Final Quality Report

Relating to the

EU-SILC Operation 2004-2007

Austria

STATISTICS AUSTRIA

The Information Manager

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Introductory remark to the reader

The present document presents quality evaluation criteria for the EU-SILC 2007 operation as foreseen in Council Regulation No. 1177/2003 and follows the structure outlined in Commission Regulation No. 28/2004. To avoid redundancies with the Intermediate Quality Report for the EU-SILC operation 2007 this Final Quality Report has a clear focus on the EU-SILC longitudinal component, strictly following the structure specified in Annex III of the aforementioned Commission Regulation.

In Austria EU-SILC operations started in 2004. A rotational design was implemented to integrate the cross sectional and longitudinal component from 2007 onwards. Thus in 2007 the EU-SILC operation contains a panel rotation that extends to four consecutive years for the first time. Rotation 4/04, which started in 2004 and has been traced until 2007 (and will not be followed up in 2008) represents the first fully matured longitudinal component. This is the first possibility to calculate the longitudinal at-persistent-risk-of-poverty indicator (see chapter 1 for details).

To direct reader's attention in particular to the longitudinal component and illustrate its quality, Statistics Austria decided to concentrate on the sample's part which was eligible to be traced between 2004 and 2007, i.e. the rotational group R4/04. Where necessary this is complemented by information on the full sample of the cross-sectional component 2007 (R4/04, R1/05, R2/06, R3/07).

1.   Common longitudinal European Union Indicators based on the longitudinal component of EU-SILC

The longitudinal dataset 2004-2007 of the EU-SILC operation comprises a panel of four years (2004-2007) for the first time. The main objective of the four years panel rotation is to deliver an adequate data basis for the calculation of the at-persistent-risk-of-poverty indicator.

As mentioned in the EUROSTAT document 39/09 of the working group on living conditions[1] the assessment of persistent poverty is one of the primary indicators on social inclusion. The main objective of the four years panel rotation is to deliver an adequate data basis for the calculation of the at-persistent-risk-of-poverty indicator. In order to estimate the percentage of panel-persons living with at-risk-of-poverty, the at-risk-of-poverty threshold has to be recalculated for each year of the four years longitudinal rotation (R4/04). Otherwise the yearly at-risk-of-poverty indicator for each year of the four year panel would be biased. This would biasedness would stem from the use of a threshold that was estimated for the cross-sectional population of each year from 2004 to 2007 instead of the longitudinal population.

The abovementioned strategy complies fully to the one described in document 39/09 page 43 ff. Persistent at risk of poverty occurs if a panel person is at risk of poverty in the last wave of the four years panel (i.e. 2007) and has been at-risk-of-poverty at least two times during the preceding waves. Table 1 shows possible combinations of being at-risk-of-poverty which are contained in the longitudinal at-risk-of-poverty indicator:

Table 1 : Types of at-persistent-risk-of-poverty

Duration of at-risk-of-poverty	T 2007	T-1 2006	T-2 2005	T-3 2004
4 years	at-risk-of-poverty	at-risk-of-poverty	at-risk-of-poverty	at-risk-of-poverty
3 years	at-risk-of-poverty	at-risk-of-poverty	at-risk-of-poverty	not at-risk-of-poverty
3 years	at-risk-of-poverty	at-risk-of-poverty	not at-risk-of-poverty	at-risk-of-poverty
3 years	at-risk-of-poverty	not at-risk-of-poverty	at-risk-of-poverty	at-risk-of-poverty

According to the EU-SILC longitudinal dataset 5.1 % of all persons who are within the reference population from 2004-2007 are at-persistent-risk-of-poverty.

Table 2 : At-persistent-risk-of-poverty rate by sex

At-persistant-risk-of-poverty		
Age	Sex	%
Total	T	5.1
	M	3.1
	F	7.0
0-17	T	4.4
18-64	T	3.9
	M	2.7
	F	5.2
65+	T	10.2
	M	4.6
	F	14.2

Source: EU-SILC longitudinal sample 2004-2007

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[1] E.g. see page 9 the respective document

2. Accuracy

Accuracy refers to the closeness of calculations and estimates to the exact or true value.

2.1. Sampling design

2.1.1. Type of sampling

The longitudinal component of EU-SILC 2007 as transmitted to EUROSTAT by May 2009 consists of the rotational groups one and four of EU-SILC 2004 and the rotational groups one and four of the cross-sectional sample in EU-SILC 2005 and the rotational groups one, two and four of the cross-sectional samples of EU-SILC 2006 and 2007.

The sample for the first wave of the longitudinal component was drawn from the central registration register ZMR (*Zentrales Melderegister*) a constantly updated population register based on the register of residence. The Ministry of the Interior administers this register. For the longitudinal component addresses were selected with a simple random sampling procedure.

2.1.2. Sampling units

Sampling units are dwelling units registered in the ZMR. The sampling frame consisted of all accommodations with at least one person aged 16 or older who has her/his main residence (*Hauptwohnsitzmeldung*) in these accommodations. The following units were excluded: institutional housing facilities, dwelling units in which all persons with their main residence in this unit were younger than 16 years and units which have been selected for the prior samples of EU-SILC.

2.1.3. Stratification criteria

In the first wave of the longitudinal component 2004-2007 (R4/04) a simple random sample without stratification was used.

2.1.4. Sample size and allocation criteria

The necessary sample size for Austria was calculated according to the Commission regulation to guarantee 4,500 Households cross-sectionally and 3,250 household longitudinally under simple random sampling.

The cross-sectional sample of EU-SILC 2004 consisted of 8,000 addresses from which the fieldwork institute actually used only 7,514 addresses. Of these, 3,787 addresses were randomly allocated to the rotations to be included in the longitudinal sample to be followed up until 2007. Originally rotational groups three and four should have been interviewed again for EU-SILC 2005. But due to various problems with the fieldwork in 2005 (which have been described in the Intermediate Quality Report for EU-SILC 2005), the rotational group one of EU-SILC 2004 was added to the rotational group four in 2005[2] to obtain a sufficiently large longitudinal sample. Thus, all households of the rotational groups one, three and four successfully interviewed in 2004 were selected again in 2005. Accordingly, the longitudinal component of EU-SILC 2007 consists of the rotational groups one and four of 2004 and the rotational group four of 2005, 2006 and 2007.

Figure 1: Rotational design - longitudinal design 2004 - 2007

Longitudinal subsample
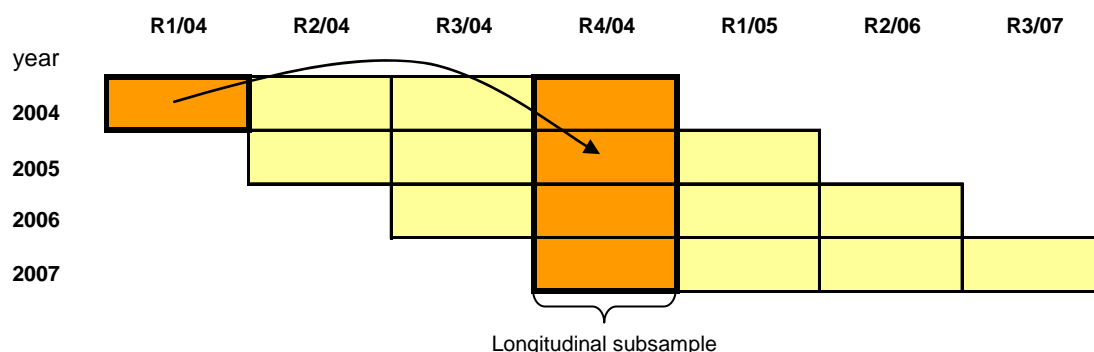
For the sake of convenience, further tables referring to the year 2004 and rotation R4/04 are always implicitly containing rotation R1/04. The dataset of the longitudinal component consists, overall, of 9,583 records of

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[2] Variable DB075 was recoded from 1 to 4 for these households in the longitudinal component of 2004 to allow the linkage of the rotational groups.

households: the original households of the first wave 2004 (N = 3,787), the follow-up households 2005 (N = 2,276), the split households 2005 (N = 66), the follow-up households of 2006 (N = 1,835), the split households of 2006 (N = 46), the follow-up households of 2007 (N = 1,538) and the split households of 2007 (N = 35).

The total of 6,728 completed household interviews consists of the 2,276 interviews in 2004, the 1,512 interviews with followed-up households in 2005, the 29 interviews with split households in 2005, the 1,465 interviews with follow-up households in 2006, the 14 interviews with split households in 2006, the 1,412 interviews with follow-up households in 2007 and the 20 interviews with split households in 2007.

In 2005 all households successfully interviewed in 2004 were followed-up (N = 2,276). Hence the number of issued addresses in 2005 is the same as the number of accepted interviews in 2004. These households and 66 split households then constitute the 2,342 used addresses of 2005. The households provided 2005 1,541 interviews (1,512 follow-up and 29 split). The households providing accepted interviews in 2005 plus the households successfully interviewed in 2004 but not 2005, form the basis of the 1,835 follow-up households of 2006. Adding the 46 split households, these constitute the basis of 1,881 addresses of 2006. 1,479 household interviews could be successfully conducted in 2006, including 14 interviews of split households. The basis of 2007, the final year of the panel, consists of 1,573 addresses. 35 of these addresses belong to split-off households. The remaining 1,538 addresses consist of accepted household interviews of the preceding year and addresses which were part of the panel in 2004 and/or 2005 but not in 2006. These households finally provided us with 1,432 accepted household interviews.

Table 3 : Sample size, addresses and household interviews (R4/04)

| | 2004 | | 2005 | | | | 2006 | | | | 2007 | | | |
| | | | Follow-up households | | Split households | | Follow-up households | | Split households | | Follow-up households | | Split households | |
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Longitudinal component														
Used addresses	3,787	100.0	2,276	100.0	66	100.0	1,835	100.0	46	100.0	1,538	100.0	35	100.0
Addresses existent	3,732	98.5	2,276	100.0	0	0.0	1,835	100.0	0	0.0	1,538	100.0	0	0.0
Addresses not existent	55	1.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Gross sample	3,732	100.0	2,276	100.0	66	100.0	1,835	100.0	46	100.0	1,538	100.0	35	100.0
Addresses successfully contacted	3,685	98.7	2,215	97.3	58	87.9	1,788	97.4	41	89.1	1,512	98.3	27	77.1
Addresses not successfully contacted	47	1.3	61	2.7	8	12.1	47	2.6	5	10.9	26	1.7	8	22.9
Successfully contacted addresses	3,685	100.0	2,215	100.0	58	100.0	1,788	100.0	41	100.0	1,512	100.0	27	100.0
Household questionnaire completed	2,318	62.9	1,512	68.3	29	50.0	1,465	81.9	14	34.1	1,412	93.4	20	74.1
Refusal to co-operate	861	23.4	428	19.3	10	17.2	207	11.6	11	26.8	65	4.3	5	18.5
Entire household away for the duration of fieldwork	362	9.8	226	10.2	19	32.8	94	5.3	14	34.1	26	1.7	2	7.4
household unable to respond	19	0.5	47	2.1	0	0.0	22	1.2	1	2.4	8	0.5	0	0.0
Other reasons	125	3.4	2	0.1	0	0.0	0	0.0	1	2.4	1	0.1	0	0.0
Successful household questionnaire	2,318	100.0	1,512	100.0	29	100.0	1,465	100.0	14	100.0	1,412	100.0	20	100.0
Interview accepted for database	2,276	98.2	1,512	100.0	29	100.0	1,465	100.0	14	100.0	1,412	100.0	20	100.0
Interview rejected	42	1.8	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0

Source: EU-SILC longitudinal sample 2004-2007

2.1.5. Sample selection scheme

As described in section 2.1.3. the addresses of the first wave of the longitudinal component (R4/04) were selected with a simple random sampling design.

2.1.6. Sample distribution over the time

In 2004, the fieldwork period took only 5 months. Most interviews were conducted in the four month period from March to June. After the change of the fieldwork institute in 2005 the fieldwork period of the operation of EU-SILC 2005 started one month later and was extended until November. The fieldwork of EU-SILC 2006 also started at the beginning of April and was concluded during the second half of September. In 2007 the fieldwork started a bit earlier, at the midst of March and ended in September too.

Table 4 : Number of successful interviews by date of interview (R4/04)

	2004	2005	2006	2007	Total
March	538			151	689
April	533	86	288	341	1,248
May	565	230	448	275	1,518
June	611	235	314	211	1,371
July	29	184	252	209	674
August		118	117	194	429
September		84	60	51	195
October		356			356
November		248			248
Total	2,276	1,541	1,479	1,432	6,728

Source: EU-SILC longitudinal sample 2004-2007

2.1.7. Renewal of the sample: rotational groups

The year 2004 was the initial year of the survey. A new sample was drawn and the rotational groups were determined by a random selection process that ensured the required minimum size of the rotational groups during the following years.

During the years 2004 to 2007 the number of households belonging to the panel Rotation R4/04 changed considerably. On the one hand households left the panel due to reasons such as refusal of cooperation or absence during the fieldwork period. On the other hand new households joined the panel when a sample person moved out and formed a new household (split-household). If a household couldn't take part in the questionnaire during 2005 and/or 2006 but was successfully enumerated in the following year (returnee), it was treated as a follow-up household. The following figure describes the development of the 4-years panel rotation R4/04.

Figure 2: Development of the sample over the time (R4/04)
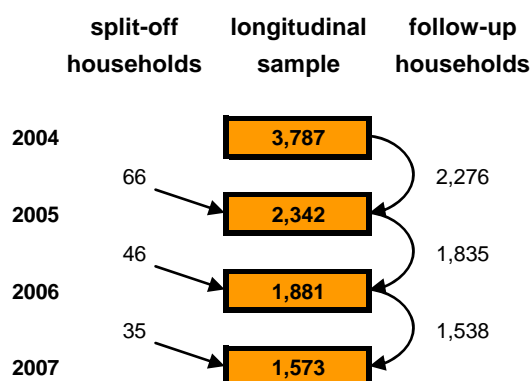
2.1.8. Weighting[3]

The longitudinal data set for individuals in EU SILC 2007 contains information on the eligible individuals traced from original sample households in EU SILC 2004, EU-SILC 2005 or EU-SILC 2006.

This data structure allows for three analytic perspectives:

- A longitudinal population of individuals who were in the target population for all four years (2004 to 2007)

- A longitudinal population of individuals who were in the target population for the last three years (2005 to 2007).

- A longitudinal population of individuals who were in the target population for the last two years (2006 & 2007).

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[3] This section presents a documentation of the weighting procedure applied to the longitudinal component and complements. The detailed description of weighting procedures for the EU-SILC cross sectional component can be found in the intermediate quality reports of the Austrian EU-SILC operation 2007.

For each perspective different weights are required according to the current version of DOC 65[4]. Common starting point of the longitudinal weights RB062 for the two year panel, RB063 for the 3 year panel and RB064 for the four year panel is the base weight RB060. From the latter also the cross sectional weight RB050 had been derived.

The procedure described below sets out from the design weights of the household sample in 2004 and their adjustments due to non-response in the initial sample. These weights are then adjusted for each individual by the inverse propensity to stay in the panel, whereby response probabilities are estimated using a logistic regression model. Individuals, who entered the survey either as co-residents or as newborns, have no base weight from a previous year. In line with EUROSTAT's recommendations newborns are assigned their mothers' base weight or, if the mother cannot be found, the average of base weights in the household. Other co-residents receive a base weight of zero. (cf. EU-SILC Intermediate Quality Report 2007, ch. 2.1.8.2.)

2.1.8.1. Design factor

The longitudinal component of EU-SILC started with the sample of the EU-SILC 2004 survey, where households were selected by unrestricted simple random sampling. Each household has the same inclusion probability and the design weight is given by the total number of households in the sampling frame divided by the number of selected addresses.

2.1.8.2. Non-response adjustment – first wave

The aim of non-response weights is the reduction of the bias caused by unit non-response on household level for the first wave and for attrition among individuals for the follow-up waves. The correction of this bias ideally requires knowledge on the response probability of each of the responding households. Each record in the dataset is then re-weighted by the inverse of this probability.

The estimation strategy applied for the first wave households by Statistics Austria divides the sample into classes and computes the empirical response rate for each of these classes, using design weights. This empirical response rate then serves as an estimate for the response probability of all households of the respective class. This estimation strategy assumes that the response probability is the same for all households of the class.

The classes were defined by cross-tabulating the variables DB040 (region, Nuts 2 level) and DB100 (degree of urbanisation). The first variable has 9 categories, according to Austria's nine federal provinces (*Bundesländer*), and the second variable has 3 categories, so finally 24 classes were built. A more refined non-response analysis has only been established in more recent waves. Coherence of survey data and registers is not optimal because of changes between sampling and fieldwork but also because living reality and register reality may be different. Therefore non-response adjustment for the first wave of the survey is restricted to basic information on household level[5].

The design weights adjusted for non-response in the 2004 survey provide the basis for the further adjustments of the longitudinal component.

2.1.8.3. Adjustment to external data – first wave

External adjustments are done to improve the consistency of estimations with reliable external sources. This step is also documented in the respective quality report for EU-SILC 2004.

The reference data source for calibration was the Microcensus, a quarterly household survey with a sample of more than 22,000 randomly selected households. The second quarter of 2004 was chosen in consistency with the main period of the EU-SILC fieldwork. The Microcensus operates with a rotational design like EU-SILC. The Microcensus incorporates the Labour Force Survey, and due to the size of the sample it is also the most important reference for the socio-demographic structure of private households in Austria.

The adjustments were done on the basis of the product of the design weights and the non-response weights. A calibration was applied to all rotations together. The calibration was carried out simultaneously on household and on individual level and with reference to the following variables:

Household level:

- household size (four categories: 1, 2, 3 household members and households with 4 and more household members),

- tenure status (two categories: rented flat/house or owned),

- region (nine categories: Nuts 2 level).

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[4] EU-SILC 065/05.1
[5] The population register has only been set up in 2003 as a sampling frame and is subject to revision.

Individual level:

- Sex

- age (younger than 15 yrs., 15 to 19 yrs., 5 yr. age groups between 20 and 74 and 75 and older)

The variables for calibration were chosen in conformity with the EUROSTAT proposal in doc EU-SILC 65/04. An "integrative" calibration design was applied with the target that on individual level every person of the household should be assigned the same weight. The individual characteristics were aggregated on household level, and dummy variables were constructed for every parameter of the individual adjustment characteristics.

In 2004 a programme developed by Statistics Austria was used, while In later years the SAS macro "CALMAR" which was developed by INSEE was applied.

2.1.8.4.   Final longitudinal weights – first wave

A final correction of individual non-response within a household was not necessary because the small number of missing cases were imputed completely. In the first wave, the longitudinal base weights (RB60) are identical to the design weights after non-response adjustment and calibration.

2.1.8.5.   Non-response adjustments – subsequent waves

For the second, third and fourth wave households, their base weights correspond to the design weights in 2004 adjusted for non-response and calibrated for external marginal distributions. Given that longitudinal households are difficult to define, weighting for attrition is based on individual attrition propensities.

For the non-response adjustment for respondents followed up in the second, third and fourth wave, more information is available from the household and personal interviews of the first wave. Therefore the response probability of each household was estimated on the basis of a logistic regression model. In the first step a set of significant variables between participation and non-participation in the second wave was selected. Significance was tested with t-test and Chi-Square. Variables with a correlation with income (main variable of interest) were selected into the model. The non-response model is identical to the non-response model of the cross sectional component and has been described in detail in the relevant intermediate quality reports[6].

Design weights and non-response weights are multiplied to obtain the personal base weight (RB060) for the subsequent wave. This product is not defined for individuals who were newly born between 2004 and 2007. They receive their mother's weight or, alternatively the average weight of sample persons in the household. In principle new entrants from outside the target population should be treated analogously. In absence of the required information of their former population status all other co-residents are assigned zero base weights.

2.1.8.6.   Further adjustments to external data

The base weights described in section 2.1.8.5 above were used to produce longitudinal weights for the two year panel 2006-2007 (RB062), for the three year panel 2005-2007 (RB063) and for the four year panel 2004-2007 (RB064). In order to establish coherence between the cross-section of EU-SILC 2007 and the last year of the longitudinal panels, the longitudinal weights were calibrated with a procedure similar to the one described in section 2.1.8.3.

Longitudinal analysis of EU-SILC 2007 Data has shown remarkable inconsistencies between cross sectional and longitudinal results. The at-risk-of-poverty rate estimated upon cross sectional data was 12,0 % whereas estimates for the panel population below the at-risk-of-poverty threshold (values from the full sample) were 10,2% for the two year panel 9,8% for the three year panel and 10,2% for the four year panel. While each referring to a different population these figures all refer to the income situation observed in the EU-SILC operation 2007.

Although of a different sample size, conceptually, the panel and cross sectional populations differ only by the population of migrants and newborns. For example, in the case of the two year panel, individuals born or migrated in 2007 contribute to the cross sectional estimates but can not be reflected in the panel data.

According to Austrian migration and birth statistics for the year 2007 the population not covered by the panel would comprise a total of around 180.000 persons or roughly 2% of the population in 2007.

The observed difference of about 2 percentage points between the estimates for the population below the at-risk-of-poverty-threshold in the two year panel and cross sectional data would imply that almost all of the population not covered by the two year panel is at-risk of poverty. This assumption is highly implausible. Empirically, 21% of all sample members and co-residents with new-borns and migrants of the years 2005-2007 living in their households have an income below the at-risk-of-poverty threshold. Hence, the higher prevalence of poverty risks among the population which is not covered in the panel may perhaps explain a difference of 0,4 percentage points.

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[6] Compare: intermediate quality report 2006 ch. 2.1.8 & intermediate quality report 2007 ch. 2.1.8

If population differences can explain only a minor part of the inconsistencies, coherence has to be established in another way. The calibration method aims to obtain weights which establish coherence between cross-sectional and longitudinal poverty estimates and population structure for 2007, the final year of the panel.

For each of the longitudinal weights RB06i (i ∈ [2;3;4]) a new sample was constructed comprising:

- Records from the longitudinal sample which have positive weights (i.e. where RB06i > 0, for a panel with a duration of i years)

- Newborns from the longitudinal sample ((i.e. where RB06i = 0, for a panel with a duration of i years). Their weight is replaced by the base weight RB060.

- Records from the cross sectional sample which entered the frame population in the period[7] after the first year of the respective panel with their cross sectional weight (Rb050).

If only records of 2007 are taken into account, this reconstructed cross-sectional dataset is structurally consistent with the cross-sectional dataset of EU-SILC 2007. It contains groups of people who can be present in the cross-section of 2007 and the longitudinal dataset 2004-2007 and also persons who are only part of the cross-sectional dataset 2007. However, there still remain the above described inconsistencies regarding the major social indicator of EU-SILC, namely the at-risk-of-poverty-indicator. In order to establish coherence the base weights of the reconstructed cross-section had to be adjusted to important marginal distribution of the cross-sectional dataset of EU-SILC 2007.

The adjustments were applied on individual level on the basis of to the variables listed under 2.1.8.3. For age, modified categories were used and some other variables on individual level were added to the adjustment process. Altogether, the following variables based on external data were used:

Household level:

- household size (four categories: 1, 2, 3 household members and households with 4 and more household members),

- tenure status (two categories: rented flat/house or owned),

- region (nine categories: Nuts 2 level).

Individual level:

- Sex

- age (younger than 15 yrs., 15 to 34 years, 35 to 64 years, 65 years and older)

- Citizenship Austria or foreign country

- Income below the median equivalized income

- Income below 60% of median equivalized income (individuals at-risk-of-poverty)

- Individuals belonging to the population not covered in the panel (migrants and new borns)

- Beneficiaries of unemployment benefits for a duration of more than one months (data from the association of the national social-security incurances, "Hauptverband der österreichischen Sozialversicherungsträger" are used)

After the calibration using the SAS macro "CALMAR" people not part of the longitudinal panel were removed from the reconstructed cross-sectional dataset and newborns from the longitudinal sample received a longitudinal weight RB06i (i ∈ [2;3;4]) of zero. The new longitudinal dataset is only filled for persons belonging to the respective panels, but is also consistent with the cross-sectional data of 2007.

2.1.8.7. Final longitudinal weight

Individuals entering the population after the start of a panel study cannot be represented in the rotations which started after the first year of the panel. This part of the target population is called "IN-Population".

The panel which started in 2004, i.e. R4/04 forms a 4 year panel. The appropriate weight is RB064 which is defined for all individuals present throughout this period excluding newborns and co-residents. RB064 before calibration is identical to RB060 apart from a scaling factor. For RB062 and RB063 the longitudinal weights require some adjustment which is applied for the calibration.

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[7] Since the corresponding information from the population register can presently not be matched directly to the individuals concerned this can only be approximated and all individuals in a household with a new member of the frame population are considered.

The 4 year panel incorporates also a 3 year panel and a 2 year panel. When the 3 year panel is combined with the 3-year panel which was launched in the year 2005, a small part of the population is only represented in this latter part. This can be referred to as "IN-Population" and consists mostly of migrants of the year 2005. Their weights need to be inflated accordingly to give an unbiased representation of the population in scope during the years 2005-2007. In accordance to the EUROSTAT document 065/05.1 (section V. of the chapter on weighting) an inflation factor of 2 should be chosen for the longitudinal weights RB063 of the IN-Population, since these persons couldn't be represented in rotation R4/04 of the three year panel which consists of two rotations (R4/04 & R1/05). The same procedure was applied to the two year panel 2006 to 2007 which consists of the rotation R4/04, R1/05 and R3/06. A small fraction of the persons of rotation R2/06 and R3/05 belong to the IN-Population described above. The weights of these persons should be inflated by the factor 3/2 (if they entered the target population in 2005) or a factor of 3 (if they entered the target population in 2006) [8].

2.1.8.8. Final cross sectional weight

Final cross sectional weights are obtained by a calibration of the joint cross sectional and longitudinal sample following the procedure described in 2.1.8.3. In addition to this procedure data from the association of the national social-security incurances were used to provide an accurate number of people who were receiving social security benefits due to unemployment.

The adjustments were carried out on household level and on individual level and were done with reference to the following variables:

Household level:

- household size (four categories: 1, 2, 3 household members and households with 4 and more household members),
- tenure status (two categories: rented flat/house or owned),
- region (nine categories: Nuts 2 level).

Individual level:

- Sex
- age (younger than 15 yrs., 15 to 34 years, 35 to 64 years, 65 years and older)
- The number of foreign and Austrian citizens
- The number of recipients of unemployment benefits for a duration of more than one months

2.1.9. Substitutions

Substitutions were necessary only in the initial cross sectional sample of the year 2005 and are described in detail in the relevant Intermediate Quality Report for the EU-SILC 2005 operation.

2.2. Sampling errors

The subsequent tables present means, number of observations and standard errors for each wave of the longitudinal component and the cross sectional component in the years 2006.

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[8] Currently the population status of individuals can only be determined with a certain propensity for all household members. Register data from the original sample is used to determine whether a household contains individuals who entered the population after the previous sample had been drawn, i.e. who were not in the sampling frame in t-1. Since no unique matching on the individual level is possible, the weights of all members living in such households have to be inflated by the same factor, proportional to the share of new entrants in the household.

Table 5 : Mean, total number of observations (before and after imputation) and standard error for income components 2004 (households & persons, weighted mean, R4/04)

	Mean	Number of observations		Standard error
		Before imputation	After imputation	
Total household gross income	41,456	784	2,276	695
Total disposable household income	30,194	1183	2,276	442
Total disposable household income before social transfers other than old-age and survivors' benefits	27,656	1185	2,237	436
Total disposable household income before social transfers including old-age and survivors' benefits	24,085	979	1,931	494
Net income components at household level				
Income from rental of a property or land	5,382	101	129	598
Family/child related allowances	4,961	783	879	151
Social exclusion not elsewhere classified	905	50	55	275
Housing allowances	1,425	85	90	99
Regular inter-household cash transfer received	4,127	151	173	268
Interest repayments on mortgage	555	171	580	68
Income received by people aged under 16	2,848	19	24	421
Regular inter-household cash transfer paid	3,863	145	159	344
Repayments/receipts for tax adjustment	-202	766	776	56
Gross income components at household level				
Income from rental of a property or land	8,374	51	129	1,068
Family/child related allowances	4,961	783	879	151
Social exclusion not elsewhere classified	905	50	55	275
Housing allowances	1,425	85	90	99
Regular inter-household cash transfer received	4,127	151	173	268
Interest repayments on mortgage	688	134	580	82
Income received by people aged under 16	3,246	10	24	496
Regular inter-household cash transfer paid	3,863	145	159	344
Tax on Income and Social Contributions	11,214	760	2,221	283
Net income components at personal level				
Employee cash or near cash income	16,155	1796	2,465	226
Contributions to individual private pension plans	995	0	924	35
Cash benefits or losses from self-employment	15,194	271	452	1,103
Value of goods produced by own-consumption	1,013	73	92	197
Pension from individual private plans	4,886	32	46	1,227
Unemployment benefits	3,845	269	324	161
Old-age benefits	14,906	924	1,104	286
Survivor's benefits	7,042	37	46	684
Sickness benefits	2,543	59	90	314
Disability benefits	11,314	117	141	543
Education-related allowances	904	3	4	175
Gross income components at personal level				
Employee cash or near cash income	23,169	1556	2,465	373
Contributions to individual private pension plans	995	0	924	35
Cash benefits or losses from self-employment	24,744	128	452	1,850
Value of goods produced by own-consumption	1,013	73	92	197
Pension from individual private plans	4,962	15	46	1,232
Unemployment benefits	3,876	264	324	166
Old-age benefits	18,227	508	1,104	400
Survivor's benefits	8,429	15	46	869
Sickness benefits	3,263	20	90	401
Disability benefits	13,610	77	141	837
Education-related allowances	904	3	4	175

Source: EU-SILC longitudinal sample 2004-2007

Weighted by db090 at household level and pb050 at personal level

Table 6 : Mean, total number of observations (before and after imputation) and standard error for income components 2005 (households & persons, weighted mean, R4/04)

	Mean	Number of observations		Standard error
		Before imputation	After imputation	
Total household gross income	44,030	568	1,541	935
Total disposable household income	32,673	910	1,541	616
Total disposable household income before social transfers other than old-age and survivors' benefits	29,764	920	1,530	612
Total disposable household income before social transfers including old-age and survivors' benefits	22,689	895	1,459	646
Net income components at household level				
Income from rental of a property or land	7,366	47	64	1,196
Family/child related allowances	4,725	615	619	136
Social exclusion not elsewhere classified	2,382	29	31	404
Housing allowances	1,696	50	53	137
Regular inter-household cash transfer received	4,676	111	117	520
Interest repayments on mortgage	377	811	1,207	62
Income received by people aged under 16	3,045	11	13	902
Regular inter-household cash transfer paid	3,982	116	124	340
Repayments/receipts for tax adjustment	-226	642	676	58
Gross income components at household level				
Income from rental of a property or land	9,881	30	64	1,588
Family/child related allowances	4,725	615	619	136
Social exclusion not elsewhere classified	2,382	29	31	404
Housing allowances	1,696	50	53	137
Regular inter-household cash transfer received	4,676	111	117	520
Interest repayments on mortgage	471	811	1,207	77
Income received by people aged under 16	3,543	9	13	901
Regular inter-household cash transfer paid	3,982	116	124	340
Tax on Income and Social Contributions	11,219	556	1,518	347
Net income components at personal level				
Employee cash or near cash income	17,191	1530	1,718	322
Contributions to individual private pension plans	1,079	660	725	49
Cash benefits or losses from self-employment	16,210	195	297	1,278
Value of goods produced by own-consumption	1,137	62	62	294
Pension from individual private plans	2,824	7	9	421
Unemployment benefits	4,458	177	202	300
Old-age benefits	16,314	690	773	510
Survivor's benefits	6,839	21	24	877
Sickness benefits	2,214	36	42	345
Disability benefits	12,851	97	100	748
Education-related allowances	2,714	54	60	450
Gross income components at personal level				
Employee cash or near cash income	24,497	1102	1,718	536
Contributions to individual private pension plans	1,079	660	725	49
Cash benefits or losses from self-employment	22,583	123	297	1,746
Value of goods produced by own-consumption	1,137	62	62	294
Pension from individual private plans	3,468	5	9	727
Unemployment benefits	4,613	171	202	337
Old-age benefits	20,669	336	773	816
Survivor's benefits	8,166	8	24	1,145
Sickness benefits	2,613	11	42	431
Disability benefits	15,357	57	100	1,030
Education-related allowances	2,714	54	60	450

Source: EU-SILC longitudinal sample 2004-2007

Weighted by db090 at household level and pb050 at personal level

Table 7 : Mean, total number of observations (before and after imputation) and standard error for income components 2006 (households & persons, weighted mean, R4/04)

	Mean	Number of observations		Standard error
		Before imputation	After imputation	
Total household gross income	41,177	492	1,479	784
Total disposable household income	31,198	919	1,479	549
Total disposable household income before social transfers other than old-age and survivors' benefits	28,402	919	1,464	543
Total disposable household income before social transfers including old-age and survivors' benefits	21,956	877	1,379	589
Net income components at household level				
Income from rental of a property or land	9,448	48	54	2,883
Family/child related allowances	4,549	565	568	130
Social exclusion not elsewhere classified	2,050	23	24	443
Housing allowances	1,403	46	48	142
Regular inter-household cash transfer received	4,422	103	105	471
Interest repayments on mortgage	375	761	1,139	49
Income received by people aged under 16	1,778	12	19	384
Regular inter-household cash transfer paid	3,477	85	92	318
Repayments/receipts for tax adjustment	-148	621	646	87
Gross income components at household level				
Income from rental of a property or land	9,066	23	53	3,253
Family/child related allowances	4,549	565	568	130
Social exclusion not elsewhere classified	2,050	23	24	443
Housing allowances	1,403	46	48	142
Regular inter-household cash transfer received	4,422	103	105	471
Interest repayments on mortgage	468	761	1,139	62
Income received by people aged under 16	1,788	9	19	384
Regular inter-household cash transfer paid	3,477	85	92	318
Tax on Income and Social Contributions	9,965	506	1,457	280
Net income components at personal level				
Employee cash or near cash income	17,233	1430	1,589	296
Contributions to individual private pension plans	1,086	677	738	49
Cash benefits or losses from self-employment	13,191	244	286	904
Value of goods produced by own-consumption	256	52	57	43
Pension from individual private plans	3,736	8	9	1,239
Unemployment benefits	4,555	163	176	347
Old-age benefits	16,007	696	756	389
Survivor's benefits	7,971	18	19	1,140
Sickness benefits	3,465	25	33	757
Disability benefits	12,715	99	103	680
Education-related allowances	2,288	36	43	465
Gross income components at personal level				
Employee cash or near cash income	24,299	970	1,589	472
Contributions to individual private pension plans	1,086	677	738	49
Cash benefits or losses from self-employment	17,675	131	286	1,194
Value of goods produced by own-consumption	256	52	57	43
Pension from individual private plans	3,740	4	9	1,239
Unemployment benefits	4,718	162	176	380
Old-age benefits	19,618	308	756	539
Survivor's benefits	9,793	8	19	1,364
Sickness benefits	4,529	10	33	1,164
Disability benefits	15,130	59	103	915
Education-related allowances	2,288	36	43	465

Source: EU-SILC longitudinal sample 2004-2007

Weighted by db090 at household level and pb050 at personal level

Table 8 : Mean, total number of observations (before and after imputation) and standard error for income components 2007 (households & persons, weighted mean, R4/04)

	Mean	Number of observations		Standard error
		Before imputation	After imputation	
Total household gross income	42,853	383	1,432	1,002
Total disposable household income	32,299	937	1,432	672
Total disposable household income before social transfers other than old-age and survivors' benefits	29,708	942	1,413	676
Total disposable household income before social transfers including old-age and survivors' benefits	22,642	915	1,334	648
Net income components at household level				
Income from rental of a property or land	5,658	42	43	834
Family/child related allowances	4,434	535	539	137
Social exclusion not elsewhere classified	3,397	20	21	822
Housing allowances	1,578	42	45	134
Regular inter-household cash transfer received	5,408	97	101	771
Interest repayments on mortgage	459	754	1,076	53
Income received by people aged under 16	4,540	9	10	1,305
Regular inter-household cash transfer paid	4,249	77	83	479
Repayments/receipts for tax adjustment	-277	631	654	61
Gross income components at household level				
Income from rental of a property or land	6,479	0	43	1,029
Family/child related allowances	4,434	531	539	137
Social exclusion not elsewhere classified	3,397	20	21	822
Housing allowances	1,578	42	45	134
Regular inter-household cash transfer received	5,408	97	101	771
Interest repayments on mortgage	573	754	1,076	67
Income received by people aged under 16	4,553	5	10	1,301
Regular inter-household cash transfer paid	4,249	77	83	479
Tax on Income and Social Contributions	10,520	387	1,410	382
Net income components at personal level				
Employee cash or near cash income	17,504	1419	1,532	309
Contributions to individual private pension plans	1,120	630	683	60
Cash benefits or losses from self-employment	16,611	222	252	1,405
Value of goods produced by own-consumption	587	72	76	122
Pension from individual private plans	5,728	8	8	3,308
Unemployment benefits	4,521	176	187	368
Old-age benefits	16,530	694	761	736
Survivor's benefits	6,635	21	22	744
Sickness benefits	3,439	32	40	675
Disability benefits	12,666	82	86	618
Education-related allowances	2,489	33	35	425
Gross income components at personal level				
Employee cash or near cash income	24,969	808	1,532	487
Contributions to individual private pension plans	1,120	630	683	60
Cash benefits or losses from self-employment	20,520	4	252	1,557
Value of goods produced by own-consumption	587	72	76	122
Pension from individual private plans	6,556	2	8	3,477
Unemployment benefits	4,793	169	187	456
Old-age benefits	20,711	321	761	1,209
Survivor's benefits	7,966	7	22	998
Sickness benefits	4,044	11	40	745
Disability benefits	15,021	40	86	887
Education-related allowances	2,489	33	35	425

Source: EU-SILC longitudinal sample 2004-2007

Weighted by db090 at household level and pb050 at personal level

Table 9 : Mean, total number of observations (before and after imputation) and standard error for income components of the cross-sectional component 2007 (households & persons, weighted)

	Mean	Number of observations		Standard error
		Before imputation	After imputation	
Total household gross income	43,535	2058	6,806	456
Total disposable household income	32,542	4379	6,806	305
Total disposable household income before social transfers other than old-age and survivors' benefits	29,972	4364	6,704	305
Total disposable household income including old-age and survivors' benefits	23,915	4058	6,178	332
Net income components at household level				
Income from rental of a property or land	8,425	272	280	904
Family/child related allowances	4,617	2425	2,437	68
Social exclusion not elsewhere classified	2,663	180	185	266
Housing allowances	1,454	256	267	55
Regular inter-household cash transfer received	4,695	495	518	283
Interest repayments on mortgage	567	3347	4,547	45
Income received by people aged under 16	3,251	58	65	311
Regular inter-household cash transfer paid	3,790	436	468	165
Repayments/receipts for tax adjustment	-310	2899	2,964	27
Gross income components at household level				
Income from rental of a property or land	10,118	0	280	1,190
Family/child related allowances	4,617	2378	2,437	68
Social exclusion not elsewhere classified	2,663	180	185	266
Housing allowances	1,454	256	267	55
Regular inter-household cash transfer received	4,695	495	518	283
Interest repayments on mortgage	709	3347	4,547	57
Income received by people aged under 16	3,758	45	65	312
Regular inter-household cash transfer paid	3,790	436	468	165
Tax on Income and Social Contributions	11,006	2219	6,688	182
Net income components at personal level				
Employee cash or near cash income	17,462	6296	7,012	172
Contributions to individual private pension plans	1,072	2822	3,036	26
Cash benefits or losses from self-employment	15,283	1158	1,297	593
Value of goods produced by own-consumption	621	376	411	56
Pension from individual private plans	8,713	39	41	754
Unemployment benefits	4,682	836	901	224
Old-age benefits	15,986	3109	3,447	238
Survivor's benefits	6,670	112	122	324
Sickness benefits	2,900	219	241	218
Disability benefits	11,670	365	377	335
Education-related allowances	2,866	167	179	140
Gross income components at personal level				
Employee cash or near cash income	25,106	4128	7,012	285
Contributions to individual private pension plans	1,072	2822	3,036	26
Cash benefits or losses from self-employment	20,168	29	1,297	753
Value of goods produced by own-consumption	621	376	411	56
Pension from individual private plans	9,468	28	41	796
Unemployment benefits	4,883	822	901	279
Old-age benefits	19,818	1578	3,447	375
Survivor's benefits	7,925	43	122	413
Sickness benefits	3,528	92	241	256
Disability benefits	13,506	224	377	423
Education-related allowances	2,866	167	179	140

Source: EU-SILC cross-sectional sample 2007

Weighted by db090 at household level and pb040 at personal level

Table 10 : The mean, the number of observations (before and after imputations) and the standard error for the equivalised disposable income 2004 (weighted, R4/04)

Equivalised disposable income	Mean	Number of observations		Standard error	S.E. / Mean
		Before imputation	After imputation		%
By household size					
1 household member	17.957	383	575	664	3,7
2 household members	19.743	820	1.490	402	2,0
3 household members	19.850	507	1.221	529	2,7
4 and more household members	17.642	1.105	2.529	323	1,8
	.				
By age groups					
< 25	17.005	839	1.811	249	1,5
25 - 34	18.477	339	693	416	2,3
35 - 44	19.478	433	940	422	2,2
45 - 54	20.852	342	822	652	3,1
55 - 64	20.605	385	715	491	2,4
65 +	17.832	477	834	429	2,4
By sex					
Male	19.054	1.356	2.820	240	1,3
Female	18.340	1.459	2.995	259	1,4
Total	18.690	2.815	5.815	221	1,2

Source: EU-SILC longitudinal sample 2004-2007

Weighted by rb060

Table 11 : The mean, the number of observations (before and after imputations) and the standard error for the equivalised disposable income 2005 (weighted, R4/04)

Equivalised disposable income	Mean	Number of observations		Standard error	S.E. / Mean
		Before imputation	After imputation		%
By household size					
1 household member	18.630	269	374	599	3,2
2 household members	22.314	587	920	804	3,6
3 household members	21.300	489	848	742	3,5
4 and more household members	18.316	1.051	1.819	611	3,3
By age groups					
< 25	18.157	752	1.260	481	2,7
25 - 34	19.262	266	413	662	3,4
35 - 44	20.063	411	656	787	3,9
45 - 54	21.938	324	575	736	3,4
55 - 64	21.987	301	505	642	2,9
65 +	20.553	342	552	940	4,6
By sex					
Male	20.232	1.175	1.941	401	2,0
Female	19.767	1.221	2.020	393	2,0
Total	19.994	2.396	3.961	374	1,9

Source: EU-SILC longitudinal sample 2004-2007

Weighted by rb060

Table 12 : The mean, the number of observations (before and after imputations) and the standard error for the equivalised disposable income 2006 (weighted, R4/04)

Equivalised disposable income	Mean	Number of observations		Standard error	S.E. / Mean
		Before imputation	After imputation		%
By household size					
1 household member	17.836	270	376	569	3,2
2 household members	21.753	601	899	553	2,5
3 household members	20.893	427	741	699	3,3
4 and more household members	18.161	921	1.678	405	2,2
By age groups					
< 25	17.922	696	1.182	324	1,8
25 - 34	18.891	220	362	622	3,3
35 - 44	19.685	323	571	536	2,7
45 - 54	20.636	324	536	539	2,6
55 - 64	23.328	305	492	753	3,2
65 +	19.084	351	551	530	2,8
By sex					
Male	19.994	1.059	1.790	310	1,5
Female	19.144	1.160	1.904	303	1,6
Total	19.561	2.219	3.694	274	1,4

Source: EU-SILC longitudinal sample 2004-2007

Weighted by rb060

Table 13 : The mean, the number of observations (before and after imputations) and the standard error for the equivalised disposable income 2007 (weighted, R4/04)

Equivalised disposable income	Mean	Number of observations		Standard error	S.E. / Mean
		Before imputation	After imputation		%
By household size					
1 household member	19.662	279	376	1.025	5,2
2 household members	21.630	596	860	635	2,9
3 household members	21.094	444	718	782	3,7
4 and more household members	19.240	923	1.543	437	2,3
		.			
By age groups					
< 25	18.462	682	1.075	365	2,0
25 - 34	19.402	219	339	570	2,9
35 - 44	20.976	337	543	753	3,6
45 - 54	22.257	326	510	579	2,6
55 - 64	22.398	314	462	675	3,0
65 +	20.051	364	568	960	4,8
By sex					
Male	20.636	1.071	1.677	320	1,6
Female	19.917	1.171	1.820	418	2,1
Total	20.268	2.242	3.497	325	1,6

Source: EU-SILC longitudinal sample 2004-2007

Weighted by rb060

Table 14 : The mean, the number of observations (before and after imputations) and the standard error for the equivalised disposable income for the cross-sectional component 2007 (weighted)

Equivalised disposable income	Mean	Number of observations		Standard error	S.E. / Mean
		Before imputation	After imputation		%
By household size					
1 household member	19,069	1,579	2,014	366	1.9
2 household members	22,193	2,996	4,150	324	1.5
3 household members	21,358	2,340	3,471	430	2.0
4 and more household members	19,044	4,796	7,049	237	1.2
By age groups					
< 25	18,466	3,602	5,105	201	1.1
25 - 34	20,063	1,302	1,841	343	1.7
35 - 44	21,111	1,880	2,669	377	1.8
45 - 54	22,511	1,668	2,397	332	1.5
55 - 64	22,145	1,409	2,011	381	1.7
65 +	19,596	1,850	2,661	334	1.7
By sex					
Male	20,802	5,628	8,037	182	0.9
Female	19,826	6,083	8,647	177	0.9
Total	20,302	11,711	16,684	163	0.8

Source: EU-SILC cross-sectional sample 2007

Weighted by rb050

2.3. Non-sampling errors

2.3.1. Sampling frame and coverage errors

The sampling frame for the first wave of the longitudinal component (2004) was the ZMR. The ZMR is a continuously updated population register based on the registration of residence. The register is administered by the federal ministry of the Interior BMI (*Bundesministerium für Inneres*). Data from the ZMR are delivered quarterly to Statistics Austria. For the sampling procedure of EU-SILC 2004 the reference date of the ZMR was December 31st 2003. Addresses already selected for the EU-SILC 2003 survey were excluded from the sample frame.

The ZMR can be expected to provide the most up-to-date representation of the resident population of Austria. Nonetheless the sample contained obsolete units at the time of the fieldwork, mainly due to changes that occurred after the sample had been drawn. These changes are for example persons who emigrated or died or persons who did not report changes of their main residence in time. Other units, such as newly built accommodation could not be included in the sampling frame.

The sampling frame was constructed from the ZMR data in quarterly intervals by aggregation of individuals to dwelling units. The entries of the ZMR comprise information on individuals and there is no key or link to identify all persons that are living in the same dwelling. So the connection of dwelling units has to be constructed by the individual address characteristics. The households constructed in this way are not always correct, mainly because of spelling errors or differences of the spelling of the addresses. However, the ZMR is regarded as the most reliable source for drawing representative samples and is also used in other surveys in Austria like the Microcensus (Labour Force Survey).

2.3.2. Measurement and processing errors

2.3.2.1. Measurement errors

Measurement errors are defined as the difference between the value of a variable (provided by the respondent) and the true but unknown value of a variable. These errors originate from four basic sources:

- the questionnaire (effects of the design, content and wording)

- the data collection method (effects of the modes of interviewing)

- the interviewer (effects of the interviewer on the response to a question including errors of the interviewer)

- the respondents (effects of the respondent on the interpretation of items)

The occurrence of these errors and their effects is almost unavoidable. However, Statistics Austria implemented various methods and procedures to reduce such effects and errors.

The original questionnaires were developed on the basis of the EU-SILC regulations and the EU-SILC doc 65 (*Description of Target Variables: Cross-sectional and Longitudinal*). They are annually adopted and revised according to changes of EUROSTATs requirements; feedback from interviewers or data checking procedures which indicated misinterpretations of particular items.

After the original contract with the fieldwork institute responsible for the survey in 2004 expired, a call for public tender had to be opened. The successful bid came from a different institute than in 2004. Hence, the data from the follow-up surveys in 2005, 2006 and 2007 was largely collected from a different pool of interviewers.

During the years 2004 to 2007 the data collection was primarily conducted using the CAPI technique (Computer Assisted Personal Interviewing). Due to the change of the fieldwork institute in 2005 the CAPI programming had to be done anew by the new fieldwork institute using a different CAPI programme. However, informed by the experience from prior surveys it was possible to expand the range of checks between 2004 and 2005 on the surface of the input devices (laptop or handheld computer), so that errors, inconsistencies and incompatibilities within a household or within an interview could be clarified and fixed already during the interview. In 2007 a small sample of follow-up interviews was conducted by Statistics Austria instead of the fieldwork institute. The aim of this strategy was to assess the suitability of the CATI technique (Computer Assisted Telephone Interviewing) for long and complex interviews as in EU-SILC. Three of these CATI interviews were conducted in the four years longitudinal rotation R4/04 of EU-SILC 2007. Differences between questionnaire implementations were kept as small as possible. However, some varieties like different answer categories for some questions and the usage of different programming tools for the questionnaire couldn't be avoided, but were expected to be too small to affect the interview results[9].

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[9] For a more detailed description of the CATI test see the Austrian intermediate quality report 2006, ch. 2.4.1.

To reduce interviewer effects it was necessary to provide the interviewers with sufficient training and support measures. These helped to ensure that all respondents were interviewed under similar conditions as far as the interviewer behaviour is concerned. The responsible fieldwork institutes conducted the interviewer training in cooperation with the EU-SILC project team of Statistics Austria. In 2004 142 interviewers were trained, in 2005 90 interviewers and in 2006 121 interviewers[10] attended the training sessions. In 2007 the fieldwork institute SPECTRA trained 66 interviewer (76 interviewer provided successful interviews)[11], at Statistics Austria 137 CAPI interviewer and 13 CATI interviewer participated in the training sessions.

Despite the efforts to keep the rate of proxy interviews low, this rate increased between 2004 and 2005 from 12.5% to 25.8%. The presented table refers only to those persons interviewed in all four waves. Since proxy interviews are a possible source of bias, Statistics Austria and the fieldwork institute aimed at keeping the rate of proxy interviews low. Having learned from the experiences from the survey of 2005[12], the fieldwork institute managed to reduce the ratio of proxy interviews from 25.8% in 2005 to 19.6% in the rotational group four in 2006[13]. In 2007 the rate of proxy interviews remained at about the same level (19.0%).

As in the last years, the ratio of proxy interviews varies considerably with the basic activity status of the respondent for whom a proxy interview had to be conducted. Retired and unemployed persons are more likely to give a personal interview (and/or are more accessible for interviews), than people in employment or self-employment.

Table 15 : Distribution of proxy interviews by activity status and year (persons interviewed in all four waves of R4/04)

	Personal Interview		Proxy Interview		Total	
	2004					
	N	%	N	%	N	%
Working	1,063	84.6	194	15.4	1,257	100.0
Unemployed	70	85.4	12	14.6	82	100.0
Retired	609	93.7	41	6.3	650	100.0
Other	370	86.9	56	13.1	426	100.0
TOTAL	2,112	87.5	303	12.5	2,415	100.0
	2005					
	N	%	N	%	N	%
Working	887	69.7	385	30.3	1,272	100.0
Unemployed	53	86.9	8	13.1	61	100.0
Retired	579	82.6	122	17.4	701	100.0
Other	303	71.8	119	28.2	422	100.0
TOTAL	1,822	74.2	634	25.8	2,456	100.0
	2006					
	N	%	N	%	N	%
Working	998	76.8	302	23.2	1,300	100.0
Unemployed	52	85.2	9	14.8	61	100.0
Retired	642	88.6	83	11.4	725	100.0
Other	325	76.7	99	23.3	424	100.0
TOTAL	2,017	80.4	493	19.6	2,510	100.0
	2007					
	N	%	N	%	N	%
Working	1,003	77.6	290	22.4	1,293	100.0
Unemployed	51	79.7	13	20.3	64	100.0
Retired	676	89.1	83	10.9	759	100.0
Other	308	77.2	91	22.8	399	100.0
TOTAL	2,038	81.0	477	19.0	2,515	100.0

Source: EU-SILC longitudinal sample 2004-2007

Activity status = recoded variable pl030

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[10] 2 interviewers in 2005 and 15 interviewers in 2006 did not provide any successful interviews.
[11] Ten interviewers of SPECTRA did not participate in the training sessions; these interviewers already interviewed for previous wave of EU-SILC.
[12] The negative or problematic aspects of proxy interviews were also communicated in the interview trainings.
[13] In the whole sample of EU-SILC 2006 the rate of proxy interviews was 19.6%.

2.3.2.2. Processing errors

As already during the fieldwork, checking of data quality is an important part of the post-data-collection editing process. Basic principles of this process are standardisation and transparency. Hence, all relevant tasks are included in a predefined process and data editing rules are generalized for subgroups to avoid single case solutions. Transparency of data changes is ensured by documentation such as programme code, copies of data files at various stages, flag variables for the collected variables and written documentations and descriptions.

Flags for collected Austrian income variables:

-2	not applicable
-1	no answer and not (yet) imputed
1	value according to survey
2	value from category imputation
3	value from net-gross or gross-net conversion
4	value logically deduced
5	value statistically imputed with longitudinal method
6	value statistically imputed with cross-sectional method
7	value from survey was corrected
8	value computed from a monthly income (this code applies only to variables of yearly income)

The data editing process consists of several checking procedures and the respective solutions:

- Assessment of unit and item non-response on household level: Households with too much lacking information are not included in the final database.

- Formal data checks (e.g. checking of completeness of data copies, correctness of routings, ranges of entered values): If required new data copies are made. Formal errors in the dataset are either corrected according to the formal requirements or in case of missing data labelled to be imputed later.

- Cross-sectional and longitudinal plausibility checks: Detected implausible values are either recoded, imputed or – for income variables – corrected through net-gross or gross-net conversion.

Imputation and weighting complete the data editing process.

With the final datasets on the macro-level the distribution of income variables and indicators are checked with various data sources (previous EU-SILC waves, ECHP, microcensus, LFS, HBS, tax statistics and national accounts) to identify implausible distributions due to errors in the data editing process.

Before transmitting the longitudinal datasets to EUROSTAT the EUROSTAT SAS checking programmes were run to detect errors in the computation and coding of target variables. These require mostly formal corrections as at this point all checking and editing regarding content has already been implemented earlier in the editing process. Cases which are identified by the checking programme as probably implausible but are considered correct were commented and sent to EUROSTAT with the first data transmission.

2.3.3. Non-response errors

2.3.3.1. Achieved sample size

Table 16 : Sample size and accepted interviews (R4/04)

	2004	2005	2006	2007
Accepted household interviews	2,276	1,541	1,479	1,432
Personal Interview accepted				
Number of persons 16 years and older	4,674	3,209	3,031	2,926
Sample Persons	4,674	74	105	163
Co-residents	0	3,135	2,926	2,763

Source: EU-SILC longitudinal sample 2004-2007

2.3.3.2. Unit non-reponse

Table 17 : Indicators of unit non-response (R4/04)

	2004
Address successfully contacted	3,685
Valid addresses selected	3,732
Ra - address contact rate %	98.7%
Number of household interviews completed and accepted for the database	2,276
Number of households at contacted address	3,685
Rh - proportion of completed interviews %	61.8%
NRh - HH non-response rate %	38.2%
Personal interviews completed	4,640
number of eligible individuals	4,674
Rp - individual response rate %	99.3%
NRp - individual non-response rate %	0.7%
Overall individual non-response rate *NRp %	39.5%

Source: EU-SILC longitudinal sample 2004-2007

Ra is the ratio of the number of addresses successfully completed to the number of valid addresses selected.

Rh is the ratio of the number of household interviews completed and accepted for the database to the number of eligible households at the contacted address.

Rp is the ratio of the number of personal interviews completed to the number of eligible individuals in the households whose interviews where completed and accepted.

Table 18 : Household response rate: Comparison of result codes between wave 2 and wave 1 (R4/04)

		Sample outcome in wave 2 - 2005											Total
		DB130 = 11											
		DB135 = 1	DB135 = 2	DB120 = 22	DB130 = 22	DB130 = 23	DB130 = 24	DB130 = 21	DB120=21	NC	DB110 = 10	DB120 = 23	
Sample outcome in wave 1 - 2004													
	DB130 = 11 DB135 = 1	1,512	0	0	226	47	2	428	0	61	0	0	2,276
	DB135 = 2	0	0	0	0	0	0	0	0	0	0	0	0
	DB120 = 21												
	DB120 = 22												
2004	DB120 = 23												
	DB130 = 21												
	DB130 = 22												
	DB130 = 23												
	DB130 = 24												
	Total	1,512	0	0	226	47	2	428	0	61	0	0	2,276
New Households in wave 2 - 2005													
2005	DB110 = 8	29	0	0	19	0	0	10	8	NA	NA	0	66
	DB110 = 9	0	0	0	0	0	0	0	0	NA	NA	0	0
Total		1,541	0	0	245	47	2	438	8	61	0	0	2,342

Source: EU-SILC longitudinal sample 2004-2007

NC: Not contacted; db110 in (3,4,5,6,7)

Response rates for households wave 2 and wave 1 (R4/04):

wave response rate	0.658	Ratio of successfully interviewed households which were followed up from wave 1 to wave 2 to all followed up housholds in wave 2.
long follow up rate	0.785	Percentage of contacted households within the households received into wave 2 from wave 1, excluding those out of scope or non-existent.
follow-up ratio	0.806	Number of contacted households in comparison to the number of households received for follow-up at wave 2 from wave 1.
achieved sample size ratio	0.677	Ratio of the number of households accepted for the database in wave 2 to the number of households accepted for the database in wave 1.

Table 19 : Household response rate: Comparison of result codes between wave 3 and wave 2 (R4/04)

			Sample outcome in wave 3 - 2006										Total
		DB130 = 11											
		DB135 = 1	DB135 = 2	DB120 = 22	DB130 = 22	DB130 = 23	DB130 = 24	DB130 = 21	DB120=21	NC	DB110 = 10	DB120 = 23	
Sample outcome in wave 2 - 2005													
	DB130 = 11 — DB135 = 1	1,342	0	0	46	12	0	123	0	17	1	0	1,541
	DB135 = 2	0	0	0	0	0	0	0	0	0	0	0	0
	DB120 = 22	0	0	0	0	0	0	0	0	0	0	0	0
2005	DB130 = 22	107	0	0	45	2	0	70	0	21	0	0	245
	DB130 = 23	15	0	0	3	8	0	13	0	8	0	0	47
	DB130 = 24	1	0	0	0	0	0	1	0	0	0	0	2
	Total	1,465	0	0	94	22	0	207	0	46	1	0	1,835
New Households in wave 3 - 2006													
2006	DB110 = 8	14	0	0	14	1	0	11	5	NA	NA	0	45
	DB110 = 9	0	0	0	0	0	0	0	0	NA	NA	0	0
Total		1479	0	0	108	23	0	218	5	46	1	0	1880

Source: EU-SILC longitudinal sample 2004-2007

NC: Not contacted; db110 in (3,4,5,6,7)

Response rates for households wave 3 and wave 2 (R4/04):

wave response rate	0.787	Ratio of successfully interviewed households which were followed up from wave 2 to wave 3 to all followed up housholds in wave 3.
long follow up rate	0.830	Percentage of contacted households within the households received into wave 3 from wave 2, excluding those out of scope or non-existent.
follow-up ratio	0.846	Number of contacted households in comparison to the number of households received for follow-up at wave 3 from wave 2.
achieved sample size ratio	0.960	Ratio of the number of households accepted for the database in wave 3 to the number of households accepted for the database in wave 2.

Table 20 : Household response rate: Comparison of result codes between wave 4 and wave 3 (R4/04)

			DB130 = 11		Sample outcome in wave 4 - 2007									Total
			DB135 = 1	DB135 = 2	DB120 = 22	DB130 = 22	DB130 = 23	DB130 = 24	DB130 = 21	DB120=21	NC	DB110 = 10	DB120 = 23	
Sample outcome in wave 3 - 2006														
	DB130 = 11	DB135 = 1	1,379	0	0	19	6	1	54	0	19	1	0	1,479
		DB135 = 2	0	0	0	0	0	0	0	0	0	0	0	0
	DB120 = 22		0	0	0	0	0	0	0	0	0	0	0	0
2006	DB130 = 22		28	0	0	7	0	0	7	0	4	0	0	46
	DB130 = 23		5	0	0	0	2	0	4	0	1	0	0	12
	DB130 = 24		0	0	0	0	0	0	0	0	0	0	0	0
	Total		1,412	0	0	26	8	1	65	0	24	1	0	1,537
New Households in wave 4 - 2007														
2007	DB110 = 8		0	0	0	2	0	0	5	8	NA	NA	0	15
	DB110 = 9		0	0	0	0	0	0	0	0	NA	NA	0	0
Total			1,412	0	0	28	8	1	70	8	24	1	0	1,552

Source: EU-SILC longitudinal sample 2004-2007

NC: Not contacted; db110 in (3,4,5,6,7)

Response rates for households wave 4 and wave 3 (R4/04):

wave response rate	0.910	Ratio of successfully interviewed households which were followed up from wave 3 to wave 4 to all followed up housholds in wave 4.
long follow up rate	0.936	Percentage of contacted households within the households received into wave 4 from wave 3, excluding those out of scope or non-existent.
follow-up ratio	0.937	Number of contacted households in comparison to the number of households received for follow-up at wave 4 from wave 3.
achieved sample size ratio	0.955	Ratio of the number of households accepted for the database in wave 4 to the number of households accepted for the database in wave 3.

Table 21 : Personal Interview outcome in wave 2 (R4/04)

		2005												
				Not completed because of										
		RB250 = 11,12,13	RB250=14 *	RB250 = 21	RB250 = 22	RB250 = 23	RB250 = 31	RB250 = 32	RB250 = 33	HHnc		Pn	PI	TOTAL
										HHnc1	HHnc2			
Row	*Sample persons forwarded from last wave*													
1	RB110 = 1-2	3039	18	0	0	0	0	0	0					3057
2	RB110 = 6													30
3	RB110 = -1													0
4	RB120 = 2													5
5	RB120 = 3													11
6	RB120 = 4													13
7	DB135 = 2 or -1, or DB110 = 7, or DB120 = 21-23 or -1, or DB130 == 21-24 or -1													0
8	DB110 = 3-6													0
	New Sample Persons													
9	Reached age 16	47	0	0	0	0	0	0	0	0	0	0	0	47
10	Sample additions	0	0	0	0	0	0	0	0					0
	Non-Sample persons 16+													
11	From wave 1 - 2004	0	0	0	0	0	0	0	0	0	0	0	0	0
	From wave 2 - 2005	73	1	0	0	0	0	0	0	0	0	0	0	74
	Sample persons not forwarded from last wave (excluded died or not eligible according to tracing rules)													
13	From 2004													66
	Sum of Rows													
	1+3+6+7+9+10	3086	18	0	0	0	0	0	0	0	0	0	0	3117
	1+3+6+7+9+10+13	3086	18	0	0	0	0	0	0	0	0	0	0	3183
	1+3+6+7+9+10+11	3159	19	0	0	0	0	0	0	0	0	0	0	3191

Source: EU-SILC longitudinal sample 2004-2007

* Interviews not completed, though contact was made, data completed by imputation

Response rates for persons wave 2 and wave 1 (R4/04):

wave response rate of sample persons	0.990	achieved sample size ratio for sample persons	0.767
wave response rate of co-residents	n.a.	achieved sample size ratio for sample persons and coresidents	0.785
longitudinal follow-up rate	0.970	achieved sample size ratio for co-residents selected in previous wave	n.a.
R(RB250=14)	0.006	response rate for non-sample persons	0.986

Table 22 : Personal Interview outcome in wave 3 (R4/04)

		RB250 = 11,12,13	RB250=14 *	RB250 = 21	RB250 = 22	RB250 = 23	RB250 = 31	RB250 = 32	RB250 = 33	HHnc1	HHnc2	Pn	PI	TOTAL
						Not completed because of				HHnc				
Row	*Sample persons forwarded from last wave*													
1	RB110 = 1-2	2648	7	0	0	0	0	0	0					2655
2	RB110 = 6													19
3	RB110 = -1													0
4	RB120 = 2													7
5	RB120 = 3													9
6	RB120 = 4													3
7	DB135 = 2 or -1, or DB110 = 7, or DB120 = 21-23 or -1, or DB130 == 21-24 or -1													0
8	DB110 = 3-6													0
	New Sample Persons													
9	Reached age 16	49	0	0	0	0	0	0	0	0	0	0	0	49
10	Sample additions	0	0	0	0	0	0	0	0					0
	Non-Sample persons 16+													
11	From wave 2 - 2005	53	2	0	0	0	0	0	0	0	0	0	0	55
	From wave 3 - 2006	50	0	0	0	0	0	0	0	0	0	0	0	50
	Sample persons not forwarded from last wave (excluded died or not eligible according to tracing rules)													
13	From 2005													47
	Sum of Rows													
1+3+6+7+9+10		2697	7	0	0	0	0	0	0	0	0	0	0	2707
1+3+6+7+9+10+13		2697	7	0	0	0	0	0	0	0	0	0	0	2754
1+3+6+7+9+10+11		2747	7	0	0	0	0	0	0	0	0	0	0	2757

Source: EU-SILC longitudinal sample 2004-2007

* Interviews not completed, though contact was made, data completed by imputation

Response rates for persons wave 3 and wave 2 (R4/04):

wave response rate of sample persons	0.996	achieved sample size ratio for sample persons	0.778
wave response rate of co-residents	0.964	achieved sample size ratio for sample persons and coresidents	0.793
longitudinal follow-up rate	0.979	achieved sample size ratio for co-residents selected in previous wave	0.726
R(RB250=14)	0.003	response rate for non-sample persons	0.981

Table 23 : Personal Interview outcome in wave 4 (R4/04)

		RB250 = 11,12,13	RB250=14 *	RB250 = 21	RB250 = 22	RB250 = 23	RB250 = 31	RB250 = 32	RB250 = 33	HHnc HHnc1	HHnc2	Pn	PI	TOTAL
						2007 Not completed because of								
Row	*Sample persons forwarded from last wave*													
1	RB110 = 1-2	2679	5	0	0	0	0	0	0					2684
2	RB110 = 6													14
3	RB110 = -1													0
4	RB120 = 2													2
5	RB120 = 3													5
6	RB120 = 4													4
7	DB135 = 2 or -1, or DB110 = 7, or DB120 = 21-23 or -1, or DB130 == 21-24 or -1													0
8	DB110 = 3-6													0
	New Sample Persons													
9	Reached age 16	50	0	0	0	0	0	0	0	0	0	0	0	50
10	Sample additions	0	0	0	0	0	0	0	0					0
	Non-Sample persons 16+													
11	From wave 3 - 2006	79	1	0	0	0	0	0	0	0	0	0	0	80
	From wave 4 - 2007	83	0	0	0	0	0	0	0	0	0	0	0	83
	Sample persons not forwarded from last wave (excluded died or not eligible according to tracing rules)													
13	From 2006													36
	Sum of Rows													
	1+3+6+7+9+10	2729	5	0	0	0	0	0	0	0	0	0	0	2738
	1+3+6+7+9+10+13	2729	5	0	0	0	0	0	0	0	0	0	0	2774
	1+3+6+7+9+10+11	2812	5	0	0	0	0	0	0	0	0	0	0	2821

Source: EU-SILC longitudinal sample 2004-2007

* Interviews not completed, though contact was made, data completed by imputation

Response rates for persons wave 4 and wave 3 (R4/04):

wave response rate of sample persons	0.997	achieved sample size ratio for sample persons	0.769
wave response rate of co-residents	0.988	achieved sample size ratio for sample persons and coresidents	0.793
longitudinal follow-up rate	0.984	achieved sample size ratio for co-residents selected in previous wave	0.767
R(RB250=14)	0.002	response rate for non-sample persons	0.994

2.3.3.3.   Distribution of households by household status (DB110), by record of contact at the address (DB120), by household questionnaire result (DB130) and by household interview acceptance (DB135)

Table 24 : Distribution of households by household status (R4/04)

		db110 =									
	Total	1	2	3	4	5	6	7	8	9	10
2004											
Total	3,787	0	0	0	0	0	0	0	0	3,787	0
%	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0
2005											
Total	2,342	2142	73	1	4	3	4	49	66	0	0
%	100.0	91.5	3.1	0.0	0.2	0.1	0.2	2.1	2.8	0.0	0.0
2006											
Total	1,881	1696	92	3	1	15	9	18	46	0	1
%	100.0	90.2	4.9	0.2	0.1	0.8	0.5	1.0	2.4	0.0	0.1
2007											
Total	1,573	1446	66	3	6	8	1	7	35	0	1
%	100.0	91.9	4.2	0.2	0.4	0.5	0.1	0.4	2.2	0.0	0.1

Source: EU-SILC longitudinal sample 2004-2007

Table 25 : Distribution of households by contact at address (R4/04)

		db120 =					
	Total	11	21	22	23	24	Missing
2004							
Total	3,787	3685	35	1	55	11	0
%	100.0	97.3	0.9	0.0	1.5	0.3	0.0
2005							
Total	2,342	131	8	0	0	0	2,203
%	100.0	3.5	0.2	0.0	0.0	0.0	94.1
2006							
Total	1,881	133	5	0	0	0	1,743
%	100.0	3.5	0.1	0.0	0.0	0.0	92.7
2007							
Total	1,573	93	8	0	0	0	1,472
%	100.0	2.5	0.2	0.0	0.0	0.0	93.6

Source: EU-SILC longitudinal sample 2004-2007

Table 26 : Distribution of households by household questionnaire result (R4/04)

		db130 =					
	Total	11	21	22	23	24	Missing
2004							
Total	3,787	2,318	861	362	19	125	102
%	100.0	61.2	22.7	9.6	0.5	3.3	2.7
2005							
Total	2,342	1,541	438	245	47	2	69
%	100.0	65.8	18.7	10.5	2.0	0.1	2.9
2006							
Total	1,881	1,479	218	108	23	1	52
%	100.0	78.6	11.6	5.7	1.2	0.1	2.8
2007							
Total	1,573	1432	70	28	8	1	34
%	100.0	91.0	4.5	1.8	0.5	0.1	2.2

Source: EU-SILC longitudinal sample 2004-2007

Table 27 : Distribution of households by household interview acceptance (R4/04)

		db135 =		
	Total	1	2	Missing
2004				
Total	3,787	2,276	42	1,469
%	100.0	60.1	1.1	38.8
2005				
Total	2,342	1,541	0	801
%	100.0	65.8	0.0	34.2
2006				
Total	1,881	1,479	0	402
%	100.0	78.6	0.0	21.4
2007				
Total	1,573	1,432	0	141
%	100.0	91.0	0.0	9.0

Source: EU-SILC longitudinal sample 2004-2007

2.3.3.4. Distribution of persons for membership status

The following tables are provided for the second, third and fourth wave of the EU-SILC longitudinal component.

Table 28 : Distribution of persons by membership status (R4/04)

	Total	Current household members				Not current household members		
		RB110 = 1	RB110 = 2	RB110 = 3	RB110 = 4	RB110 = 5	RB110 = 6	RB110 = 7
2005	4,212	3,885	31	100	45	111	30	10
%	100.0	92.2	0.7	2.4	1.1	2.6	0.7	0.2
2006	3,926	3,702	18	60	29	95	22	0
%	100.0	99.0	0.5	1.6	0.8	2.5	0.6	0.0
2007	3,738	3,559	27	34	25	79	14	0
%	100.0	95.2	0.7	0.9	0.7	2.1	0.4	0.0

Source: EU-SILC longitudinal sample 2004-2007

Table 29 : Distribution of persons by membership status (R4/04)

	RB110 = 5					
	RB120 = 1			Not current household members		
	Total	This person is a current household member of another household this wave	This person is not a current household member	RB110 = 2	RB110 = 3	RB110 = 4
2005	111	31	44	6	13	17
%	100	27.9	39.6	5.4	11.7	15.3
2006	95	14	56	8	11	6
%	100	14.7	58.9	8.4	11.6	6.3
2007	76	26	31	2	7	10
%	100	34.2	40.8	2.6	9.2	13.2

Source: EU-SILC longitudinal sample 2004-2007

2.3.3.5. Item non-response

The following tables provide an overview of non-response on household and individual level. For every income component the total number of households/persons having received the component is given and a breakdown with regard to the completeness of the information. The percentages next to the totals in the first column refer to the ratio of the number of households/persons having received an amount of the respective income component compared to the number of all completed household or personal interviews (i.e. DB135=1 or RB245 in [11;12;13;14]). The tables cover the dataset for each wave and for each wave the fraction interviewed in all four waves.

Table 30 : Information on item non-response on household level – households 2004 (R4/04)

		Households having received an amount		Full information		Partial information		Missing information	
		Total	% of all interviewed households	Total	%	Total	%	Total	%
Household incomes									
HY010	Total household gross income	2,276	100.0	784	34.4	1,063	46.7	429	18.8
HY020	Total disposable household income	2,276	100.0	1,183	52.0	954	41.9	139	6.1
HY022	Total disposable household income before social transfers other than old-age and survivors' benefits	2,237	98.3	1,185	53.0	802	35.9	250	11.2
HY023	Total disposable household income including old-age and survivors' benefits	1,931	84.8	979	50.7	672	34.8	280	14.5
Net income components at household level									
HY040N	Income from rental of a property or land	129	5.7	101	78.3	7	5.4	21	16.3
HY050N	Family/child related allowances	879	38.6	783	89.1	89	10.1	7	0.8
HY060N	Social exclusion not elsewhere classified	55	2.4	50	90.9	1	1.8	4	7.3
HY070N	Housing allowances	90	4.0	85	94.4	4	4.4	1	1.1
HY080N	Regular inter-household cash transfer received	173	7.6	151	87.3	3	1.7	19	11.0
HY090N	Interest, dividends, profit from capital investments	580	25.5	171	29.5	40	6.9	369	63.6
HY110N	Income received by people aged under 16	24	1.1	19	79.2	0	0.0	5	20.8
HY130N	Regular inter-household cash transfer paid	159	7.0	145	91.2	5	3.1	9	5.7
HY145N	Repayments/receipts for tax adjustment	776	34.1	766	98.7	3	0.4	7	0.9
Gross income components at household level									
HY040G	Income from rental of a property or land	129	5.7	51	39.5	21	16.3	57	44.2
HY050G	Family/child related allowances	879	38.6	783	89.1	89	10.1	7	0.8
HY060G	Social exclusion not elsewhere classified	55	2.4	50	90.9	1	1.8	4	7.3
HY070G	Housing allowances	90	4.0	85	94.4	4	4.4	1	1.1
HY080G	Regular inter-household cash transfer received	173	7.6	151	87.3	3	1.7	19	11.0
HY090G	Interest, dividends, profit from capital investments	580	25.5	134	23.1	31	5.3	415	71.6
HY110G	Income received by people aged under 16	24	1.1	10	41.7	0	0.0	14	58.3
HY130G	Regular inter-household cash transfer paid	159	7.0	145	91.2	5	3.1	9	5.7
HY140G	Tax on Income and Social Contributions	2,221	97.6	760	34.2	1,225	55.2	236	10.6

Source: EU-SILC longitudinal sample 2004-2007

Table 31 : Information on item non-response on household level – households 2005 (R4/04)

		Households having received an amount		Full information		Partial information		Missing information	
		Total	% of all interviewed households	Total	%	Total	%	Total	%
Household incomes									
HY010	Total household gross income	1,541	100.0	568	36.9	862	55.9	111	7.2
HY020	Total disposable household income	1,541	100.0	910	59.1	620	40.2	11	0.7
HY022	Total disposable household income before social transfers other than old-age and survivors' benefits	1,530	99.3	920	60.1	589	38.5	21	1.4
HY023	Total disposable household income including old-age and survivors' benefits	1,459	94.7	895	61.3	473	32.4	91	6.2
Net income components at household level									
HY040N	Income from rental of a property or land	64	4.2	47	73.4	15	23.4	2	3.1
HY050N	Family/child related allowances	619	40.2	615	99.4	3	0.5	1	0.2
HY060N	Social exclusion not elsewhere classified	31	2.0	29	93.5	1	3.2	1	3.2
HY070N	Housing allowances	53	3.4	50	94.3	2	3.8	1	1.9
HY080N	Regular inter-household cash transfer received	117	7.6	111	94.9	0	0.0	6	5.1
HY090N	Interest, dividends, profit from capital investments	1,207	78.3	811	67.2	98	8.1	298	24.7
HY110N	Income received by people aged under 16	13	0.8	11	84.6	0	0.0	2	15.4
HY130N	Regular inter-household cash transfer paid	124	8.0	116	93.5	3	2.4	5	4.0
HY145N	Repayments/receipts for tax adjustment	676	43.9	642	95.0	11	1.6	23	3.4
Gross income components at household level									
HY040G	Income from rental of a property or land	64	4.2	30	46.9	10	15.6	24	37.5
HY050G	Family/child related allowances	619	40.2	615	99.4	3	0.5	1	0.2
HY060G	Social exclusion not elsewhere classified	31	2.0	29	93.5	1	3.2	1	3.2
HY070G	Housing allowances	53	3.4	50	94.3	2	3.8	1	1.9
HY080G	Regular inter-household cash transfer received	117	7.6	111	94.9	0	0.0	6	5.1
HY090G	Interest, dividends, profit from capital investments	1,207	78.3	811	67.2	98	8.1	298	24.7
HY110G	Income received by people aged under 16	13	0.8	9	69.2	0	0.0	4	30.8
HY130G	Regular inter-household cash transfer paid	124	8.0	116	93.5	3	2.4	5	4.0
HY140G	Tax on Income and Social Contributions	1,518	98.5	556	36.6	919	60.5	43	2.8

Source: EU-SILC longitudinal sample 2004-2007

Table 32 : Information on item non-response on household level – households 2006 (R4/04)

		Households having received an amount		Full information		Partial information		Missing information	
		Total	% of all interviewed households	Total	%	Total	%	Total	%
Household incomes									
HY010	Total household gross income	1,479	100.0	492	33.3	884	59.8	103	7.0
HY020	Total disposable household income	1,479	100.0	919	62.1	556	37.6	4	0.3
HY022	Total disposable household income before social transfers other than old-age and survivors' benefits	1,464	99.0	919	62.8	535	36.5	10	0.7
HY023	Total disposable household income including old-age and survivors' benefits	1,379	93.2	877	63.6	444	32.2	58	4.2
Net income components at household level									
HY040N	Income from rental of a property or land	54	3.7	48	88.9	1	1.9	5	9.3
HY050N	Family/child related allowances	568	38.4	565	99.5	3	0.5	0	0.0
HY060N	Social exclusion not elsewhere classified	24	1.6	23	95.8	0	0.0	1	4.2
HY070N	Housing allowances	48	3.2	46	95.8	1	2.1	1	2.1
HY080N	Regular inter-household cash transfer received	105	7.1	103	98.1	0	0.0	2	1.9
HY090N	Interest, dividends, profit from capital investments	1,139	77.0	761	66.8	86	7.6	292	25.6
HY110N	Income received by people aged under 16	19	1.3	12	63.2	0	0.0	7	36.8
HY130N	Regular inter-household cash transfer paid	92	6.2	85	92.4	3	3.3	4	4.3
HY145N	Repayments/receipts for tax adjustment	646	43.7	621	96.1	9	1.4	16	2.5
Gross income components at household level									
HY040G	Income from rental of a property or land	53	3.6	23	43.4	9	17.0	21	39.6
HY050G	Family/child related allowances	568	38.4	565	99.5	3	0.5	0	0.0
HY060G	Social exclusion not elsewhere classified	24	1.6	23	95.8	0	0.0	1	4.2
HY070G	Housing allowances	48	3.2	46	95.8	1	2.1	1	2.1
HY080G	Regular inter-household cash transfer received	105	7.1	103	98.1	0	0.0	2	1.9
HY090G	Interest, dividends, profit from capital investments	1,139	77.0	761	66.8	86	7.6	292	25.6
HY110G	Income received by people aged under 16	19	1.3	9	47.4	0	0.0	10	52.6
HY130G	Regular inter-household cash transfer paid	92	6.2	85	92.4	3	3.3	4	4.3
HY140G	Tax on Income and Social Contributions	1,457	98.5	506	34.7	917	62.9	34	2.3

Source: EU-SILC longitudinal sample 2004-2007

Table 33 : Information on item non-response on household level – households 2007 (R4/04)

		Households having received an amount		Full information		Partial information		Missing information	
		Total	% of all interviewed households	Total	%	Total	%	Total	%
Household incomes									
HY010	Total household gross income	1,432	100.0	383	26.7	940	65.6	109	7.6
HY020	Total disposable household income	1,432	100.0	937	65.4	492	34.4	3	0.2
HY022	Total disposable household income before social transfers other than old-age and survivors' benefits	1,413	98.7	942	66.7	467	33.1	4	0.3
HY023	Total disposable household income including old-age and survivors' benefits	1,334	93.2	915	68.6	361	27.1	58	4.3
Net income components at household level									
HY040N	Income from rental of a property or land	43	3.0	42	97.7	0	0.0	1	2.3
HY050N	Family/child related allowances	539	37.6	535	99.3	4	0.7	0	0.0
HY060N	Social exclusion not elsewhere classified	21	1.5	20	95.2	0	0.0	1	4.8
HY070N	Housing allowances	43	3.0	42	97.7	0	0.0	1	2.3
HY080N	Regular inter-household cash transfer received	101	7.1	97	96.0	0	0.0	4	4.0
HY090N	Interest, dividends, profit from capital investments	1,076	75.1	754	70.1	64	5.9	258	24.0
HY110N	Income received by people aged under 16	10	0.7	9	90.0	0	0.0	1	10.0
HY130N	Regular inter-household cash transfer paid	83	5.8	77	92.8	2	2.4	4	4.8
HY145N	Repayments/receipts for tax adjustment	654	45.7	631	96.5	8	1.2	15	2.3
Gross income components at household level									
HY040G	Income from rental of a property or land	43	3.0	0	0.0	0	0.0	43	100.0
HY050G	Family/child related allowances	539	37.6	531	98.5	8	1.5	0	0.0
HY060G	Social exclusion not elsewhere classified	21	1.5	20	95.2	0	0.0	1	4.8
HY070G	Housing allowances	45	3.1	42	93.3	2	4.4	1	2.2
HY080G	Regular inter-household cash transfer received	101	7.1	97	96.0	0	0.0	4	4.0
HY090G	Interest, dividends, profit from capital investments	1,076	75.1	754	70.1	64	5.9	258	24.0
HY110G	Income received by people aged under 16	10	0.7	5	50.0	0	0.0	5	50.0
HY130G	Regular inter-household cash transfer paid	83	5.8	77	92.8	2	2.4	4	4.8
HY140G	Tax on Income and Social Contributions	1,410	98.5	387	27.4	1,009	71.6	14	1.0

Source: EU-SILC longitudinal sample 2004-2007

Table 34 : Information on item non-response on individual level – persons 2004 (R4/04)

		Persons having received an amount		Full information		Partial information		Missing information	
		Total	%	Total	%	Total	%	Total	%
Net income components at personal level									
PY010N	Employee cash or near cash income	2,465	52.7	1,796	72.9	68	2.8	601	24.4
PY035N	Contributions to individual private pension plans	924	19.8	0	0.0	924	100.0	0	0.0
PY050N	Cash benefits or losses from self-employment	452	9.7	271	60.0	10	2.2	171	37.8
PY070N	Value of goods produced by own-consumption	92	2.0	73	79.3	0	0.0	19	20.7
PY080N	Pension from individual private plans	46	1.0	32	69.6	0	0.0	14	30.4
PY090N	Unemployment benefits	324	6.9	269	83.0	8	2.5	47	14.5
PY100N	Old-age benefits	1,104	23.6	924	83.7	31	2.8	149	13.5
PY110N	Survivor's benefits	46	1.0	37	80.4	0	0.0	9	19.6
PY120N	Sickness benefits	90	1.9	59	65.6	1	1.1	30	33.3
PY130N	Disability benefits	141	3.0	117	83.0	1	0.7	23	16.3
PY140N	Education-related allowances	4	0.1	3	75.0	0	0.0	1	25.0
Gross income components at personal level									
PY010G	Employee cash or near cash income	2,465	52.7	1,556	63.1	84	3.4	825	33.5
PY035G	Contributions to individual private pension plans	924	19.8	0	0.0	924	100.0	0	0.0
PY050G	Cash benefits or losses from self-employment	452	9.7	128	28.3	45	10.0	279	61.7
PY070G	Value of goods produced by own-consumption	92	2.0	73	79.3	0	0.0	19	20.7
PY080G	Pension from individual private plans	46	1.0	15	32.6	0	0.0	31	67.4
PY090G	Unemployment benefits	324	6.9	264	81.5	9	2.8	51	15.7
PY100G	Old-age benefits	1,104	23.6	508	46.0	62	5.6	534	48.4
PY110G	Survivor's benefits	46	1.0	15	32.6	1	2.2	30	65.2
PY120G	Sickness benefits	90	1.9	20	22.2	3	3.3	67	74.4
PY130G	Disability benefits	141	3.0	77	54.6	4	2.8	60	42.6
PY140G	Education-related allowances	4	0.1	3	75.0	0	0.0	1	25.0

Source: EU-SILC longitudinal sample 2004-2007

Table 35 : Information on item non-response on individual level – persons 2005 (R4/04)

		Persons having received an amount		Full information		Partial information		Missing information	
		Total	%	Total	%	Total	%	Total	%
Net income components at personal level									
PY010N	Employee cash or near cash income	1,694	52.8	1,507	89.0	101	6.0	86	5.1
PY035N	Contributions to individual private pension plans	715	22.3	650	90.9	0	0.0	65	9.1
PY050N	Cash benefits or losses from self-employment	293	9.1	191	65.2	59	20.1	43	14.7
PY070N	Value of goods produced by own-consumption	61	1.9	61	100.0	0	0.0	0	0.0
PY080N	Pension from individual private plans	9	0.3	7	77.8	0	0.0	2	22.2
PY090N	Unemployment benefits	199	6.2	174	87.4	9	4.5	16	8.0
PY100N	Old-age benefits	773	24.1	690	89.3	47	6.1	36	4.7
PY110N	Survivor's benefits	24	0.7	21	87.5	0	0.0	3	12.5
PY120N	Sickness benefits	42	1.3	36	85.7	0	0.0	6	14.3
PY130N	Disability benefits	99	3.1	96	97.0	0	0.0	3	3.0
PY140N	Education-related allowances	59	1.8	53	89.8	0	0.0	6	10.2
Gross income components at personal level									
PY010G	Employee cash or near cash income	1,694	52.8	1,084	64.0	99	5.8	511	30.2
PY035G	Contributions to individual private pension plans	715	22.3	650	90.9	0	0.0	65	9.1
PY050G	Cash benefits or losses from self-employment	293	9.1	120	41.0	34	11.6	139	47.4
PY070G	Value of goods produced by own-consumption	61	1.9	61	100.0	0	0.0	0	0.0
PY080G	Pension from individual private plans	9	0.3	5	55.6	0	0.0	4	44.4
PY090G	Unemployment benefits	199	6.2	168	84.4	11	5.5	20	10.1
PY100G	Old-age benefits	773	24.1	336	43.5	146	18.9	291	37.6
PY110G	Survivor's benefits	24	0.7	8	33.3	5	20.8	11	45.8
PY120G	Sickness benefits	42	1.3	11	26.2	9	21.4	22	52.4
PY130G	Disability benefits	99	3.1	57	57.6	11	11.1	31	31.3
PY140G	Education-related allowances	59	1.8	53	89.8	0	0.0	6	10.2

Source: EU-SILC longitudinal sample 2004-2007

Table 36 : Information on item non-response on individual level – persons 2006 (R4/04)

		Persons having received an amount		Full information		Partial information		Missing information	
		Total	%	Total	%	Total	%	Total	%
Net income components at personal level									
PY010N	Employee cash or near cash income	1,575	52.0	1,418	90.0	100	6.3	57	3.6
PY035N	Contributions to individual private pension plans	731	24.1	671	91.8	0	0.0	60	8.2
PY050N	Cash benefits or losses from self-employment	285	9.4	243	85.3	6	2.1	36	12.6
PY070N	Value of goods produced by own-consumption	57	1.9	52	91.2	0	0.0	5	8.8
PY080N	Pension from individual private plans	9	0.3	8	88.9	0	0.0	1	11.1
PY090N	Unemployment benefits	174	5.7	161	92.5	5	2.9	8	4.6
PY100N	Old-age benefits	755	24.9	696	92.2	35	4.6	24	3.2
PY110N	Survivor's benefits	19	0.6	18	94.7	0	0.0	1	5.3
PY120N	Sickness benefits	33	1.1	25	75.8	1	3.0	7	21.2
PY130N	Disability benefits	103	3.4	99	96.1	1	1.0	3	2.9
PY140N	Education-related allowances	43	1.4	36	83.7	0	0.0	7	16.3
Gross income components at personal level									
PY010G	Employee cash or near cash income	1,575	52.0	962	61.1	75	4.8	538	34.2
PY035G	Contributions to individual private pension plans	731	24.1	671	91.8	0	0.0	60	8.2
PY050G	Cash benefits or losses from self-employment	285	9.4	131	46.0	20	7.0	134	47.0
PY070G	Value of goods produced by own-consumption	57	1.9	52	91.2	0	0.0	5	8.8
PY080G	Pension from individual private plans	9	0.3	4	44.4	0	0.0	5	55.6
PY090G	Unemployment benefits	174	5.7	160	92.0	5	2.9	9	5.2
PY100G	Old-age benefits	755	24.9	308	40.8	165	21.9	282	37.4
PY110G	Survivor's benefits	19	0.6	8	42.1	4	21.1	7	36.8
PY120G	Sickness benefits	33	1.1	10	30.3	3	9.1	20	60.6
PY130G	Disability benefits	103	3.4	59	57.3	8	7.8	36	35.0
PY140G	Education-related allowances	43	1.4	36	83.7	0	0.0	7	16.3

Source: EU-SILC longitudinal sample 2004-2007

Table 37 : Information on item non-response on individual level – persons 2007 (R4/04)

		Persons having received an amount		Full information		Partial information		Missing information	
		Total	%	Total	%	Total	%	Total	%
Net income components at personal level									
PY010N	Employee cash or near cash income	1,513	51.7	1,401	92.6	83	5.5	29	1.9
PY035N	Contributions to individual private pension plans	675	23.1	622	92.1	0	0.0	53	7.9
PY050N	Cash benefits or losses from self-employment	252	8.6	222	88.1	4	1.6	26	10.3
PY070N	Value of goods produced by own-consumption	76	2.6	72	94.7	0	0.0	4	5.3
PY080N	Pension from individual private plans	8	0.3	8	100.0	0	0.0	0	0.0
PY090N	Unemployment benefits	185	6.3	174	94.1	5	2.7	6	3.2
PY100N	Old-age benefits	761	26.0	694	91.2	57	7.5	10	1.3
PY110N	Survivor's benefits	22	0.8	21	95.5	0	0.0	1	4.5
PY120N	Sickness benefits	40	1.4	32	80.0	1	2.5	7	17.5
PY130N	Disability benefits	86	2.9	82	95.3	2	2.3	2	2.3
PY140N	Education-related allowances	35	1.2	33	94.3	0	0.0	2	5.7
Gross income components at personal level									
PY010G	Employee cash or near cash income	1,513	51.7	795	52.5	79	5.2	639	42.2
PY035G	Contributions to individual private pension plans	675	23.1	622	92.1	0	0.0	53	7.9
PY050G	Cash benefits or losses from self-employment	252	8.6	4	1.6	10	4.0	238	94.4
PY070G	Value of goods produced by own-consumption	76	2.6	72	94.7	0	0.0	4	5.3
PY080G	Pension from individual private plans	8	0.3	2	25.0	0	0.0	6	75.0
PY090G	Unemployment benefits	185	6.3	167	90.3	5	2.7	13	7.0
PY100G	Old-age benefits	761	26.0	321	42.2	143	18.8	297	39.0
PY110G	Survivor's benefits	22	0.8	7	31.8	3	13.6	12	54.5
PY120G	Sickness benefits	40	1.4	11	27.5	4	10.0	25	62.5
PY130G	Disability benefits	86	2.9	40	46.5	9	10.5	37	43.0
PY140G	Education-related allowances	35	1.2	33	94.3	0	0.0	2	5.7

Source: EU-SILC longitudinal sample 2004-2007

2.4. Mode of data collection

Table 38 : Distribution of household members by data status – all household members (16+) (R4/04)

	Total	RB250 = 11	RB250 = 12	RB250 = 14	RB250 = 21	RB250 = 23
2004						
Total	4,674	4,640	0	34	0	0
%	100.0	99.3	0.0	0.7	0.0	0.0
2005						
Total	3,209	3,190	0	19	0	0
%	100.0	99.4	0.0	0.6	0.0	0.0
2006						
Total	3,031	3,022	0	9	0	0
%	100.0	99.7	0.0	0.3	0.0	0.0
2007						
Total	2,926	2,920	0	6	0	0
%	100.0	99.8	0.0	0.2	0.0	0.0
2004-2007						
Total	13,840	13,772	0	68	0	0
%	100.0	99.5	0.0	0.5	0.0	0.0

Source: EU-SILC longitudinal sample 2004-2007

Table 39 : Distribution of household members by data status – sample persons (16+) (R4/04)

	Total	RB250 = 11	RB250 = 12	RB250 = 14	RB250 = 21	RB250 = 23
2004						
Total	4,674	4,640	0	34	0	0
%	100.0	99.3	0.0	0.7	0.0	0.0
2005						
Total	3,135	3,117	0	18	0	0
%	100.0	99.4	0.0	0.6	0.0	0.0
2006						
Total	2,926	2,919	0	7	0	0
%	100.0	99.8	0.0	0.2	0.0	0.0
2007						
Total	2,763	2,758	0	5	0	0
%	100.0	99.8	0.0	0.2	0.0	0.0
2004-2007						
Total	13,498	13,434	0	64	0	0
%	100.0	99.5	0.0	0.5	0.0	0.0

Source: EU-SILC longitudinal sample 2004-2007

Table 40 : Distribution of household members by data status – co-residents (16+) (R4/04)

	Total	RB250 = 11	RB250 = 12	RB250 = 14	RB250 = 21	RB250 = 23
2004						
Total	0	0	0	0	0	0
%	0.0	0.0	0.0	0.0	0.0	0.0
2005						
Total	74	73	0	1	0	0
%	100.0	98.6	0.0	1.4	0.0	0.0
2006						
Total	105	103	0	2	0	0
%	100.0	98.1	0.0	1.9	0.0	0.0
2007						
Total	163	162	0	1	0	0
%	100.0	99.4	0.0	0.6	0.0	0.0
2004-2007						
Total	342	338	0	4	0	0
%	100.0	98.8	0.0	1.2	0.0	0.0

Source: EU-SILC longitudinal sample 2004-2007

Table 41 : Distribution of household members by type of interview– all household members (16+) (R4/04))

	Total	RB260 = 1	RB260 = 2	RB260 = 3	RB260 = 4	RB260 = 5
2004						
Total	4,640	0	3,967	0	0	673
%	100.0	0.0	85.5	0.0	0.0	14.5
2005						
Total	3,190	0	2,085	235	0	870
%	100.0	0.0	65.4	7.4	0.0	27.3
2006						
Total	3,022	0	2,400	21	0	601
%	100.0	0.0	79.4	0.7	0.0	19.9
2007						
Total	2,920	0	2,346	3	0	571
%	100.0	0.0	80.3	0.1	0.0	19.6
2004-2007						
Total	13,772	0	10,798	259	0	2,715
%	100.0	0.0	78.4	1.9	0.0	19.7

Source: EU-SILC longitudinal sample 2004-2007

Table 42 : Distribution of household members by type of interview– sample persons (16+) (R4/04)

	Total	RB260 = 1	RB260 = 2	RB260 = 3	RB260 = 4	RB260 = 5
2004						
Total	4,640	0	3,967	0	0	673
%	100.0	0.0	85.5	0.0	0.0	14.5
2005						
Total	3,117	0	2,047	234	0	836
%	100.0	0.0	65.7	7.5	0.0	26.8
2006						
Total	2,919	0	2,332	21	0	566
%	100.0	0.0	79.9	0.7	0.0	19.4
2007						
Total	2,758	0	2,256	3	0	499
%	100.0	0.0	81.8	0.1	0.0	18.1
2004-2007						
Total	13,434	0	10,602	258	0	2,574
%	100.0	0.0	78.9	1.9	0.0	19.2

Source: EU-SILC longitudinal sample 2004-2007

Table 43 : Distribution of household members by type of interview– co-residents (16+) (R4/04)

	Total	RB260 = 1	RB260 = 2	RB260 = 3	RB260 = 4	RB260 = 5
2004						
Total	0	0	0	0	0	0
%	0.0	0.0	0.0	0.0	0.0	0.0
2005						
Total	73	0	38	1	0	34
%	100.0	0.0	52.1	1.4	0.0	46.6
2006						
Total	103	0	68	0	0	35
%	100.0	0.0	66.0	0.0	0.0	34.0
2007						
Total	162	0	90	0	0	72
%	100.0	0.0	55.6	0.0	0.0	44.4
2004-2007						
Total	338	0	196	1	0	141
%	100.0	0.0	58.0	0.3	0.0	41.7

Source: EU-SILC longitudinal sample 2004-2007

2.5.   Imputation procedure

The following chapter describes the imputation procedures in EU-SILC 2004, EU-SILC 2005, EU-SILC 2006 and EU-SILC 2007.

General remarks

The imputation procedures in EU-SILC 2004, EU-SILC 2005, EU-SILC 2006 and EU-SILC 2007 are very similar except for the application of longitudinal imputation procedures in EU-SILC 2005, EU-SILC 2006 and EU-SILC 2007. Imputation refers to all procedures to estimate and insert variable values that are missing due to item non-response.

These procedures comprise

- deductive methods

- deterministic methods

- stochastic methods

Deductive methods refer to imputation procedures in which the true value of a missing item is logically deduced. This means that the value is either deduced from other variables of the survey or is derived from legal regulations. An example for the first mode of deductions is the net-gross-net conversion, when either the gross value or the net value is given and the corresponding missing value is calculated by applying general rules. An example for the latter mode is when the value of the childcare benefit (*Kinderbetreuungsgeld*) is missing and the effectual value can be inserted.

The difference between deterministic and stochastic methods is whether the calculation procedure to calculate the missing item includes a residual term or not. Deterministic methods were primarily used in cases when the integration of a residual term seemed unreasonable. Stochastic methods were mainly used to estimate missing income variables. Imputation procedures were both applied to complete missing information because of unit-non response or because of item-non response.

Missing personal interviews

Statistics Austria replaces missing personal interviews of persons that could not be interviewed because of temporary absence, because of refusal of cooperation or because of other reasons. To do so, a distance function to determine an appropriate donor case to complete the information for the missing interview is applied. The distance function uses a given set of variables to compute the similarity of interviews and ranks the interviews accordingly. Then the nearest neighbour is determined as a donor, given that a set of minimum requirements is fulfilled:

- The donor case and the case with the missing personal interview share the same sex.

- The interview is not a proxy interview.

- The donor case should share the same employment status[14]

Here the procedure varies between the waves, as in EU-SILC 2005, EU-SILC 2006 and EU-SILC 2007 two procedures of imputing missing personal interviews were possible: the person has been interviewed for the first time or the person was interviewed in the previous year. For missing interviews in EU-SILC 2004 only the cross-sectional procedure was possible. When the person was interviewed in the preceding survey, the information of the last years' interview was used to calculate the distance function. The interviews of the previous year were ranked and the nearest neighbour was identified as the donor for the missing interview. The information of the donor in 2005, 2006 and 2007 respectively was then used to impute the required information. The variables that were used to compute the distance function are listed below.

Table 44 : Variables used for the distance function with longitudinal information for full record imputation (2005-2007)

No.	Variable
1	Sex
2	Age
3	Current employment situation
4	Household size
5	Number of children under 18 in the household
6	Number of persons over 60 in the household
7	Federal state / NUTS 2
8	Highest level of education attained
9	Suffer from any chronic illness or condition / limitation in activities because of health problems
10	Household income
11	Number of months in employment / self-employment
12	Number of months in self-employment

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[14] This was done by determining the number of ranks up until this constraint is fulfilled.

When the person with the missing personal interview was not interviewed in the last year, no previous interview could be used to calculate the distance function. Only the information from the household and personal registers was available. Hence the number of variables for the distance function was shorter. These variables are listed below.

Table 45 : Variables used for the distance function for cross-sectional imputations for full record imputation (2005-2007)

No.	Variable
1	Density of population
2	Sex
3	Age
4	Household size
5	Employment status
6	Federal state / NUTS 2
7	Number of children under 18 in the household
8	Number of persons over 60 in the household
9	Household income

For EU-SILC 2004 60, for EU-SILC 2005 55, for EU-SILC 2006 36 and for EU-SILC 2007 59 interviews were imputed. In the longitudinal component (rotation R4/04) 34 interviews were imputed for the year 2004, 19 interviews for the year 2005, 9 interviews for the year 2006 and 6 interviews for the year 2007.

Procedures to handle item non-response.

As far as item non-response is concerned, Statistics Austria in general only imputed net income variables, missing gross variables were calculated by the net-gross conversion. Item non-response of income variables occurred because of three reasons: either the information whether an income of a particular type was received or not was missing, or the information about the months an income component was received was missing, or the amount of the income was missing.

If the information whether an income component had been received was missing, Statistics Austria tried to deduce this information from other variables (e.g. the information on main activity). If it was not possible to derive this information from other questions of the questionnaire, it was assumed that no income of this kind was received.

If the information about the number of months was missing, Statistics Austria again tried to derive the length of a period an income component had been received from other variables of the survey. If this was not possible, a value according to a random number was imputed.

The question of missing income values received special attention. Basically, the respondents had more than one possibility to provide information about their income: they could provide either the gross or the net income amount, or they could provide information about their income by declaring an income category. The latter possibility was foreseen to reduce the number of missing income values. The interviewer presented show cards to support the respondent to identify the approximate range, and in case of unwillingness to respond, to reduce the burden to give an answer. If an income variable was missing but either the gross or the net amount was declared, the corresponding missing value was computed according to a model based on Austrian tax data. If the respondent declared an income category to give the information about the income received, Statistics Austria then assigned an income value by selecting a random value from within this income category ("hotdeck" procedure).

If the respondent refused to give any information about the income, Statistics Austria applied deductive, stochastic and deterministic methods of imputation. Deductive methods were applied when the 'correct' value could be calculated from information from the questionnaire or the legal regulations. Estimations made by these methods produce comparatively exact results that are relatively close to the missing true value.

For other missing income information Statistics Austria applied two approaches: longitudinal and cross-sectional imputation. The longitudinal method was used when the person with the missing information had declared a value in 2004, 2005 or 2006. For all other cases the cross-sectional imputation method was used.

The deterministic longitudinal imputation procedure is based on the row-and-column-method of Little and Su[15]. As suggested by the name, the method uses the row effects and the column effects of the data to identify an appropriate donor case. The row effect, then, is the development of the variable between waves, and the column effect quantifies the relation of one case to all other observations in the sample. This results in a total effect that is used to sort the data file. The nearest neighbour is then used as a donor value.

As cross-sectional imputation Statistics Austria used regression models as estimation procedures. The estimated values were then added with a residual term to prevent the attenuation of the variance. This estimation procedure required the specification of several regression models per income component to ensure that a value can be estimated in case of missing values in predictor variables in the most sophisticated models.

The predictors were selected according to their predictive capability (variation of the R^2) and / or according to theoretical assumptions about the response variable. In cases where no regression model could be specified the

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[15] Little, Roderick J.A. / Su, Hong-Lin (1989), *Item Non-response in Panel Surveys.* In: Kasprzyk/Duncan/Kalton/Singh (1989), *Panel Surveys.* New York, p. 400-425

missing information was estimated by using the group mean or the group median of the distribution added with a random residual term.

The following figure describes the procedure for missing information for income questions.

Figure 3: Editing procedure for income data
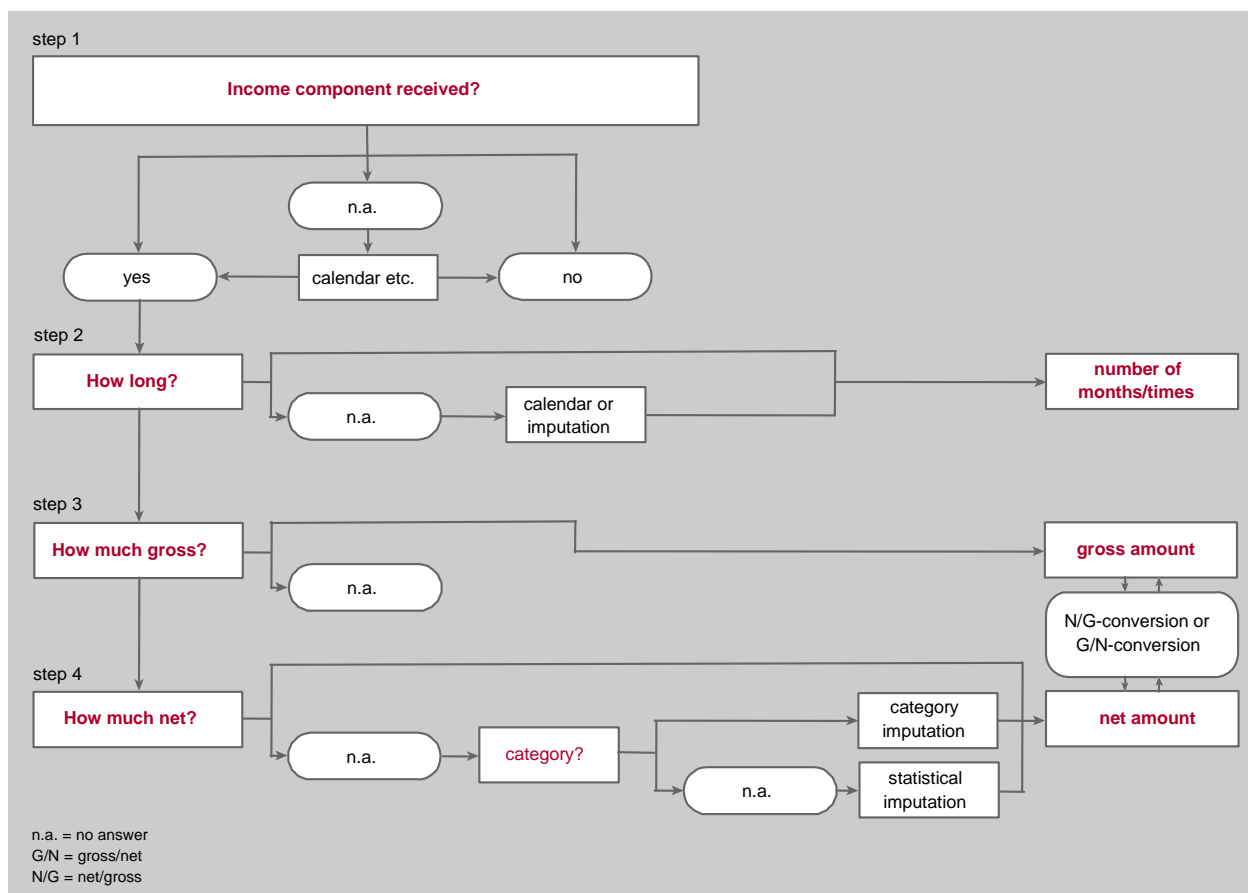
2.6. Imputed rent

For the waves 2004, 2005 and 2006 Statistic Austria has not calculated imputed rents. However, in 2007 Imputed rents (HY030G/N) became obligatory.

Households living in a self-owned dwelling or in a rent-free dwelling or in a dwelling that is rented at a reduced rate enjoy a financial advantage compared to households living in a rented dwelling. The idea of imputed rents is, then, to quantify and estimate that financial advantage for the computation of household incomes. The aim, then, is to estimate the virtual rent for self-owned dwellings (and rent-free dwellings and dwellings rented at a reduced rate), that a household would have to pay on the free market for its dwelling. This virtual rent, then, is used as a proxy for the financial advantage and is calculated as the imputed rent.

In EU-SILC 2007, the imputed rent is in short calculated on the basis of the data of the Austrian microcensus. On the basis of the microcensus data linear regression models are used to estimate the rent for those dwellings, for which no rent information is available (including those dwellings that are rented at a reduced price). This estimate is then used as imputed rent. For dwellings that are rented at a reduced rate, the imputed rent equals the difference between the actually paid rent and the estimated virtual rent for the dwelling.[16]

For a 67% of all households an imputed rent has been calculated: for 52% owner-occupied dwellings, for 7% rent-free dwellings and for 272,000 dwellings that are rented at a reduced rate. The dwellings for which a rent has been imputed differ considerably from rented dwellings: dwellings for which a rent was calculated were mainly in single family houses or semi-detached houses (71% of all dwelling with imputed rent), whereas only less than 10 percent of all rented dwellings belong to these building types.
Overall, the median imputed rent per household is 3,440 Euro per year. In sum, the imputed rent accounts for 8.650 billon Euro; this is about 7.5% of the sum of the total disposable household income. There is no difference between net and gross imputed rent.

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[16] For details on the computation of the imputed rents see the final report of the EU-SILC Study on Comparability of National Implementation, Part 2, Computation of imputed rents.

2.7. Company cars

The private use of a company car was recorded in the questionnaire of all four years. The value of this use was deduced according to the relevant tax regulations. The value is included in the variable PY010.

3. Comparability

This chapter reports on the differences between EUROSTAT definitions and the definitions applied in EU-SILC 2004, EU-SILC 2005, EU-SILC 2006 and EU-SILC 2007. It also reports on the impact of these differences on the comparability.

3.1. Basic concepts and definitions

(a)   Reference population

No difference to the common definition in all four waves.

(b)   Private household

The following definition refers to EU-SILC 2004, EU-SILC 2005, EU-SILC 2006 and EU-SILC 2007 similarly.
Private households are generally defined as a person living alone or a group of persons living in the same dwelling. All persons at the dwelling form the household as shared expenses are assumed. .
Household members thus are:

- All persons who are actually living in the dwelling unit,. The question whether these residents have their main residence in this particular dwelling, is not relevant. Only those dwellings are included in the sampling frame in which at least one person age 16 years or older has his or her main residence.

- Lodgers, visitors, au-pairs and guests are considered members of the household if they stay or intend to stay 6 months or longer in the household, or if they do not have any other home address.

- Persons who are temporarily away for less than 6 months and are not members of other private households.

- Household members who are absent for 6 months or longer who are not members of other private households and/or are children or partners of actual household members.

- Under the assumption of sharing expenses only one household per dwelling was counted.

- From 2007 onwards the definition is applied more precisely to better comply with the EUROSTAT definition: If there is more than one household living in one dwelling and not sharing expenses, they are collected as different households. If the persons living at the particular address clearly do not share their expenses (meaning for example a lodger is paying for his or her rent and does not share utility costs or food with the rest of the household), a separate additional household is be registered at the same address. Flat-sharing communities are in most of the cases considered as one household because in the majority of cases the members of such communities are sharing their living costs. If the expenses of the flat-sharing community are not shared, meaning that the payments for rent, operating costs and daily expenses are paid individually, the members would constitute individual households.

The following groups of persons connected to the household are not considered as household members:

- Persons 6 months or longer away from the household and not parents or children of actual household members

- Persons less than 6 months away from the household but living in or constituting another private household.

(c)   Household membership

Given the difference of the definitions of private household, the definitions of household membership differ analogously.

(d)   Income period(s) used

No difference to the common definition. The income reference year for EU-SILC 2004 was 2003, for EU-SILC 2005 the year 2004, for EU-SILC 2006 the year 2005 and for EU-SILC 2007 the year 2006.

(e)   The period for taxes on income and social insurance contributions

No difference to the common definition. Income reference years again were 2003, 2004, 2005 and 2006, meaning that repayments and receipts of tax adjustments are measured if the money was paid or received in the respective year.

(f)   The reference period for taxes on wealth

There are no taxes on wealth in Austria.

(g)   The lag between the income reference period and current variables

For EU-SILC 2004 the gap between the income reference period and the data of the interview was in all cases shorter than 7 months. For EU-SILC 2005 the fieldwork was finished at the end of November, exceeding the recommended termination of the fieldwork by three months. In 2006 the fieldwork period started on the 6th of April and ended on the 24th of September. In 2007 the fieldwork was conducted from the 16th of March to the 23rd of September. Therefore, in EU-SILC 2006 and EU-SILC 2007 the gap between the income reference period and the current period exceeded the prescribed gap of 8 month by 3 weeks.

(h)   The total duration of the data collection of the sample

The data collection for EU-SILC 2004 lasted 20 weeks and the last data files were received by Statistics Austria on the 27th of July 2004. For EU-SILC 2005 the data collection period lasted 33 weeks and the last files were received on the 19th of January 2006. For EU-SILC 2006 data collection period lasted 23 weeks. Additionally, until the middle of October several call-backs were carried out, so that the final files were received on the 24th of October 2006. in 2007 data were collected for 27 weeks, the final files all arrived until 25th of October 2007.

(i)   Basic information on activity status during the income reference period

In all waves the information was collected with the questionnaire by an activity calendar covering each month of the income reference period.

3.2.   Components of income

3.2.1. Differences between the national definitions and standard EU-SILC definitions

Income components where no difference between national and standard definitions can be found are not mentioned. The differences between the national and the EUROSTAT definitions refer to all three waves unless stated otherwise. Some additional remarks are also given in this chapter. Please note that they do not refer to incomparabilities.

(a)   Total household gross income (HY010)

The Austrian questionnaire comprised questions on two income components that are not target variables of EU-SILC. These components were, first, the income received by persons doing their military service or civilian service, and, second, "other income, not elsewhere classified". The latter question was integrated to avoid under-recording caused by misunderstandings. The total disposable household (gross) income contains these two income components. On individual level, the income from military/civilian service was integrated with the income for employees and the "other income" was merged either with the employee income, the income from self-employment or old-age benefits, depending on plausibility. This application of the definitions of target variables in the document EU-SILC 065 is coherent with the guidelines of EUROSTAT.

(b)   Total disposable household income (HY020)

See above (HY010).

(c)   Total disposable household income, before social transfers other than old-age and survivors' benefits (HY022)

See above (HY010).

(d)   Total disposable household income, before social transfers including old-age and survivors' benefits (HY023)

See above (HY010).

(e)   Family related allowances (HY050)

In 2003 and 2004 education related allowances were included in HY050 when the amount of the income depended on the recipient's personal and/or family income. This was changed in EU-SILC 2005 and from now on all education related allowances are reported in variable PY140. The impact of this change on HY050 is however small, as education related allowances only made a very small share on the total family related allowances.

(f)   Cash-or near-cash employee income (PY010)

This variable additionally includes payments in kind for the private use of company cars, income from compulsory military or civilian service, other income not elsewhere classified (if plausible) and proportional lump-sum payments if the person is employed for more than 1 month. According to the document EU-SILC 065 the fully taxable value for the private use of the company car as near cash income can be included in PY010 because PY021 (company car) foresees a value which indicates the including of the company car in another variable ("-4 – amount included in another component"). Income from civilian/military service and lump sum payments are also added to PY010. If

plausible, "other incomes not elsewhere classified" have been added to PY010 as well. This approach is coherent with EUROSTAT's definitions of target variables.

(g)   Non-cash employee income (PY020)

Payments in kind for the private use of a company car are included in PY010. Other payments in kind were recorded for the first time in EU-SILC 2005 but according to the regulation they are only included in PY020 from 2007 on: free lodging, free meals, fuel/electricity, other non-cash income.

(h)   Cash profits or losses from self-employment (PY050)

This income component includes additionally other income not elsewhere classified, if plausible (see above (HY010)). In EU-SILC 2004 the exact amount of losses was not recorded but these cases were assigned an income of 1 in the target variables to distinguish between persons who were not self-employed and those who were but had a negative income. From 2005 onwards negative incomes were recorded too. Additionally, sales revenues from privately sold goods (like sold fruits from the own garden) were added to this income component in 2006. In 2007 no gross variables were surveyed, but the respondents were asked to give the amount paid for social security and income tax for their self-employment. These payments were added to the net amounts to obtain the gross amounts.

The question concerning the privately sold goods appears in the household questionnaire to avoid double reporting. The whole amount is attributed to the person with the highest income from self-employment or, in case that there is no self-employed within the household, to the person with the lowest personal income.[17]

If plausible, "other incomes not elsewhere classified" have been added to PY050 as well. This approach is coherent with EUROSTAT's definitions of target variables.

(i) Value of goods produced for own consumption

This component was collected from 2005 on and is mandatory from 2007 on. PY070 was not included in the household income yet to allow for comparisons with previous results. Again this question appears in the household questionnaire, otherwise we are not sure to avoid double reporting. The whole amount is attributed to the person with the highest income from self-employment or, in case that there is no self-employed person within the household, to the person with the lowest personal income. From 2006 onwards sales revenues from privately sold goods are not included (see PY050).

(j)   Unemployment benefits (PY090)

If the person is unemployed (for at least 2 months), this income component includes proportional lump-sum payments. These refer to severance payments which are to be included according to the document EU-SILC 065.

(k)   Old-age benefits (PY100)

Since the standard retirement age in Austria is 65 years for men and 60 years for women, it contains all pension benefits paid to persons aged 65/60 or over, including other incomes not elsewhere included if the person is retired. This approach is coherent with EUROSTAT's definitions of target variables.

(l)   Education related allowances (PY140)

See above HY050. As to the changes mentioned above PY140 from EU-SILC 2005 on can not be directly compared to values from 2003 and 2004.

(m)   Interest repayments on mortgages (HY100)

Interest repayments and mortgages are another income component that became part of the EU-SILC survey in 2007. The variable HY10N/G estimates the interest repayments on mortgages, thus the costs of a mortgage for dwelling. So if the imputed rent considers the self-owned, rent-free and dwellings at a reduced rate as a financial advantage of the household, the variable HY100N/G takes into account the costs of the purchase of the dwelling. Additionally, also dwellings rented at a prevailing or market rate can have interest repayments on mortgages. For example, dwellings rented from a cooperative society (*Genossenschaft*) include some kind of one-time financing payment (*Genossenschaftsbeitrag*) which may require that a tenant of such a dwelling has to borrow on mortgage.

EU-SILC 2007 in Austria collected the parameters of up to three different mortgages. These details were then used to calculate the interest payments as part of the total payments for the mortgage. This calculation is based on a model of interest payments since a direct question on the interest payments resulted in questionable results.

(n)   Employer's social contributions (PY030)

PY030 is the third income variable that has been asked only since the last year of the longitudinal component of EU-SILC 2004-2007. Employer's social contributions are calculated as a percentage of employee cash or near cash income (PY010G/N). According to the type of employment (manual workers, clerks, civil servants and tenured civil servants) different percentage rates for health insurance, accident insurance, pension insurance, unemployment insurance and contributions for the severance pay account (*Betriebliche Mitarbeitervorsorge*).

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[17] In the revised EU-SILC Doc 65 it is also recommended to ask the amount on household level and assign it to a member of the household.

The employer's social contribution equals about 20% of the income for manual workers and clerks, and about 8% for employees in the civil service. However, the employer's social contributions are not added to the household incomes.

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

All income data have been collected with questionnaires. The EU-SILC income target variables were split into more differentiated sub-components. These sub-components were defined according to the Austrian tax regulations and benefit system and not directly recorded in the survey. Some components were calculated on the basis of auxiliary information given in the questionnaire. For example the amount of family allowances was calculated upon the number and age of children receiving this benefit.

Between the four waves from EU-SILC 2004 to EU-SILC 2007 the questionnaire was partly revised for some income variables.

Changes from 2005 onwards[18]:

Cash profits or losses from self-employment (PY050) and income from rental of a property or land (HY040) were recorded as monthly drawings from business instead of annual gross income. This seems to be more reliable and valid, the reported income is higher. Also, from 2005 onwards negative incomes were registered. Profits from contracts for services (*Werkvertrag*) and profits for quasi-freelance contracts (*freier Dienstvertrag*) were asked in one question.

Cash-or near-cash employee income (PY010) was recorded in more detailed survey components. Monthly income was asked instead of annual income– however if the respondent chose to answer to the annual income question this was also possible. Besides the regular monthly income amounts for "13th and 14th month" salaries and amounts for holiday remunerations, tips, bonus payments, overtime pay, severance pay, commissions, family related payments of the employer, benefits for commuting expenses and other payments of the employer were asked. This is an improvement to 2004 where "13th and 14th month" salaries, overtime pay, commissions and "other benefits" were named, but not separately surveyed. Plus, a new show-card was used to activate respondents to remember their receipts better. Additionally, benefits in kind were asked in more detail.

The unemployment benefits (PY090) included the special unemployment assistance (*Sondernotstandsunterstützung*) in 2004. The question about this benefit was replaced from 2005 onwards by a question about the part-time benefit for older workers (*Altersteilzeitgeld*).

The collection of education related allowances (PY140) was revised to cover the Austrian benefit structure more appropriately without increasing the burden for the interviewees.

In 2004 the questions for the receipt of alimonies were asked in the personal questionnaire, from 2005 onwards these questions are included in the household questionnaire.

In 2004 the exact amount of the long-term care benefit was asked. In 2005 this was changed because this benefit is available in ranks (*Pflegestufen*), which refer to a certain amount. Hence, from 2005 onwards these ranks are asked.

Interest, dividends and profit from capital investment (HY090): As interviewers reported this to be an especially difficult question we eased the response burden by only asking one question on all of these income components in total, revising order of the appearance and adapting the wording of the question in EU-SILC 2005.

2004 it was asked: Please tell me if you had any of the following incomes?

- Income from interests yes/no

- Income from dividends yes/no

- Income from investments in business yes/no

- Other income from capital yes/no

For each component gross and net amounts were asked repeatedly.

From 2005 onwards it is asked: Did you own one or several of the following assets in 2004: Saving book, saving contract, shares, options, licences, etc.

If yes: All in all what was your net profit in 2004?

Changes implemented in 2006 and 2007:

In EU-SILC 2006, changes were implemented mainly with regard to the routing of the questionnaire and with regard to checks of the CAPI programme.

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[18] cf. the Intermediate Quality Report for EU-SILC 2005 in Austria, ch. 3.2.2 and 4.1.1

2007 was the first year of the Austrian EU-SILC operation where computer assisted telephone interviews were conducted (CATI technique) However the majority of interviews (93.8%) were still carried out with computer assisted personal interviewing (CAPI). The CATI method was tested on a small subsample of follow-up households (21 CATI interviews were done by the fieldwork institute, 553 CATI interviews were conducted by Statistics Austria). CATI will be used more widely from EU-SILC 2008 onwards.

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

Respondents were asked for all income components that are subject to taxation and/or social security contribution, to give the net and gross amount. Gross in this context means that if a component is subject to taxes and social security contributions both amounts were included. Employer's contributions were not taken into account.

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

Gross and net income variables were asked separately, if applicable. If the respondents were not willing or not able to provide one of these amounts (net or gross) Statistics Austria calculated the missing value on the basis of the information given, e.g. if the net value was given and the gross value was missing, the gross value was calculated on the basis of the net value. If both values were missing (and the respondent refused or was not able to give an income class), Statistics Austria first imputed the net value and then calculated the gross value on the basis of the imputed net value (see chapter 2.5).

The conversion between net and gross values for employees' income and pensions was carried out on the basis of tax statistics. This means wage tax statistics for the income reference year. Income from self-employment was converted on the basis of regression models which used the information of complete cases (cases where the net and the gross value was given).

3.3. Tracing rules

For the second, third and fourth wave of the longitudinal component of EU-SILC, the tracing rules as laid down in the document EU-SILC 065 were applied. To identify the residence of persons moving from one address to another address, Statistics Austria made use of the ZMR.