Negative values are permitted.

- Total disposable household income, before social transfers other than old-age and survivors' benefits.

(No differences between national and EU-SILC concept.)

Negative values are permitted.

- Total disposable household income, before social transfers.

(No differences between national and EU-SILC concept.)

Negative values are permitted.

- Imputed rent.

Not provided for the 2005 survey.

- Income from rental of property or land. (No differences between national and EU-SILC concept.)

(No differences between national and EU-SILC concept.)

- Family/children-related allowances.

(No differences between national and EU-SILC concept.)

- Social exclusion payments not elsewhere classified.

(No differences between national and EU-SILC concept.)

- Housing allowances.

(No differences between national and EU-SILC concept.)

- Regular inter-household cash transfers received.

(No differences between national and EU-SILC concept.)

- Interest, dividends, profit from capital investments in unincorporated businesses.

(No differences between national and EU-SILC concept.)

- Interest paid on mortgages.

Not provided for the 2005 survey.

- Income received by people aged under 16.

(No differences between national and EU-SILC concept.)

- Regular taxes on wealth.

(No differences between national and EU-SILC concept.)

- Regular inter-household transfers paid.

(No differences between national and EU-SILC concept.)

- Tax on income and social insurance contributions.

Not provided for the 2005 survey.

- Refunds/receipts for tax adjustments (personal income tax – IRPF).

(No differences between national and EU-SILC concept.)

- Cash or near-cash employee income.

(No differences between national and EU-SILC concept.)

- Non-cash employee income.

(No differences between national and EU-SILC concept.)

- Employers' social insurance contributions.

Not provided for the 2005 survey.

- Cash profits or losses from self-employment (including royalties).

(No differences between national and EU-SILC concept.)

- Value of goods produced for own consumption.

Not provided for the 2005 survey.

- Unemployment benefits.

(No differences between national and EU-SILC concept.)

- Old-age benefits.

(No differences between national and EU-SILC concept.)

- Survivors' benefits.

(No differences between national and EU-SILC concept.)

- Sickness benefits.

(No differences between national and EU-SILC concept.)

- Disability benefits.

(No differences between national and EU-SILC concept.)

- Education-related allowances.

(No differences between national and EU-SILC concept.)

- Gross monthly earnings for employees.

(No differences between national and EU-SILC concept.)

### 3.2.2. The source or procedure used for the collection of income variables

We used personal interview as the method to collect income variables.

### 3.2.3. The form in which income variables at component level have been obtained

We gave respondents the option of reporting income gross or net (of tax on income at source and, if applicable, of social contributions) at component level. The interviewee normally states income net at source although in some cases gives too gross. The form in which the amounts are recorded in database are net (of tax on income at source and, if applicable, of social contributions).

### 3.2.4. The method used for obtaining income target variables in the required form

Target income variables were reported net of tax on income at source and, where applicable, net of social contributions; hence no conversion has been needed except for current monthly earnings.

Total disposable household income has been obtained considering net (of income tax at source and of social contributions) income subcomponents and repayments/receipts for tax adjustments.

Current monthly earnings for employees are reported gross. Interviewees were asked to report figures both net (of income tax at source) and gross (the latter generated many 'not available' entries). The conversion was explained in Annex I (Net-to-gross conversion) in the previous final quality report (2004).

However we have provided our users since April 2007, at national level, with all income gross figures, since the net-to-gross conversion model for every single component had been implemented in 2005.

This model is based on social security contributions and tax retentions. There are four possible conversion types to be applied to each of the income components:

Type I includes components having social security contributions and tax withholding at source, type II includes components having tax withholding at source, type III includes a flat rate tax retention, and type IV makes gross equal to net.

Social security contributions are calculated from gross income, employment, activity and education level. In turn, the tax withholding at source is obtained applying the taxation rules at source.



### **3.3. Tracing rules**

Standard EU-SILC tracing rules are applied.

## 4. COHERENCE

### 4.1 Comparison of income target variables and number of persons who receive income from each 'income component', with external sources

Comparison with external sources is difficult because the definitions used do not match. The difficulty stems from the definition of the income component itself, which affects comparison of the number of people receiving a given income component, and from the way an amount is expressed (external sources usually state gross figures), which affects comparison of average amounts.

A very large proportion of social transfers, for instance, depends on Autonomous Communities (self-ruling region), and so it is very hard to bring all the available information together.

Nevertheless, we provide a range of tables to offer a guide to the structure of income distribution using other sources.

The available results from external sources come from:

- The *Boletín de Estadísticas Laborales* (labour statistics journal) of the Ministry of Labour and Social Affairs
- INE National Accounts
- Fiscal sources
- Wage Structure Survey
- Results from EU-SILC 2004

Starting with the Survey on Income and Living Conditions (SILC) results, the following table itemises number of recipients, average income, average monthly income (taking account of 14 annual pay packets) and total income by component. Figures are given net of income tax at source and, where applicable, net of social contributions.

To make it easier to compare social transfers, we have removed the constraint that all survivors' and disability benefits for persons aged 65 and above be treated as old-age benefits.

Source: Spanish Living Conditions Survey (ECV). Adult recipients by income type (net figures)

	Recipients (thousands)	Average income 2004 (euros)	Average monthly income 2004 (euros)	Total income 2004 (millions of euros)
Cash employee income	17.084	13.242	946	226.227
Non-cash employee income	238	2.871	205	682
Cash profits or losses from self-employment	2.698	9.532	681	25.721
Unemployment benefits	1.919	3.311	236	6.355
Old-age benefits	5.214	9.584	685	49.975
Survivors benefits	1.672	6.537	467	10.929
Disability benefits	792	7.478	534	5.919

Source: Spanish Living Conditions Survey (ECV). Recipient households by income type (net figures)

	Recipient households (thousands)	Average income 2004 (euros)	Total income 2004 (millions of euros)
Income from rental of a property or land	849	4.900	4.162
Interest, div., profit from capital invest.	3.982	769	3.064

For social transfers we have the following data from the *Boletín de Estadísticas Laborales* (labour statistics journal) of the Ministry of Labour and Social Affairs.

### Social Security pension contributions Series 1994-2004

#### Pensions by scheme, class, years, number and average figure

Units: Number: thousands of pensions. Average figure: euros per month

	2004	
	Number	Average figure
<b>TOTAL</b>		
Total	7.878,6	576,57
Permanent disability	815,1	665,10
Retirement	4.619,6	648,91
Widowhood	2.136,3	432,09
Orphanhood	266,6	248,46

### Benefits not tied to contributions Series 1994-2004

#### Beneficiaries of benefits not tied to contributions by mode, class and year

Units: Number of beneficiaries (annual average)

	2004
<b>SOCIAL SECURITY PENSIONS NOT TIED TO CONTRIBUTIONS (1)</b>	488.472
Disability	207.025
Retirement	281.447

On comparing the number of benefits payees by type, we find the largest differences relate to survivors' benefits, 1672 as against 2136+266. The largest differences in average amount are found in disability pensions (but it should be borne in mind that the average amount of pensions not tied to contributions is unknown).

The available statistics on unemployment refer only to the average annual number of beneficiaries of unemployment benefits and subsidies (1.262.400 in 2004); other benefits and the turnover of unemployed workers in the year are not reflected, therefore.

To compare with the results for other components of income we can use the interim National Accounts 2003. The following table presents data on “Accounts for the total economy and institutional sectors” (“Table of current accounts and accumulated accounts”) of the household sector (millions of euros).

D.11.	Wages and salaries	288,640
B.3b.1	Gross mixed income	124,397
D.621	Social security benefits in cash	79,288
D.41	Interest	14,603
D.42	Income distributed by corporations	9,104
D.45	Income from land	831

To compare National Accounts and SILC data, account must be taken of the fact that income components and amount values (net/gross) are defined differently.

The difference between the ‘wages and salaries’ item under NA and the ‘net cash employee income’ under SILC is partly accounted for by the latter not including income tax deducted at source or social contributions. Remuneration in kind other than company cars are not reflected by SILC, either.

‘Net cash profits or losses from self-employment’, ‘income from rental of a property or land’ and ‘net interest, dividends, profit from capital investment in unincorporated business’ are very poorly picked up by interview, so comparison is not possible. ‘Income from rental of a property or land’ under SILC is treated as mixed income in NA.

The differences between the two statistical operations are less with regard to figures on social benefits.

In relation to Fiscal sources the Tax Agency produces yearly the publication *Mercado de Trabajo y Pensiones en Las Fuentes Tributarias 2004* (Labour market and Pensions in Tax Sources). The reference period is the year 2004 and the amounts in the fiscal sources are gross.

### Number of persons with employee income and amount annual average

	Employees	Income (annual average) euros
Total	17.320.764	15.658

There are not important differences between the two sources (SILC and Fiscal sources). It must be taken into account that the amounts in the fiscal sources are gross.

### Number of persons with pensions income and amount annual average

	Pensioners	Pension (annual average) euros
Total	8.018.617	9.042

There are not important differences between the two sources (SILC and Fiscal sources) if we consider in EU-SILC together old-age, survivors and disability benefits.

### Number of persons with unemployment benefits and amount annual average

	Unemployed	Benefits (annual average) euros
Total	3.147.956	2.778

The difference between the two sources (SILC and Fiscal sources) can be explained if EU-SILC, perhaps, is not able of collecting cases of very short periods of unemployment.

The results from EU-SILC 2004 are:

Source: Spanish SILC. Adult recipients by income type (net figures)

	Recipients (thousands)	Average income 2003 (euros)	Average monthly income 2003 (euros)	Total income 2003 (millions of euros)
Net cash employee income	16,574	12,714	908	210,714
Non-cash employee income	263	1,568	112	413
Net cash profits or losses from self-employment	2,383	9,361	669	22,310
Net unemployment benefits	2,050	3,269	233	6,701
Net old-age benefits	5,141	9,295	664	47,784
Net survivors' benefits	1,802	6,128	438	11,041
Net disability benefits	990	7,211	515	7,136

Source: Spanish SILC. Recipient households by income type (net figures)

	Recipient households (thousands)	Average income 2003 (euros)	Total income 2003 (millions of euros)
Net income from rental of a property or land	752	5,032	3,784
Net interest, div., profit from capital invest. in uninc. business	4,694	661	3,103