

Final Quality Report

relating to the

EU-SILC 2006 Operation

Version 2

Denmark

Copenhagen 2009

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1. COMMON LONGITUDINAL EUROPEAN UNION INDICATORS BASED ON THE LONGITUDINAL COMPONENT OF EU-SILC

Not applicable as the 2006 longitudinal indicators are not yet calculated.

2. ACCURACY

2.1. Sample design

2.1.1. Type of sampling design (stratified, multi-stage, clustered)

Denmark has adopted the 4-year rotational integrated design recommended by Eurostat. The sample is drawn as a sample of persons. The sub-samples are sampled by simple random sampling.

2.1.2. Sampling units (one stage, two stages)

The sample is a one stage sample. The sampling unit is the individual person (the selected person). The current household of the selected person is defined as the household of which the selected person is member at the beginning of the survey year (1 January). The sampling frame is all persons aged 13+ living in private households. Only households, where selected person are 16 or more at the beginning of the survey year, are surveyed.

2.1.3. Stratification and substratification criteria

Not applicable, the sample was drawn in a simple random sampling procedure.

2.1.4. Sample size and allocation criteria

Longitudinal Component 2006 is based on 4 subsamples (rotational groups) selected in 2003, 2004, 2005 and 2006 respectively. For each sub-sample 2.500 households have been selected. Not all of them are eligible cf. chapter 2.1.2

2.1.5. Sample selection schemes

Not applicable, since Denmark uses simple random sampling.

2.1.6. Sample distribution over time

The sample is not distributed over time.

2.1.7. Renewal of sample: rotational groups

Longitudinal Component 2006 consisted of 3 sequences ending in 2006. One sequence covering 2003-2006, one sequence covering 2004-2006 and one sequence covering 2005-2006.

The sequence 2003-2006 includes rotational group 4 selected 2003.

The sequence 2004-2006 includes group 4 selected 2003 and group 1 selected in 2004.

The sequence 2005-2006 includes group 4 selected 2003, group 1 selected 2003 and group 2 selected 2005.

Table 2.1.7.a shows the composition of the 2006 cross-sectional sample, which is the basis of the longitudinal component. See also chapter 2.3.1.

	<i>Selected 2003</i>	<i>Selected 2004</i>	<i>Selected 2005</i>	<i>Selected 2006</i>	<i>Total</i>
Number initially selected	2.500	2.500	2.500	2.500	10.000
- selected person out of scope at the beginning of 2006	128	101	58	1	288
- selected person not 16+	0	34	74	114	222
Number in the sample	2372	2365	2368	2385	9490
Notes:					
Out of scope includes					
<ul style="list-style-type: none">• selected persons, who have moved to a collective household or an institution within the country,• selected persons, who have moved outside the country and• selected persons, who have died					
Selected persons not 16+ includes					
<ul style="list-style-type: none">• persons below 16 selected for the survey but not yet included cf. section 2.1.2					

2.1.8 Weightings

2.1.8.1 Design Factor

The design effect (or design factor) compares the variance of two different estimators. That is the actual estimator in use and a simple estimator exploiting no auxiliary information in the estimation. Thus the design effect indicates the loss/gain in precision as a consequence of the choice of estimator.

A design effect below 1 indicates an improved estimator, whereas a design effect above 1 indicates a decrease in precision. In this case the actual estimator is the regression estimator and the auxiliary information in use is strongly correlated with variables in the survey. The design effect for the share of households below the ‘at risk of poverty threshold’ is 0.014 indicating a very efficient estimator.

2.1.8.2 Non-response Adjustments

In a preliminary paper “*EU-SILC weighting procedures: an outline*” by Vijay Verma (2006), an integrated procedure is described to obtain both longitudinal and cross-sectional weights for SILC. The idea is to create some “base weights”, which are assigned to all persons in a panel from when the panel starts in the sample. These base weights are then adapted in subsequent waves, depending on the likelihood of certain people disappearing from the panel. Persons appearing in an existing household in the panel also get a weight.

Disappearance from the panel is modelled by logistic regression, resulting in a probability that a certain person is continuing to the next wave. The base weights are then multiplied by the inverse of this probability.

New entrances into the panel, such as newborn babies get the base weight of their mother, and new cohabitating persons in a household get a base weight depending on whether they come from completely outside the population or from a household that already existed in the population.

The above mentioned paper describe how exactly the base weights in the different waves should be calculated and how the cross-sectional and longitudinal weights are derived from them.

We have **directly** adopted the method described in the paper mentioned above in our derivation of the longitudinal weights. The reasons for this are the following:

1. We assume that the cross-sectional weights in any wave of a panel give a better approximation for the inclusion probabilities of households and persons in the sample at that particular time, than the above mentioned adapted base weights. The difference between the adapted base weights and the cross-sectional weights is assumed to become larger the longer a panel has been participating in SILC.

An example of a situation where there arises a difference is when a person enters a sample household from another non-sample household in the population. This person will initially get zero base weight in the wave where he enters. The weights of all household members are subsequently averaged and assigned to all persons in the household. In contrast, this person gets a cross-sectional household (and person) weight, which depends on the number of persons over 15 in that household at that particular wave. This means that his cross-sectional weight differs, depending on whether the person is below or above 15, whereas there is no difference for the adapted base weight.

2. In determining the adapted base weights for successive waves, a logistic regression is used for determining the probability that persons in the panel continue to the next wave. However, we can use register information to calibrate for nonresponse. This is assumed to give a better estimation of the equivalent of the base weight changes due to exit of persons from the sample.
3. With the base weight method, it is not clear how to include households that have not responded in the first wave, but have responded in the next waves. In the Danish SILC design, this is of importance, because we sample in reality among people over 13. However, only households around sampled persons over 15 are observed in the first wave. In the second wave, the households around sampled persons who are at that time over 15 are surveyed, etc. This is done to avoid that persons of 16, 17, or 18 years old are underrepresented among the sampled persons in a given panel. In addition, a household refusing to respond in one wave is still followed up in the next wave. Only after 2 successive refusals, the household is not followed up anymore.

So, instead of deriving adapted base weights for successive waves from the initial base weights in the first wave, we always start with the cross-sectional weights in the beginning of the longitudinal period of interest.

2.1.8.3 Adjustments to external data

In the previous section it was described how the base weights were corrected in order to adjust for nonresponse. In the estimation part the base weights are adjusted to external information as described in more detail in the following.

Every year, three sets of longitudinal weights is determined for the persons in the participating panels in the relevant period. These weights are rb062 (two years), rb063 (three years) and rb064 (four years).

Description of the longitudinal weighting procedure two-year duration (RB062)

The ultimate goal is to derive longitudinal weights RB062. These weights are all personal weights. There are no household longitudinal weights. Weights will only be derived for persons that are continuously present in the sample during the longitudinal period of interest.

Step 1: Panel cross-sectional weights.

We begin with the cross-sectional weights RB050 (persons all ages), from the first year of the longitudinal period. These weights are determined using calibration of the complete 2005-sample S_{2005} on the 2005-population U_{2005} . The weights RB050 are equivalent to the household weights DB090, and PB060 is a factor M_h larger (M_h is the number persons over 15 in household h). In this calibration, the panel structure is not taken into account. This means, that the 4 panels are together, and not separately, calibrated on the population.

The first step in determining the longitudinal weights for the two-year period consists of separating S_{2005} into 4 panels $S_{2005}^{(p)}$ ($p=1,2,3,4$), such that each panel represents the whole population U_{2005} . This is done by multiplying the household weights DB090 by the inverse of the relative size of the panel to which a certain household belongs:

$$DB090 \rightarrow \frac{n}{n_p} \times DB090,$$

where $n = n_1 + n_2 + n_3 + n_4$ is the total number of (responding) households in the cross-sectional sample, and n_p is the number of (responding) households in panel p ($p = 1, \dots, 4$).

Although each panel $S_{2005}^{(p)}$ now counts for the whole population U_{2005} , they are not calibrated on the population totals on which the 4 panels together were calibrated. To compensate partially for this, each panel is subsequently calibrated on the correct number of households, the correct number of persons over 15, and the correct number of persons of all ages in U_{2005} . This gives a panelequivalent DB090^(p) of the cross sectional weights DB090. From DB090^(p), the corresponding personal panelequivalents RB050^(p) are derived with $DB090^{(p)} = RB050^{(p)}$.

Step 2: Longitudinal population.

The second step consists of defining a so-called longitudinal population U_L . This population consists of all persons that are present in the population in the complete longitudinal period of interest. That

means in the present case, all persons that were present in 2005 and 2006. The longitudinal population is thus given by

$$U_L \equiv U_{2005} \cap U_{2006}.$$

Persons that entered the population between 2005 and 2006 are not part of the longitudinal population, and neither are persons that exited the population in this period.

Step 3: Longitudinal sample.

The third step consists of determining the so-called longitudinal sample S_L . This sample consists of all persons that are present in the sample in both years of the longitudinal period. That means all persons from three out of four panels observed both years:

$$S_L \equiv S_{2005} \cap S_{2006}.$$

Persons that entered a sampled household between 2005 and 2006 are thus not a part of the longitudinal sample. Neither are people who left a sampled household during this period, for instance due to a divorce or death. Also households that responded in 2005 but chose not to in 2006 are not part of the longitudinal sample.

Notice that the longitudinal sample consists of persons, i.e., the sampling units are not households.

Step 4: Calibration of longitudinal sample on longitudinal population.

Each of the 3 panels $S_L^{(p)}$ in the longitudinal sample S_L should be representative for the longitudinal population U_L . But due to nonresponse, and people leaving a sampled household but not leaving the population, a longitudinal panel $S_L^{(p)}$ is initially underrepresenting the longitudinal population. To compensate for this, the panel weights from step 1 are calibrated for nonresponse. This is done independently for persons of all ages, persons over 15, and for the sampled persons.

The calibration is done for persons, that is, not for households. As a consequence, persons in the same household can get a different weight. This can be understood easily from an example: the probability that a 20-year old daughter is continuing in the next wave as a part of her parents household is smaller than the probability that the 5 year old son is continuing. The daughter might leave her parents house in connection with an education elsewhere, or she might start to live together with someone else. Similarly, persons living in a household with an old sampled person have a smaller probability to continue in the next wave.

The calibration is done in 2 parts. First, the 3 longitudinal panels of each type of persons (all ages, over 15, sampled persons) are collected again into the longitudinal sample S_L , so that they together represent the (longitudinal) population U_L . This is done by multiplying the corresponding panel weights by the relative panel sizes, as in step 1 but now the other way around. For persons of all ages we thus get

$$RB050^* = \frac{n_p}{n} \times DB050^{(p)},$$

where n_p is the number of responding households in the longitudinal panel $S_L^{(p)}$ and $n = n_1 + n_2 + n_3$ is the total number of (responding) households in the longitudinal sample S_L (these numbers are not the same as in Step 1!).

Second, the longitudinal sample S_L is calibrated with CLAN on the longitudinal population U_L . For persons of all ages, we use the weights $RB050^*$ as starting weights, and the following weighting model:

$[sex \times age_{14}] \times 1 +$
 $[sex \times age_5 \times poverty] \times 1 +$
 $[eq_incgrp] \times 1 +$
 $[famincgrp] \times 1 +$
 $[famtype] \times 1 +$
 $[educationgrp \times poverty] \times 1 +$
 $[hh_educationgrp] \times 1 +$
 $[ec_status \times poverty] \times 1 +$
 $[hh_ec_status] \times 1.$

The notation $[var1 \times var2] \times 1$ stands for a count over persons of all ages in U_L with respect to the combination of categorical variables ‘var1 x var 2’.

The auxiliary variables all refer to their value in first year of the period and their meaning is as follows:

Sex: Gender of person (male, female).

Age14: Age group of person (14 classes: 0-15, 16-19, 20-24, ..., 60-64, 65-74, 75-84, 85+).

Age5: Age group of person (5 classes: 0-15, 16-24, 25-49, 50-64, 65+).

Eq_incgrp: Equivalised income group of *household* to which person belongs (3 classes: below ‘at risk of poverty threshold’, between ‘at risk of poverty threshold’ and median, above median), where the ‘at risk of poverty threshold’ is defined as 60% of the median of the equivalised income of all persons in the population.¹ The variable is determined for the whole household in 2005, whether or not all persons belong to the longitudinal household or not.

Poverty: Indication whether *the household* is below or above the ‘at risk of poverty threshold’.

Famincgrp: Net family income *in household* to which person belongs (5 categories: 112 499 and less, 112 500 – 159 999, 160 000 – 234 999, 235 000 – 329 999, 330 000 and more; boundaries are chosen such that each group contains roughly 20% of the population of households). The family income is determined for the whole household in 2005, whether or not all persons belong to the longitudinal household or not.

Famtype: Type of family living *in household* to which person belongs (10 classes: one person under 65 no children, one person 65 or older no children, two persons both under 65 no children, two persons at least one 65 or older no children, other household without children, one adult one or more children, two adults one child, two adults two children, two adults three or more children, other household with children). The family type is determined for the whole household in 2005, whether or not all persons belong to the longitudinal household or not.

Educationgrp: Highest level of education of person (4 classes, namely: **1:** Unknown or Isced 0 and 1, **2:** Isced 2, **3:** Isced 3 and 4, **4:** Isced 5, 6, and 7).

¹ The household equivalized income is calculated as the household total net income divided by equivalized household size according to the modified OECD scale (which gives a weight of 1.0 to the first adult, 0.5 to other persons aged 14 or over who are living in the household and 0.3 to each child aged less than 14). All persons in a household have the same equivalized income.

Hh_educationgrp: Highest education obtained (according to the register) of the person with the highest education *in the household* (3 categories: Isced 0-1-2, Isced 3-4, Isced 5-7). The hh_educationgrp is determined for the whole household in 2005, whether or not all persons belong to the longitudinal household or not.

Ec_status: Economic status of person (5 classes, namely **1:** employed (excl self employed), **2:** self-employed, **3:** unemployed, **4:** retired, and **5:** other economically inactive).

Hh_ec_status: Economic status of person with highest education in the household (5 classes, namely **1:** employed (excl self employed), **2:** self-employed, **3:** unemployed, **4:** retired, and **5:** other economically inactive).

Since the original cross-sectional weights already were calibrated on similar population totals (though for the whole population and not only the longitudinal part), the above calibration does not require that much. There occur for instance no negative weights. The most important effect of the calibration is to ensure that persons who have a lower probability to continue from one wave to the next get a higher weight. The resulting weights are the longitudinal weights RB062.

Remarks for longitudinal weights of two-year duration

Some remarks on the longitudinal weights are in order.

As mentioned before, persons in the same household generally do not have the same longitudinal weight RB062. This is in contrast to the cross-sectional weights, where all persons within a household are assigned the same weight RB050.

One of the consequences is, that the longitudinal weights are less ‘integrated’. That means that it is in principle possible to get a domain estimate for a certain variable based on the weights PB050 which is larger than the same estimate based on RB062, i.e., the estimated number of persons over 15 with a certain property is larger than the estimated number of persons of all ages with that property.

Such inconsistencies can in principle be avoided for the weights RB062 and PB050 by performing a completely separate weighting for persons below and above 15 years, but here we have chosen not to do that.

Description of the longitudinal weighting procedure for three-year duration (RB063)

In order to calculate the longitudinal weights for of a period of three years the same method as above is used. All four steps are followed the same way as for RB062 but only two panels are used now.

Step 1: Panel cross-sectional weights.

This is done the exact same way as for the RB062 weights. We begin with the cross-sectional weight RB050 from the first year in the three year period. There is adjusted for panels and we end up with panel weights DB090^(p).

Step 2: First longitudinal population.

The second step is defining the first longitudinal population U_L . This population consist of all persons that are in the population from 2004 and the population 2005.

$$U_L \equiv U_{2004} \cap U_{2005}$$

Persons that entered in the population between 2004 and 2005 are part of the longitudinal populations as well as persons that exited the population in this period of time.

Step 3: First longitudinal sample.

The third step is determining the so-called first longitudinal sample S_L . This sample consists of all persons that are represented in both years of the longitudinal period and are in the relevant panels. These panels are those observed in 2004, 2005 and 2006.

$$S_L \equiv S_{2004} \cap S_{2005}$$

Step 4: Calibration of the first longitudinal sample on the first longitudinal population.

The two panels $S_L^{(p)}$ in the longitudinal sample S_L should be representative for the longitudinal population U_L .

This is the exact same procedure as in step 4 for the two-year duration longitudinal weights, and the same model and every thing is used. The auxiliary information refers to year 2004.

These weights produced in step 4 are not the final RB063 as they were for RB062 in the two-year duration procedure. These weights are used as starting weights in step 7, but first we need to construct the three year longitudinal population and the three year sample. This sample is not the same as in step 3 due to non response.

Step 5: longitudinal population.

The fifth step is defining the longitudinal population U_L . This population consist of all persons that are in the population 2004, in the population 2005 and in the population 2006.

$$U_L \equiv U_{2004} \cap U_{2005} \cap U_{2006}$$

Persons that entered in the population between 2004 and 2006 are part of the longitudinal populations as well as persons that exited the population in this period of time. Furthermore, persons that are in the population 2004 and in the population 2006 but not in the population 2005 are not in the longitudinal population.

Step 6: longitudinal sample

The sixth step is to construct the longitudinal sample for the three year period. This sample consists of all persons that are represented in all three years of the longitudinal period and are in the relevant two panels. These two panels are observed in 2004, 2005 and 2006.

$$S_L \equiv S_{2004} \cap S_{2005} \cap S_{2006}$$

The only persons in the longitudinal sample are those who have responded in all three years 2004, 2005 and 2006.

Step 7: Calibration of longitudinal sample on the longitudinal population.

The two panels $S_L^{(p)}$ in the longitudinal sample S_L should be representative for the longitudinal population U_L .

The stating weights are the ones fund in step 4. A calibration is done with auxiliary information from 2005 but the same model as from step 4 (with newer auxiliary information as this is from 2005 compared to step 4 with 2004 auxiliary information).

These weights are the final RB063 longitudinal weights.

The method for longitudinal period of 3 years in short

For a 3 year longitudinal period, one starts with the cross-sectional weights w_X^t at year t, and calculate longitudinal weights $w_L^{t,t+1}$ for the period t to t+1 for two panels

Subsequently, longitudinal weights $w_L^{t+1,t+2}$ are calculated for the period t+1 to t+2, where the longitudinal weights $w_L^{t,t+1}$ are used as starting weights instead of the cross-sectional panel weights w_X^t that were used in the period t to t+1. The remaining longitudinal sample $S_L \equiv S_t \cap S_{t+1} \cap S_{t+2}$ is calibrated on the remaining longitudinal population $U_L \equiv U_t \cap U_{t+1} \cap U_{t+2}$, using household and personal information from U_{t+1} as auxiliary information. The weights $w_L^{t+1,t+2}$ are the weights of interest. They reflect changes in the longitudinal population and sample over the whole longitudinal period from t to t+2.

Description of the longitudinal weighting procedure for four-year duration (RB064)

In order to calculate the longitudinal weights for of a period of four years the same method as above is used and extended with more steps to cope with the longer time span. All steps are followed the same way as for RB063 but only one panel is used now.

Step 1: Panel cross-sectional weights.

This is done the exact same way as for the RB062 weights. We begin with the cross-sectional weight RB050 from the first year in the three year period. There is adjusted for panels and we end up with panel weights DB090^(p).

Step 2: First longitudinal population.

The second step is defining the first longitudinal population U_L . This population consist of all persons that are in the population from 2003 and the population 2004.

$$U_L \equiv U_{2003} \cap U_{2004}$$

Persons that entered in the population between 2003 and 2004 are part of the longitudinal populations as well as persons that exited the population in this period of time.

Step 3: First longitudinal sample.

The third step is determining the so-called first longitudinal sample S_L . This sample consists of all persons that are represented in both years of the longitudinal period and are in the relevant panel. This panel is the one observed in 2003, 2004, 2005 and 2006.

$$S_L \equiv S_{2003} \cap S_{2004}$$

Step 4: Calibration of the first longitudinal sample on the first longitudinal population.

The two panels $S_L^{(p)}$ in the longitudinal sample S_L should be representative for the longitudinal population U_L .

This is the exact same procedure as in step 4 for the two-year duration longitudinal weights, and the same model and every thing is used. The auxiliary information refers to year 2003.

These weights produced in step 4 are not the final RB063 as they were for RB062 in the two-year duration procedure. These weights are used as starting weights in step 7, but first we need to construct the three year longitudinal population and the three year sample. This sample is not the same as in step 3 due to non response.

Step 5: second longitudinal population.

The fifth step is defining the second longitudinal population, U_L . This population consist of all persons that are in the population 2003, in the population 2004 and in the population 2005.

$$U_L \equiv U_{2003} \cap U_{2004} \cap U_{2005}$$

Persons that entered in the population between 2003 and 2005 are part of the longitudinal populations as well as persons that exited the population in this period of time. Furthermore, persons that are in the population 2003 and in the population 2005 but not in the population 2004 are not in the longitudinal population.

Step 6: second longitudinal sample

The sixth step is to construct the second longitudinal sample for the three year period. This sample consists of all persons that are represented in all three years of the longitudinal period and are in the relevant panel. This panel is the one observed in 2003, 2004 and 2005.

$$S_L \equiv S_{2003} \cap S_{2004} \cap S_{2005}$$

The only persons in the longitudinal sample are those who have responded in all three years 2003, 2004 and 2005.

Step 7: Calibration of the second longitudinal sample on the second longitudinal population.

The panel $S_L^{(p)}$ in the longitudinal sample S_L should be representative for the longitudinal population U_L .

This is the exact same procedure as in step 7 for the three-year duration longitudinal weights, and the same model and every thing is used. The auxiliary information refers to year 2004.

These weights produced in step 7 are not the final RB064 as they were for RB063 in the three-year duration procedure. These weights are used as starting weights in step 10, but first we need to construct the four year longitudinal population and the four year sample. This sample is not the same as in step 6 due to non response.

Step 8: longitudinal population.

The eighth step is defining the longitudinal population, U_L . This population consist of all persons that are in the population 2003, in the population 2004, in the population 2005 and in the population 2006.

$$U_L \equiv U_{2003} \cap U_{2004} \cap U_{2005} \cap U_{2006}$$

Persons that entered in the population between 2003 and 2006 are part of the longitudinal populations as well as persons that exited the population in this period of time. Furthermore, persons that are in the population 2003 and in the population 2006 but not in the population 2004 or in the population 2005 are not in the longitudinal population.

Step 9: longitudinal sample

The ninth step is to construct the longitudinal sample for the four year period. This sample consists of all persons that are represented in all four years of the longitudinal period and are in the relevant panel. This panel is the one observed in 2003, 2004, 2005 and 2006.

$$S_L \equiv S_{2003} \cap S_{2004} \cap S_{2005} \cap S_{2006}$$

The only persons in the longitudinal sample are those who have responded in all four years 2003, 2004, 2005 and 2006.

Step 10: Calibration of longitudinal sample on the longitudinal population.

The panel $S_L^{(p)}$ in the longitudinal sample S_L should be representative for the longitudinal population U_L .

The starting weights are the ones found in step 7. A calibration is done with auxiliary information from 2005 but the same model as from step 4 and 7 (with newer auxiliary information as this is from 2005 compared to step 4 with 2003 auxiliary information and step 7 with 2004 auxiliary information).

These weights are the final RB064 longitudinal weights.

The method for longitudinal period of 4 years in short

For a 4 year longitudinal period, one starts with the cross-sectional weights w_X^t at year t, and calculate longitudinal weights $w_L^{t,t+1}$ for the period t to t+1 for one panel.

Subsequently, longitudinal weights $w_L^{t+1,t+2}$ are calculated for the period t+1 to t+2, where the longitudinal weights $w_L^{t,t+1}$ are used as starting weights instead of the cross-sectional panel weights w_X^t that were used in the period t to t+1. After that, longitudinal weights $w_L^{t+2,t+3}$ are calculated for the period t+2 to t+3, where the longitudinal weights $w_L^{t+1,t+2}$ are used as starting weights. The remaining longitudinal sample $S_L \equiv S_t \cap S_{t+1} \cap S_{t+2} \cap S_{t+3}$ is calibrated on the remaining longitudinal population $U_L \equiv U_t \cap U_{t+1} \cap U_{t+2} \cap U_{t+3}$, using household and personal information from U_{t+2} as auxiliary information.

The weights $w_L^{t+2,t+3}$ are the weights of interest. They reflect changes in the longitudinal population and sample over the whole longitudinal period from t to t+3.

2.1.8.4 Final longitudinal weights

Since the longitudinal sample consists only of households participating in the entire longitudinal period (2, 3 or 4 years) the weights are summing to a total less than the population. Hence the weights have to be rescaled as described below.

Calculation of longitudinal weight DB090

In the following it is described how DB090 in the longitudinal files are calculated.

Step 1: Households to be considered

First step is to find the number of households to be considered. These are the households in the relevant panels which have responded the year in question. From the table below the number of households for 2006 is found.

Year	Number of households	Rotational group
2003	1592	4
2004	3028	1, 4
2005	4464	1, 2, 4
2006	4251	1, 2, 4

Step 2: Number of households in population

Second step is to determine the number of households in the population each year. These numbers are found in the table below.

Year	Number of households in population
2003	2614841
2004	2628664
2005	2643240
2006	2661145

Step 3: Weight total to be corrected

The basis for the weight DB090 in the longitudinal files is the weight DB090 from the cross sectional file from the first year of the longitudinal period. However DB090 in the longitudinal file is only calculated for the households in the longitudinal file. This means that all households not in the longitudinal file are deleted. The weights of the remaining households are now summing to at total less than the household population total. See table below.

Year	Sum of cross-sectional weights
2003	794180.1
2004	1047816.2
2005	1625848.5
2006	1396575.4

The sum in 2003 is based on weights from the one panel in the 4 year longitudinal population. The sum in 2004 is based on the weights from the two panels in the 3 year longitudinal period etc.

Step 4: Correct the cross-sectional weight

Now the weight DB090 is corrected with the ratio between the numbers in the tables from step 2 and step 3 respectively. The correction factors are found in the table below.

Year	Correction factor
2003	3.29
2004	2.51
2005	1.63
2006	1.91

After the correction in this step the weights DB090 in the longitudinal file sum to the household population totals found in the table in step 2.

Calculation of longitudinal weight RB060

Below it is described how the longitudinal weight RB060 is calculated. The weight is based on RB050 from cross sectional personal files.

Step 1: Persons from same rotational group

Persons from the same rotational group from up to 4 different years are put together in the same data. The persons may not necessarily have answered all years in the longitudinal period.

Step 2: Number of persons in the longitudinal population in scope

From the table below it is seen how many persons there are in different longitudinal populations.

Years	Number of persons	Years	Number of persons	Years	Number of persons
2003	5308824	2004	5326221	2005	5342955
2003-2004	5204012	2004-2005	5222019	2005-2006	5240396
2003-2005	5110232	2004-2006	5129930	-	-
2003-2006	5023628	-	-	-	-

The longer the longitudinal period, the fewer persons in scope, as seen from the table.

Step 3: Correct the weights

All personal RB050 weights are now rescaled with a correction factor. The correction factor is constant within year and rotational group. The correction factor ensures that the rescaled weights sum to the population totals in the table above. The resulting weight is RB060.

2.1.9. Substitutions

2.1.9.1 Method of selection of substitutes

No substitution

2.1.9.2 Main characteristics of substituted units.

No substitution

2.1.9.3 Distribution of substituted units by record of contact at adresse etc.

No substitution

2.2 Sampling errors

Standard errors are not calculated. We are waiting for the Eurostat program.

As figures on imputed rent until 2006 is not comparable with figures from 2007 and onwards the values is declared not applicable (na).

Table 2.2.a.1: Mean, total number of observations (before and after imputation) and the standard error. Income variables reported at household level. The cross-sectional component 2006.				
	Weighted mean (Weight=DB090)	Number of observations		Standard error
		Before imputations	After imputations	
HY010: TOTAL HOUSEHOLD GROSS INCOME	385.614	5711	5711	na
HY020: TOTAL DISPOSABLE HOUSEHOLD INCOME	252.578	5711	5711	na
HY022: TOTAL DISPOSABLE HOUSEHOLD INCOME BEFORE SOCIAL TRANSFERS OTHER THAN OLDAGE AND SURVIVOR'S BENEFITS	212.243	5711	5711	na
HY023: TOTAL DISPOSABLE HOUSEHOLD INCOME BEFORE SOCIAL TRANSFERS INCLUDING OLDAGE AND SURVIVOR'S BENEFITS	182.208	5711	5711	na
HY025: WITHIN-HOUSEHOLD NON-RESPONSE INFLATION FACTOR	na	na	na	na
HY030G: IMPUTED RENT	na	na	na	na
HY040G: INCOME FROM RENTAL OF A PROPERTY OR LAND	300	5711	5711	na
HY050G: FAMILY/CHILDREN RELATED ALLOWANCES	5.587	5711	5711	na
HY060G: SOCIAL EXCLUSION NOT ELSEWHERE CLASSIFIED	na	na	na	na
HY070G: HOUSING ALLOWANCES	3.662	5711	5711	na
HY080G: REGULAR INTER-HOUSEHOLD CASH TRANSFER RECEIVED	855	5711	5711	na
HY090G: INTEREST, DIVIDENDS, PROFIT FROM CAPITAL INVESTMENTS IN UNINCORPORATED BUSINESS	3.907	5711	5711	na
HY100G: INTEREST REPAYMENTS ON MORTGAGE	15.868	5711	5711	na
HY110G: INCOME RECEIVED	518	5711	5711	na

BY PEOPLE AGED UNDER 16				
HY120G/HY120N: REGULAR TAXES ON WEALTH	4.212	5711	5711	na
HY130G: REGULAR INTER-HOUSEHOLD CASH TRANSFER PAID	583	5711	5711	na
HY140G: TAX ON INCOME AND SOCIAL CONTRIBUTIONS	127.971	5711	5711	na
HY145N: REPAYMENTS/RECEIPTS FOR TAX ADJUSTMENT	na	na	na	na

Table 2.2.a.2: Mean, total number of observations (before and after imputation) and the standard error. Income variables reported at personal level. The cross-sectional component 2006.

	Weighted mean weight=pb050	Number of observations		Standard error
		Before imputations	After imputations	
PY010G: EMPLOYEE CASH OR NEAR CASH INCOME	160.302	11.367	11.367	na
PY020G: NON-CASH EMPLOYEE INCOME	965	11.367	11.367	na
PY030G: EMPLOYER'S SOCIAL INSURANCE CONTRIBUTION	na	na	na	na
PY035G: CONTRIBUTIONS TO INDIVIDUAL PRIVATE PENSION PLANS	na	na	na	na
PY050G: CASH BENEFITS OR LOSSES FROM SELF-EMPLOYMENT	13.164	11.367	11.367	na
PY070G: VALUE OF GOODS PRODUCED BY OWN-CONSUMPTION	na	na	na	na
PY080G: PENSION FROM INDIVIDUAL PRIVATE PLANS	na	na	na	na
PY090G/PY090N: UNEMPLOYMENT BENEFITS	14.123	11.367	11.367	na
PY100G/PY100N: OLD-AGE BENEFITS	25.460	11.367	11.367	na
PY110G: SURVIVOR' BENEFITS	409	11.367	11.367	na
PY120G: SICKNESS BENEFITS	3.110	11.367	11.367	na
PY130G: DISABILITY BENEFITS	9.414	11.367	11.367	na
PY140G: EDUCATION-RELATED ALLOWANCES	2.834	11.367	11.367	na
PY200G: GROSS MONTHLY	na	na	na	na

EARNINGS FOR EMPLOYEES				
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Table 2.2.b.1: Mean, total number of observations (before and after imputation) and the standard error. Income variables reported at household level. The longitudinal component 2003 (DB010=2003).

	Weighted mean (Weight=DB090)	Number of observations		Standard error
		Before imputations	After imputations	
HY010: TOTAL HOUSEHOLD GROSS INCOME	359.738	1592	1592	na
HY020: TOTAL DISPOSABLE HOUSEHOLD INCOME	234.139	1592	1592	na
HY022: TOTAL DISPOSABLE HOUSEHOLD INCOME BEFORE SOCIAL TRANSFERS OTHER THAN OLDAGE AND SURVIVOR'S BENEFITS	183.078	1592	1592	na
HY023: TOTAL DISPOSABLE HOUSEHOLD INCOME BEFORE SOCIAL TRANSFERS INCLUDING OLDAGE AND SURVIVOR'S BENEFITS	156.048	1592	1592	na
HY025: WITHIN-HOUSEHOLD NON-RESPONSE INFLATION FACTOR	na	na	na	na
HY030G: IMPUTED RENT	na	na	na	na
HY040G: INCOME FROM RENTAL OF A PROPERTY OR LAND	388	1592	1592	na
HY050G: FAMILY/CHILDREN RELATED ALLOWANCES	5.646	1592	1592	na
HY060G: SOCIAL EXCLUSION NOT ELSEWHERE CLASSIFIED	na	na	na	na
HY070G: HOUSING ALLOWANCES	3.415	1592	1592	na
HY080G: REGULAR INTER-HOUSEHOLD CASH TRANSFER RECEIVED	1.157	1592	1592	na
HY090G: INTEREST, DIVIDENDS, PROFIT FROM CAPITAL INVESTMENTS IN UNINCORPORATED BUSINESS	2.407	1592	1592	na
HY100G: REST REPAYMENTS ON MORTGAGE	17.658	1592	1592	na
HY110G: INCOME RECEIVED BY PEOPLE AGED UNDER 16	410	1592	1592	na

HY120G/HY120N: REGULAR TAXES ON WEALTH	3.838	1592	1592	na
HY130G: REGULAR INTER-HOUSEHOLD CASH TRANSFER PAID	873	1592	1592	na
HY140G: TAX ON INCOME AND SOCIAL CONTRIBUTIONS	120.888	1592	1592	na
HY145N: REPAYMENTS/RECEIPTS FOR TAX ADJUSTMENT	na	na	na	na

Table 2.2.b.2: Mean, total number of observations (before and after imputation) and the standard error. Income variables reported at personal level. The longitudinal component 2003 (PB010=2003).

	Weighted mean (Weight=PB050)	Number of observations		Standard error
		Before imputations	After imputations	
PY010G: EMPLOYEE CASH OR NEAR CASH INCOME	146.445	3.191		na
PY020G: NON-CASH EMPLOYEE INCOME	1.318	3.191		na
PY030G: EMPLOYER'S SOCIAL INSURANCE CONTRIBUTION	na	3.191		na
PY035G: CONTRIBUTIONS TO INDIVIDUAL PRIVATE PENSION PLANS	4.033	3.191		na
PY050G: CASH BENEFITS OR LOSSES FROM SELF-EMPLOYMENT	12.312	3.191		na
PY070G: VALUE OF GOODS PRODUCED BY OWN-CONSUMPTION	na	na	na	na
PY080G: PENSION FROM INDIVIDUAL PRIVATE PLANS	na	na	na	na
PY090G/PY090N: UNEMPLOYMENT BENEFITS	16.228	3.191		na
PY100G/PY100N: OLD-AGE BENEFITS	21.215	3.191		na
PY110G: SURVIVOR' BENEFITS	413	3.191		na
PY120G: SICKNESS BENEFITS	1.858	3.191		na
PY130G: DISABILITY BENEFITS	13.127	3.191		na
PY140G: EDUCATION-RELATED ALLOWANCES	3.225	3.191		na
PY200G: GROSS MONTHLY	na	na	na	na

EARNINGS FOR EMPLOYEES				
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Table 2.2.c.1: Mean, total number of observations (before and after imputation) and the standard error. Income variables reported at household level. The longitudinal component 2004 (DB010=2004).

	Weighted mean (Weight=DB090)	Number of observations		Standard error
		Before imputations	After imputations	
HY010: TOTAL HOUSEHOLD GROSS INCOME	381.312	2775	2775	na
HY020: TOTAL DISPOSABLE HOUSEHOLD INCOME	245.424	2775	2775	na
HY022: TOTAL DISPOSABLE HOUSEHOLD INCOME BEFORE SOCIAL TRANSFERS OTHER THAN OLDAGE AND SURVIVOR'S BENEFITS	202.326	2775	2775	na
HY023: TOTAL DISPOSABLE HOUSEHOLD INCOME BEFORE SOCIAL TRANSFERS INCLUDING OLDAGE AND SURVIVOR'S BENEFITS	24.640	2775	2775	na
HY025: WITHIN-HOUSEHOLD NON-RESPONSE INFLATION FACTOR	na	na	na	na
HY030G: IMPUTED RENT	na	na	na	na
HY040G: INCOME FROM RENTAL OF A PROPERTY OR LAND	424	2775	2775	na
HY050G: FAMILY/CHILDREN RELATED ALLOWANCES	6.004	2775	2775	na
HY060G: SOCIAL EXCLUSION NOT ELSEWHERE CLASSIFIED	na	na	na	na
HY070G: HOUSING ALLOWANCES	2.912	2775	2775	na
HY080G: REGULAR INTER-HOUSEHOLD CASH TRANSFER RECEIVED	948	2775	2775	na
HY090G: INTEREST, DIVIDENDS, PROFIT FROM CAPITAL INVESTMENTS IN UNINCORPORATED BUSINESS	7.886	2775	2775	na
HY100G: INTEREST REPAYMENTS ON MORTGAGE	19.662	2775	2775	na
HY110G: INCOME RECEIVED	541	2775	2775	na

BY PEOPLE AGED UNDER 16				
HY120G/HY120N: REGULAR TAXES ON WEALTH	4.231	2775	2775	na
HY130G: REGULAR INTER-HOUSEHOLD CASH TRANSFER PAID	1.040	2775	2775	na
HY140G: TAX ON INCOME AND SOCIAL CONTRIBUTIONS	130.617.	2775	2775	na
HY145N: REPAYMENTS/RECEIPTS FOR TAX ADJUSTMENT	na	na	na	na

Table 2.2.c.2: Mean, total number of observations (before and after imputation) and the standard error. Income variables reported at personal level. The longitudinal component 2004.

	Weighted mean (Weight=PB050)	Number of observations		Standard error
		Before imputations	After imputations	
PY010G: EMPLOYEE CASH OR NEAR CASH INCOME	153.878	5524	5524	na
PY020G: NON-CASH EMPLOYEE INCOME	1.235	5524	5524	na
PY030G: EMPLOYER'S SOCIAL INSURANCE CONTRIBUTION	na	5524	5524	na
PY035G: CONTRIBUTIONS TO INDIVIDUAL PRIVATE PENSION PLANS	3.630	5524	5524	na
PY050G: CASH BENEFITS OR LOSSES FROM SELF-EMPLOYMENT	12.747	5524	5524	na
PY070G: VALUE OF GOODS PRODUCED BY OWN-CONSUMPTION	na	na	na	na
PY080G: PENSION FROM INDIVIDUAL PRIVATE PLANS	na	na	na	na
PY090G/PY090N: UNEMPLOYMENT BENEFITS	15.295	5524	5524	na
PY100G/PY100N: OLD-AGE BENEFITS	21.988	5524	5524	na
PY110G: SURVIVOR' BENEFITS	473	5524	5524	na
PY120G: SICKNESS BENEFITS	2.777	5524	5524	na
PY130G: DISABILITY BENEFITS	10.880	5524	5524	na
PY140G: EDUCATION-RELATED ALLOWANCES	2.691	5524	5524	na

PY200G: GROSS MONTHLY EARNINGS FOR EMPLOYEES	na	na	na	na
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Table 2.2.d.1: Mean, total number of observations (before and after imputation) and the standard error. Income variables reported at household level. The longitudinal component 2005 (DB010=2005).

	Weighted mean (Weight=DB090)	Number of observations		Standard error
		Before imputations	After imputations	
HY010: TOTAL HOUSEHOLD GROSS INCOME	389.334	3778		na
HY020: TOTAL DISPOSABLE HOUSEHOLD INCOME	254.056	3778		na
HY022: TOTAL DISPOSABLE HOUSEHOLD INCOME BEFORE SOCIAL TRANSFERS OTHER THAN OLDAGE AND SURVIVOR'S BENEFITS	212.417	3778		na
HY023: TOTAL DISPOSABLE HOUSEHOLD INCOME BEFORE SOCIAL TRANSFERS INCLUDING OLDAGE AND SURVIVOR'S BENEFITS	186.708	3778		na
HY025: WITHIN-HOUSEHOLD NON-RESPONSE INFLATION FACTOR	na	na	na	na
HY030G: IMPUTED RENT	na	na	na	na
HY040G: INCOME FROM RENTAL OF A PROPERTY OR LAND	483	3778		na
HY050G: FAMILY/CHILDREN RELATED ALLOWANCES	5.706	3778		na
HY060G: SOCIAL EXCLUSION NOT ELSEWHERE CLASSIFIED	na	na	na	na
HY070G: HOUSING ALLOWANCES	2788	3778		na
HY080G: REGULAR INTER-HOUSEHOLD CASH TRANSFER RECEIVED	813	3778		na
HY090G: INTEREST, DIVIDENDS, PROFIT FROM CAPITAL INVESTMENTS IN UNINCORPORATED BUSINESS	2289	3778		na
HY100G: INTEREST REPAYMENTS ON MORTGAGE	17.975	3778		na

HY110G: INCOME RECEIVED PEOPLE AGED UNDER 16	602	3778		na
HY120G/HY120N: REGULAR TAXES ON WEALTH	4.330	3778		na
HY130G: REGULAR INTER-HOUSEHOLD CASH TRANSFER PAID	711	3778		na
HY140G: TAX ON INCOME AND SOCIAL CONTRIBUTIONS	130.236	3778		na
HY145N: REPAYMENTS/RECEIPTS FOR TAX ADJUSTMENT	na	na	na	na

Table 2.2.d.2: Mean, total number of observations (before and after imputation) and the standard error. Income variables reported at personal level. The longitudinal component 2005. (PB010=2005).

	Weighted mean (Weight=PB050)	Number of observations		Standard error
		Before imputations	After imputations	
PY010G: EMPLOYEE CASH OR NEAR CASH INCOME	162.706	7555		na
PY020G: NON-CASH EMPLOYEE INCOME	1.134	7555		na
PY030G: EMPLOYER'S SOCIAL INSURANCE CONTRIBUTION	na	7555		na
PY035G: CONTRIBUTIONS TO INDIVIDUAL PRIVATE PENSION PLANS	na	7555		na
PY050G: CASH BENEFITS OR LOSSES FROM SELF-EMPLOYMENT	13.094	7555		na
PY070G: VALUE OF GOODS PRODUCED BY OWN-CONSUMPTION	na	na		na
PY080G: PENSION FROM INDIVIDUAL PRIVATE PLANS	na	na		na
PY090G/PY090N: UNEMPLOYMENT BENEFITS	16.103	7555		na
PY100G/PY100N: OLD-AGE BENEFITS	21.718	7555		na
PY110G: SURVIVOR' BENEFITS	431	7555		na
PY120G: SICKNESS BENEFITS	2.678	7555		na
PY130G: DISABILITY BENEFITS	9.719	7555		na
PY140G: EDUCATION-RELATED ALLOWANCES	2.450	7555		na

PY200G: GROSS MONTHLY EARNINGS FOR EMPLOYEES	na	na		na
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Table 2.2.e.1: Mean, total number of observations (before and after imputation) and the standard error. Income variables reported at household level. The longitudinal component 2006 (DB010=2006).

	Weighted mean (Weight=DB090)	Number of observations		Standard error
		Before imputations	After imputations	
HY010: TOTAL HOUSEHOLD GROSS INCOME	410.057	3210	3210	na
HY020: TOTAL DISPOSABLE HOUSEHOLD INCOME	266.258	3210	3210	na
HY022: TOTAL DISPOSABLE HOUSEHOLD INCOME BEFORE SOCIAL TRANSFERS OTHER THAN OLDAGE AND SURVIVOR'S BENEFITS	228.418	3210	3210	na
HY023: TOTAL DISPOSABLE HOUSEHOLD INCOME BEFORE SOCIAL TRANSFERS INCLUDING OLDAGE AND SURVIVOR'S BENEFITS	197.143	3210	3210	na
HY025: WITHIN-HOUSEHOLD NON-RESPONSE INFLATION FACTOR	na	na	na	na
HY030G: IMPUTED RENT	na	na	na	na
HY040G: INCOME FROM RENTAL OF A PROPERTY OR LAND	355	3210	3210	na
HY050G: FAMILY/CHILDREN RELATED ALLOWANCES	5.716	3210	3210	na
HY060G: SOCIAL EXCLUSION NOT ELSEWHERE CLASSIFIED	na	na	na	na
HY070G: HOUSING ALLOWANCES	2.925	3210	3210	na
HY080G: REGULAR INTER-HOUSEHOLD CASH TRANSFER RECEIVED	817	3210	3210	na
HY090G: INTEREST, DIVIDENDS, PROFIT FROM CAPITAL INVESTMENTS IN UNINCORPORATED BUSINESS	4.379	3210	3210	na
HY100G: INTEREST REPAYMENTS ON	17.822	3210	3210	na

MORTGAGE				
HY110G: INCOME RECEIVED BY PEOPLE AGED UNDER 16	584	3210	3210	na
HY120G/HY120N: REGULAR TAXES ON WEALTH	4699	3210	3210	na
HY130G: REGULAR INTER-HOUSEHOLD CASH TRANSFER PAID	713	3210	3210	na
HY140G: TAX ON INCOME AND SOCIAL CONTRIBUTIONS	138.87	3210	3210	na
HY145N: REPAYMENTS/RECEIPTS FOR TAX ADJUSTMENT	na	na	na	na

Table 2.2.e.2: Mean, total number of observations (before and after imputation) and the standard error. Income variables reported at personal level. The longitudinal component 2006 (PB010=2006).

	Weighted mean (Weight=PB050)	Number of observations		Standard error
		Before imputations	After imputations	
PY010G: EMPLOYEE CASH OR NEAR CASH INCOME	171.640	6420	6420	na
PY020G: NON-CASH EMPLOYEE INCOME	1.121	6420	6420	na
PY030G: EMPLOYER'S SOCIAL INSURANCE CONTRIBUTION	na	6420	6420	na
PY035G: CONTRIBUTIONS TO INDIVIDUAL PRIVATE PENSION PLANS	na	6420	6420	na
PY050G: CASH BENEFITS OR LOSSES FROM SELF-EMPLOYMENT	12.965	6420	6420	na
PY070G: VALUE OF GOODS PRODUCED BY OWN-CONSUMPTION	na	6420	6420	na
PY080G: PENSION FROM INDIVIDUAL PRIVATE PLANS	na	6420	6420	na
PY090G/PY090N: UNEMPLOYMENT BENEFITS	13.680	6420	6420	na
PY100G/PY100N: OLD-AGE BENEFITS	26.181	6420	6420	na
PY110G: SURVIVOR' BENEFITS	319	6420	6420	na
PY120G: SICKNESS BENEFITS	2.758	6420	6420	na
PY130G: DISABILITY BENEFITS	8.631	6420	6420	na

PY140G: EDUCATION-RELATED ALLOWANCES	2.345	6420	6420	na
PY200G: GROSS MONTHLY EARNINGS FOR EMPLOYEES	na	na	na	na

Table 2.2.f: Mean, total number of observations (before and after imputation) and the standard error for the equivalises income by sex, agegroups and household size. The cross-sectional component 2006 (RB010=2006).

	Weighted mean (Weight=RB060)	Number of observations		Standard error
		Before imputations	After imputations	
Subclasses by household size				
1 house hold member	141.385	1.109	1.109	na
2 house hold members	194.602	4.478	4.478	na
3 house hold members	195.774	2.685	2.685	na
4+1 house hold members	181.355	6.404	6.404	na
Population by agegroup				
< 25	170.426	6.909	6.909	na
25 to 34	172.793	1.237	1.237	na
35 to 44	194.406	1.351	1.351	na
45 to 54	217.562	1.677	1.677	na
55 to 64	211.216	1.878	1.878	na
Population by sex				
Male	181.771	7.165	7.165	na
Female	176.256	7.511	7.511	na

Table 2.2.g: Mean, total number of observations (before and after imputation) and the standard error for the equivalises income by sex, agegroups and household size. The longitudinal component 2003 (RB010=2003).

	Weighted mean (Weight=RB060)	Number of observations		Standard error
		Before imputations	After imputations	
Subclasses by household size				
1 house hold member	145.148	315		na
2 house hold members	217.472	720		na
3 house hold members	199.991	415		na
4+1 house hold members	161.828	768		na
Population by agegroup				
< 25	157.379	936		na
25 to 34	146.197	213		na
35 to 44	180.523	188		na
45 to 54	194.338	280		na
55 to 64	228.145	270		na
Population by sex				

Male	177.886	1.032		na
Female	171.188	1.186		na

Table 2.2.h Mean, total number of observations (before and after imputation) and the standard error for the equivalises income by sex, agegroups and household size The longitudinal component 2004 (RB010=2004).

	Weighted mean (Weight=RB060)	Number of observations		Standard error
		Before imputations	After imputations	
Subclasses by household size				
1 house hold member	140.549	626	626	na
2 house hold members	195.187	1,545	1,545	na
3 house hold members	207.803	1.051	1.051	na
4+1 house hold members	178.922	2.593	2.593	na
Population by agegroup				
< 25	177.594	3.210	3.210	na
25 to 34	160.296	397	397	na
35 to 44	185.061	466	466	na
45 to 54	197.347	557	557	na
55 to 64	200.182	630	630	na
Population by sex				
Male	179.690	2.902	2.902	na
Female	172.055	2.913	2.913	na

Table 2.2.i Mean, total number of observations (before and after imputation) and the standard error for the equivalises income by sex, agegroups and household size. The longitudinal component 2005 (RB010=2005)

	Weighted mean (Weight=RB060)	Number of observations		Standard error
		Before imputations	After imputations	
Subclasses by household size				
1 house hold member	142.814	907	907	na
2 house hold members	199.9832	2.998	2.998	na
3 house hold members	208.626	1.958	1.958	na
4+1 house hold members	181.609	4.509	4.509	na
Population by agegroup				
< 25	178.594	5.196	5.196	na
25 to 34	175.577	747	747	na
35 to 44	192.965	922	922	na
45 to 54	220.167	1.106	1.106	na
55 to 64	214.221	1.249	1.249	na
Population by sex				
Male	185.158	5.183	5.183	na
Female	181.080	5.089	5.089	na

Table 2.2.j Mean, total number of observations (before and after imputation) and the standard error for the equalises income by sex, agegroups and household size. The longitudinal component 2006 (PB010=2006).

	Weighted mean (Weight=RB060)	Number of observations		Standard error
		Before imputations	After imputations	
Subclasses by household size				
1 house hold member	145.113	674	674	na
2 house hold members	199.909	3.835	3.835	na
3 house hold members	208.597	1.986	1.986	na
4+1 house hold members	185.448	4.576	4.576	na
Population by agegroup				
< 25	179.841	5.093	5.093	na
25 to 34	179.424	830	830	na
35 to 44	199.182	981	981	na
45 to 54	224.435	1.228	1.228	na
55 to 64	218.067	1.619	1.619	na
Population by sex				
Male	187.994	5.529	5.529	na
Female	184.669	5.542	5.542	na

2.3. Non-sampling errors

2.3.1. Sampling frame and coverage errors

The sample frame is persons aged 13+ living in private household according to the Register of Population Statistics of Statistics Denmark. The register is based on the Central Population Register (CPR) run by the *Ministry of the Interior*. CPR is updated by the municipalities. The register is a continuously updated register.

Main coverage problems:

- persons living in a private household but registered in the register as living in a collective household at the time of selecting the sub-sample. This group will be under-covered in the sub-sample.
- persons, who after the sub-sample were selected during its lifetime, moved into a private Danish household from a collective household in Denmark or from abroad. This group will likewise be under-covered in the sub-sample:

In theory, these groups should be taken into consideration like persons between 13+ and 15+ at the time of sampling, cf. above, but technically it is difficult, and the number of persons involved is relatively small. The number of immigrant is on a yearly basis less than 1 pct. of the population and

the number of persons living in collective is about 1 pct., primarily persons living in old-age homes and homes for other people, who cannot take care of themselves.

If two persons from the same household are selected to a panel, one of them is dropped as a selected person. If a person, who belongs to a household from an earlier still active panel, is selected, the person is likewise dropped as a selected person. The situation, where a household is selected more than once, is only of theoretical interest. The practical importance is negligible.

2.3.2. Measurement and processing errors

2.3.2.1. Measurement errors

The data comes from interviews or from registers. Income and demographic data primarily comes from registers, while social data primarily comes from interviews. The questionnaire does not include other questions than the SILC-questions. The questionnaire includes between 40 and 50 questions dependent on the type of household.

Interview-method was telephone interviewing when feasible and postal questionnaire for other households. The questionnaire was programmed in BLAISE. To obtain contact by telephone at least 5 calls was conducted. Households contacted by mail received one reminder, if they did not respond to the first letter.

The interviews were conducted by the interviewers of Statistics Denmark. In addition to their usual training and education, they got a special introduction to the SILC-questionnaire of 2 hours.

2.3.2.2. Processing errors

The questionnaire is programmed in BLAISE. Several entry controls are built into the questionnaire. The system for processing, checking and editing data is programmed in SAS. Finally, the files are transformed into Eurostat's standard format and tested using the checking program developed by Eurostat.

During the checking procedure errors are corrected.

2.3.3. Non-response errors

2.3.3.1. Achieved sample size

Table 2.3.3.1a Achieved sample size				
	Total	Rotational group 4	Rotational group 1	Rotational group 2
2003-2006				
Accepted household interviews = accepted interviews of selected personsr	955	955	na	na
Accepted personal interviews (total)	3191	3191	na	na
- sample persons	955	955	na	na
- co-esidents	2236	2236		
2004-2006				
Accepted household interviews= accepted interviews of selected personsr	1942	955	1042	na
Accepted personal interviews	5524	2501	3023	na
- sample persons	1942	955	1042	na
- co-residents	3582	1546	1981	3210
2005-2006				
Accepted household interviews= accepted interviews of selected personsr	3210	955	1042	1213
Accepted personal interviews	6420	2201	2411	2943
- sample persons	1942	955	1042	1213
co-residents	4487	1246	1369	1730

2.3.3.2 Unit non-response

Households

Definitions:

PASS2005 Number passed on to wave 2006 from 2005, the same as the number successfully interviewed 2005 and not out of scope before the 2006-wave (3668 households)

NEW2006 Newly created or added during wave 2006 (2385 households)

PASS2005&BESV2006 Number passed on to wave 2006 from 2005 (3210 households) and successfully interviewed 2006

NEW2006&BESV2006 New 2006 and successfully interviewed 2006 (1459 households)

Wave response rate: $(\text{PASS2005\&BESV2006} + \text{NEW2006\&BESV2006}) * 100 / (\text{NSI2005} + \text{NEW2006})$

Longitudinal follow-up rate: $(\text{Pass2005\&BESV2006} * 100) / (\text{PASS} / 2005)$

Follow up ratio: $(\text{PASS2005\&BESV2006} + \text{NEW2006\&BESV2006}) / \text{PASS2005}$

Achived sample size ratio: $(\text{PASS2005\&BESV2006} + \text{NEW2006\&BESV2006}) / (\text{PASS2005})$

Wave response rate..... 77,1 %

Longitudinal follow-up rate..... 87,5 %

Follow up ratio..... 1,87

Achived sample size ratio..... 2,14

Persons

Introduction

As mentioned Denmark like other register countries uses a sample of persons rather than a sample of households, and traces the selected person - and only the selected person - in the longitudinal component. That means that

RB100 has two values

1: sample person (= the selected person)

2: co-resident. All members of the household except the sample person/selected person are considered as co-residents Therefore there is one and only one sample person in each household.

RB245 has three values

2: selected person

3: not selected respondent

4: not eligible (less than 16)

All members of the current household are in practice successfully interviewed. In the very few cases of individual non response, the person are, if possible, kept in the sample using register information. If it is not possible, the whole household is dropped.

Wave response rate (sample persons):

Definition: Percentage of sample persons successfully interviewed (RB250=11,12,13) among those passed on to wave t (the 2006 wave) from wave t-1(the 2005 wave), excluding those out of scope (under tracing rules)

As there is one and only one sample person in each household the **wave response rate** for persons is the same as for households namely 77,1.

Wave response rate (co-residents):

Definitions:

Wave response rate (co-residents): Percentage of co-residents selected in wave 1 (the 2003-wave) successfully interviewed (RB250 = 11,12,13) among those passed on to wave t (the 2006-wave) from wave t-1 (the 2005-wave)

Number2003: Number of co-residents successfully interviewed in in wave-2003 belonging to panel 4 selected in 2003. (1599 persons).

Number2005: Number of persons included in Number2003 successfully interviewed 2004 and 2005. (1045 persons).

Number2006: Number of persons included in Number2003 successfully interviewed 2004, 2005 and 2006. (877 persons).

Wave response rate (co-residents) is $\text{number2006} * 100 / \text{number2005} = 83,9$

Longitudinal follow-up rate:

Longitudinal follow-up rate (sample persons): Percentage of sample persons successfully interviewed (RB250=11,12,13) in wave t (the 2006-wave) out of all sample persons selected, excluding those who have died or been found out of scope, breakdown by causes of non-response.

As there is one and only one sample person in each household the **Longitudinal follow-up rate (sample persons)** can be defined as ; $(\text{Number of households in the dfile where DB130=11}) \cdot 100 / (\text{the total number of households in the dfile where DB110 } t = 1,2,9)$

Table 2.3.3.2.b Longitudinal follow-up rate by causes of non-response (sample persons).		
	Number	Percentage of total number of households
Total number of households in the dfile	5768	100
Successfully interviewed	4669	80,9
DB130= 21	443	7,7
DB130=22	80	1,4
DB130=23	106	1,8
DB130=24	470	8,1

Achived sample size ratio: The ratio of the number of completed personal interviews (RB250=11,12,13) in wave t (the 2006 wave) to the number of completed personal interviews in wavet-1 (persons aged 16+)

	Number of completed interviews 2006-wave	Number of completed interviews 2005-wave	Number2006/numbe r2005
All persons 16+	9306	7555	1,23
Sample persons 16+	4669	3778	1,24
Co-residents 16+ from first wave (the 2003-wave)	877	1045	0,84

Response rate for non-sample persons:

Ratio of the number of completed personal interviews (RB250=11,12,13) of non-sample persons aged 16+ in wave t (the 2006-wave) to all non-sample persons aged 16+ listed in households accepted for the database DB135=1) in wage t (the 2006-wave) or listed in the most recently conducted household interviews for households, which were forwarded from wavet-1 to wave t .

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

	wave-2003	vawe-2004	wave-2005	wave-2006
1	na	1390	2420	3373
2	na	137	258	295
3	na	8	2	3
4	na	4	5	8
5	na	7	19	11
6	na	0	0	0
7	na	46	71	88
8	na	0	0	
9	2389	2396	2382	2385

	wave-2003	vawe-2004	wave-2005	wave-2006
Total	2389	2533	2640	2680
- 11	2011	2300	2431	2395
- 21	83	43	3	14
22	95	190	206	271
23	na	na	na	na
DB110=1	na	1390	2420	3373

DB110 =3,4,5,6,7,10	na	65	97	110
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2.3.3.3.c Distribution of households by (DB130) household questionnaire result (DB110 = 1,2,9)				
DB130	wave-2003	vawe-2004	wave-2005	wave-2006
Total				
11	1592	2775	3778	4669
21	83	43	3	14
22	95	190	206	271
23	na	na	na	na
24	na	1390	2420	3373

2.3.3.3.d Distribution of households by (DB135) household questionnaire result by household interview acceptance (DB130=11).				
DB135	wave-2003	vawe-2004	wave-2005	wave-2006
1	1592	2775	3778	4669
2	na	na	na	na

2.3.3.4. Distribution of persons for membership status (RB110)

Table 2.3.3.4 Distribution of persons by membership status (RB110).				
RB110	wave-2003	vawe-2004	wave-2005	wave-2006
Total	4092	7112	9819	12085
1	4092	6995	9491	11818
2		0	0	0
3		83	251	177
4		34	77	90

Information about not current household members is not available before the 2007 longitudinal files.

2.3.3.5 Item non-response

Information about income is taken from a register. Against this background, Denmark has no item non-response for income variables.

Table 23.3.5.a: Percentage of households, who have received a specific income component				
	Wave 2003	Wave 2004	Wave 2005	Wave 2006
HY010: TOTAL HOUSEHOLD GROSS INCOME	100	100	100	100
HY020: TOTAL DISPOSABLE HOUSEHOLD INCOME	100	100	100	100
HY022: TOTAL DISPOSABLE HOUSEHOLD INCOME BEFORE SOCIAL TRANSFERS OTHER THAN OLDAGE AND SURVIVOR'S BENEFITS	94	95	96	97

HY023: TOTAL DISPOSABLE HOUSEHOLD INCOME BEFORE SOCIAL TRANSFERS INCLUDING OLDAGE AND SURVIVOR'S BENEFITS	82	90	92	91
HY025: WITHIN-HOUSEHOLD NON-RESPONSE INFLATION FACTOR	na	na	na	na
HY030G: IMPUTED RENT	na	na	na	na
HY040G: INCOME FROM RENTAL OF A PROPERTY OR LAND	2	3	3	3
HY050G: FAMILY/CHILDREN RELATED ALLOWANCES	39	40	41	39
HY060G: SOCIAL EXCLUSION NOT ELSEWHERE CLASSIFIED	0	0	0	0
HY070G: HOUSING ALLOWANCES	13	11	9	9
HY080G: REGULAR INTER-HOUSEHOLD CASH TRANSFER RECEIVED	6	6	5	5
HY090G: INTEREST, DIVIDENDS, PROFIT FROM CAPITAL INVESTMENTS IN UNINCORPORATED BUSINESS	42	42	42	45
HY100G: INTEREST REPAYMENTS ON MORTGAGE	58	62	65	62
HY110G: INCOME RECEIVED BY PEOPLE AGED UNDER 16	8	9	10	10
HY120G/HY120N: REGULAR TAXES ON WEALTH	70	73	76	76
HY130G: REGULAR INTER-HOUSEHOLD CASH TRANSFER PAID	6	5	4	4
HY140G: TAX ON INCOME AND SOCIAL CONTRIBUTIONS	100	100	100	100
HY145N: REPAYMENTS/RECEIPTS FOR TAX ADJUSTMENT	na	na	na	na

Table 2.3.3.5.b: Percentage of persona 16+, who have recieved a specific income component

	Wave 2003	Wave 2004	Wave 2005	Wave 2006
PY010G: EMPLOYEE CASH OR NEAR CASH INCOME	74	75	75	75
PY020G: NON-CASH EMPLOYEE INCOME	6	6	6	6
PY030G: EMPLOYER'S SOCIAL INSURANCE CONTRIBUTION	na	na	na	na
PY035G: CONTRIBUTIONS TO INDIVIDUAL PRIVATE PENSION PLANS	-	-	-	-
PY050G: CASH BENEFITS OR LOSSES FROM SELF-EMPLOYMENT	20	23	21	22
PY070G: VALUE OF GOODS PRODUCED BY OWN-CONSUMPTION	na	na	na	na
PY080G: PENSION FROM INDIVIDUAL PRIVATE PLANS	na	na	na	na
PY090G/PY090N: UNEMPLOYMENT BENEFITS	20	20	19	18
PY100G/PY100N: OLD-AGE BENEFITS	13	12	12	14
PY110G: SURVIVOR' BENEFITS	1	1	1	1
PY120G: SICKNESS BENEFITS	9	10	10	9
PY130G: DISABILITY BENEFITS	8	7	7	8

PY140G: EDUCATION-RELATED ALLOWANCES	7	7	7	6
PY200G: GROSS MONTHLY EARNINGS FOR EMPLOYEES	na	na	na	na

2.4. Mode of data collection

Denmark is one of the countries, which uses a sample of persons rather than a sample of addresses or households in the survey.

Table 2.4.a Distribution of household members aged 16 or over by 'data' status (RB250) and type of type of person..

Data-status = 13 (Data status is always = '13')				
	Wave-2003	Wave-2004	Wave-2005	Wave-2006
Total	3191	5524	7555	9306
Sample perso	1592	2775	3778	4669
Co-resident	1599	2749	3777	4637

Table 2.4.b Distribution of household members aged 16 or over by 'type of interview' (RB250) and type of type of person.

Table 2.4.b Distribution of household members aged 16 or over by 'type of interview' (RB250) and type of type of person					
		Type of interview (RB260)			
		Total	3	4	5
Wave 2003	Total	3191	1458	242	1491
	Sample perso	1592	1368	134	90
	Co-resident	1599	90	108	1401
Wave 2004	Total	5524	2658	198	2668
	Sample perso	2775	2501	117	157
	Co-resident	2749	157	81	2511
Wave 2005	Total	7555	3674	166	3715
	Sample perso	3778	3483	104	191
	Co-resident	3777	191	62	3524
Wave 2006	Total	9306	4544	195	4567

	Sample perso	4669	4345	125	199
	Co-resident	4637	199	70	4637

The establishment of the sample and the delimitation of the household are undertaken in the way described below.

A sample of persons is selected from the Central Population Register (CPR).

All other persons living at the same address are identified using information in the register. In the same way, married couples, couples not married, but expected to be partners, the ID's of fathers and mothers living at the address etc. is identified. In the following, the results will be called the "register-household". The register household can be considered as a hypothesis to be checked in the survey.

As a general rule, the selected person becomes the respondent of the household questionnaire, and therefore the person to be interviewed about the composition of the household, etc. The only exception is the case, where the selected person is under 25 years and has parents living at the address. In this case, we randomly select one of the parents to represent the household (the household respondent).

After the interview, a "statistical household" following Eurostat's definition is defined. Persons in the register-household, who do not belong to the statistical household, will be excluded from the sample and persons belonging to the statistical household, who are not found in the register-household are included.

As mentioned income and demographic data, including citizenship etc. primarily comes from registers, while social data primarily comes from interviews.

The questionnaire was split up into 4 different parts.

- a) Questions relating to defining households
- b) Questions about the household
- c) General questions about the household members
- d) Detailed questions about the selected person; including detailed labour information and health information

According to the instructions given to the interviewers, questions under a), b) and c) and if the selected person is the same as the selected household respondent also d), shall be asked the person in the household selected as household respondent if possible. If this person is unable to respond, e.g. is not at home or is busy with other things, it should be attempted to arrange an appointment to conduct an interview at another time. If such an appointment appears be difficult to obtain, it shall be attempted to achieve an interview with the spouse, if any. The interviewers are told to accept partners not married as proxies for the interview, if necessary, but that they should be very careful in doing so. Other members of the household should only be accepted as proxies in the worst case, e.g. if no other possibility is feasible.

Questions under d shall preferable be asked the selected person. If it is not feasible, because the person is not home or is busy with other things, the instruction is that a proxy interview with one of the parents is OK.

It is our experience that this procedure is the most feasible. It makes the interview more fluent and comfortable. Interviewing each household member individually instead of one household member on behalf of the others would be a troublesome process to the interviewers as well as to the interviewees.

It must be taken into account, that information on income and many other subjects is information extracted from registers, and therefore was not included in the questionnaire.

2.5. Imputation procedures

No imputations. Income information is extracted from registers.

2.6 Imputed rent

Until 2007 imputed rent for dwellings owned by the occupant was, in principle, calculated as 4% of the taxable value of the property in our national income statistics and in the micro-files that we transmit to Eurostat. The taxable value is a relatively good estimate of the market value. The properties are valued by the municipalities. From 2007 and onwards imputed rent is calculated using a rental equivalence method. Figures until 2006 is not comparable with figures from 2007 and onwards, where the variable became obligatory.

2.7 Company cars

Information about company cars is extracted from the tax authorities registers as the taxable value.

3. COMPARABILITY

3.1. Basic concepts and definitions

Reference population:

Private households residing in Denmark 1 January 2006 and members of these households.
No difference from EU-SILC concept

Private household definition:

No difference from EU-SILC concept.

Household membership:

No difference from EU-SILC concept.

Income reference period(s) used:

Calendar year 2005

Period for taxes on income and social insurance contributions:

Calendar year 2005

Reference period for taxes on wealth:

Calendar year 2005

Lag between the income reference period and current variables:

4-6 months

Total duration of the data collection of the sample:

6 months

Information on activity status during the income reference period:

Calendar year 2005

3.2. Components of income

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

HY090G can be negative .

The concept is calculated as a net-concept. E.g. interest received from bank accounts etc. are deducted interest paid on consumer loans etc. If interest paid exceeds capital income HY090 will be negative

HY080G/HY080N: REGULAR INTER-HOUSEHOLD CASH TRANSFER RECEIVED/

HY130G/HY130N: REGULAR INTER-HOUSEHOLD CASH TRANSFER PAID

Only information about transfers known by authorities are included. Typically obligatory transfers and transfers for which tax-deductions can be obtained. Other forms of regular transfers are not common in Denmark. In the 2003 and 2004 survey we had some questions about voluntary transfers, but the incidences was low and data quality was bad, so we decided not to use the data.

Apart from these facts only insignificant departures from EUSILC 065..

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

First wave:

The variables concerning income, wealth and taxes are monitored by registers.

The most important source is the registers of the tax authorities. These registers contain information on all kinds of taxable income and on all kinds of taxes. In addition to information used for taxation purposes, the register contains specified information reported by municipalities on social assistance, housing allowances, disability benefits, sickness benefits etc. and on the originator's number in the Central Business Register.

Almost all income in Denmark is taxable. The only exceptions of any importance are child allowances, housing allowances and supplementary payments to the disabled and the like. The municipalities report, as mentioned above, information about these forms of income to the Tax Authorities.

Information about the number of days for which the taxpayer received benefits according to different social, unemployment and training schemes are submitted to Statistics Denmark by municipalities and other authorities. The information is located in the so-called Labour Market Policy Measures Register and is used, when the different kinds of benefits from unemployment funds, trade unions etc. are split up into the different income components.

Income in the form of regular pension is from private schemes and allowances from the State Education Fund's can be distinguished and broken down by components, using information about the kind of income in the tax authorities' registers and about the originator of the income from the Central Business Register and the age of the person.

Information about the amount of unemployment benefit payments can be extracted from a special register.

Information from these different sources makes it possible to estimate the breakdown of gross income by the components with a high degree of accuracy.

Following waves: Unchanged

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

Income components were collected gross.

3.2.4. The method used for obtaining income target variables in the required form (i.e. as gross values)

They were collected gross.
Cf. 3.2.1

3.3 Tracing rules

Tracing was conducted using the personal number in the population register. In principle there is no difference from national rules and the standard EU-rules.

4. COHERENCE

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

All income target variables are monitored using external sources.