Relating to the EU-SILC UK Operation 2005-2007

Final Quality Report

Office for National Statistics

Karl Ashworth
Andrew Barnard
Rob Bucknall
Deborah Curtis
Steven Dunstan
Heather Wagstaff

Office for National Statistics
Government Buildings
Cardiff Rd
Newport
NP10 8XG
Email:
Socialsurveys@ons.gov.uk

Table of Contents

Index of Tables

Preface

According to article 16 of the Regulation (EC) no. 1177/2003 of the European Parliament and of the Council of 16 June 2003 concerning Community statistics on income and living conditions (EU-SILC), Member States and the Commission (Eurostat) will produce the following reports:

Member States shall produce by the end of year N+2 (2009), final quality reports that cover both cross-sectional and longitudinal components in relation to the year of the survey N (2007).

Note on UK Data and Final Quality Report for the 2005-7 Longitudinal Operation

Please note that the data associated with this Quality Report have been updated since the first release of this document, consequently some of the figures in this Report may be out-of-date. The UK will update this Quality Report to reflect these amendments at the earliest opportunity.

1. Common longitudinal European Union indicators

In 2007 the longitudinal UK EU-SILC data comprise a panel over three years 2005-2007. Indicators will not be available until the 2008 longitudinal dataset is produced (in 2010). At which time, the longitudinal dataset will benefit from four years of data (2005 - 2008).

2. Accuracy

Accuracy: denotes the closeness of computations or estimates to the exact or true population values.

2.1 Sampling design

2.1.1 Type of sampling

EU-SILC UK uses data from the General Household Survey (Great Britain) (GHS) and the Living Conditions Survey (Northern Ireland) (LCS). The Office for National Statistics (ONS) is responsible for the GHS and the Northern Ireland Statistics and Research Agency (NISRA) run the LCS. The EU-SILC component of the LCS is based on a sample of around 300 households, which represent the (approximately) two per cent of UK households that live in Northern Ireland. All of the data analysis and processing (for EU-SILC) from these two sources is undertaken by ONS.

EU-SILC UK aims to interview all adults aged 16 and over at every household at the sampled addresses. The sample is selected using a probability, stratified two-stage design.

2.1.2 Sampling units (one stage, two stages)

Households are sampled from the small users Postcode Address File (PAF). This is a list of all addresses maintained by the UK Post Office. The PAF files used on our sampling system are updated twice a year. The Postcode address file is ordered by postcode sector, which are similar in size to a UK electoral ward area. The postcode sectors are the Primary Sampling Units (PSU-1) for EU-SILC and the Secondary Sampling Units (PSU-2) are addresses within those sectors.

2.1.3 Stratification and sub-stratification criteria

Stratification involves the division of the population into sub-groups, or strata, from which independent samples are taken. This ensures that a representative sample is drawn with respect to the stratifiers. Stratification of a sample can lead to substantial improvements in the precision of the survey estimators provided that the strata are chosen such that members of the same strata are as similar as possible in respect of the characteristics of interest. The bigger the differences between strata, the greater the gain in the precision of the survey estimates.

Initially, postcode sectors are allocated to 30 major strata. These are based on the 10 Government Office Regions in England (sub-divided between the former Metropolitan and non-Metropolitan counties). In addition London is subdivided into quadrants (Northwest, Northeast, Southwest and Southeast) with each quadrant divided into inner and outer areas (Annex 1). Using a finer division of London generally improves the precision associated with the estimates. There are five subdivisions in Scotland, two in Wales and one in Northern Ireland.

Within each major stratum, postcode sectors are stratified according to selected indicators taken from the 2001 Census. Sectors are initially ranked according to the proportion of households with no car, and then divided into three bands containing approximately the same number of households. Within each band, sectors are re-ranked according to the proportion of households with a household reference person in socio-economic groups 1 to 5 and 13 (Annex 2), and these bands are then sub-divided into three further bands of approximately equal size. Finally, within each of these bands, sectors are re-ranked according to the proportion of people who are pensioners. In order to minimise the difference between one band and the next, the ranking by the pensioners and socio-economic group criteria are in the reverse order in consecutive bands.

Major strata were then divided into minor strata with equal numbers of addresses, the number of minor strata per major strata being proportionate to the size of the major stratum, so larger PSUs have more chance of being selected. In 2005 the frame was divided into 720 strata. In 2006, 588 of these were rolled forward to the next wave in the longitudinal design. There were 132 pseudo wave 4 strata which were replaced and an additional 96 strata added, giving 816 for 2006. In 2007, 648 of these were again rolled forward to the next wave in the longitudinal design. There were 168 pseudo wave 4 strata which were replaced and an additional 60 strata added, giving 876 for 2007. Each PSU formed a quota of work for an interviewer. Within the 228 new PSUs, 23 addresses were randomly selected.

2.1.4 Sample size and allocation criteria

Regulation 1177/2003 states that member states have to achieve a minimum effective sample size. For the UK and for the cross sectional component this is 7,500 households and 13,750 persons aged 16 and above. For the longitudinal component this is 5,750 households and 10,500 persons aged 16 and above.

The sample design for UK EU-SILC was based on the assumption that a design effect of 1.25 would be achieved under the design. In 2006, 13,857 addresses were selected for survey, yielding an achieved sample of 9,902 eligible households. Within these households 23,365 people were residents of which 18,563 were interviewed and aged at least 16 years.

In 2007, 13,478 addresses were selected for survey, yielding a sample of 9,275 eligible households. Within these households 21,942 people were residents of whom 17,484 were eligible for a personal interview (aged at least 16 years of age). Using a calculated design effect of 1.27, these numbers correspond to an effective sample size of 7,303 households.

Standard errors for the UK EU-SILC indicators are not yet available, so it is not currently possible to provide an estimate of the design effect or the achieved effective sample size for the longitudinal component.

Table 1: Sample size, addresses and household interviews

	2005		2006 Total households (db110>0)		2006 Follow-up households (db110=1,2,11)		2006 Split households (db110=8)		2007 Total households (db110>0)		2007 Follow-up households (db110=1,2,11)		2007 Split households (db110=8)	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Used addresses	9923	100.0	11894	100.0	5789	100.0	127	100.0	8449	100.0	7407	100.0	174	100.0
Addresses existent	9078	91.5	10891	91.6	5789	100.0	127	100.0	7592	89.9	7407	100.0	174	100.0
Addresses non-existent	845	8.5	1003	8.4	0	0.0	0	0.0	857	10.1	0	0.0	0	0.0
Gross sample	9078	100.0	10891	100.0	5789	100.0	127	100.0	7592	100.0	7407	100.0	174	100.0
Addresses successfully contacted	8993	99.1	10780	99.0	5787	100.0	82	64.6	7510	98.9	7402	99.9	97	55.7
Addresses not successfully contacted	85	0.9	111	1.0	2	0.0	45	35.4	82	1.1	5	0.1	77	44.3
Successfully contacted addresses	8993	100.0	10780	100.0	5787	100.0	82	100.0	7510	100.0	7402	100.0	97	100.0
Household questionnaire completed DB130=11	6316	70.2	7982	74.0	4639	80.2	72	87.8	6062	80.7	5990	80.9	72	74.2
Refusal to co-operate DB130=21,22	2168	24.1	2379	22.1	854	14.8	7	8.5	66	0.9	590	8.0	16	16.5
Unable to respond DB130=23	142	1.6	156	1.4	49	0.8	0	0.0	116	1.5	115	1.6	1	1.0
Other reasons DB130=24	367	4.1	263	2.4	245	4.2	3	3.7	25	0.3	17	0.2	8	8.2
DB130 Missing	0	0.0	0	0.0	0	0.0	0	0.0	701	9.3	690	9.3	0	0.0
Household questionnaire completed	6316	100.0	7982	100.0	4639	100.0	72	100.0	6062	100.0	5990	100.0	72	100.0
Interview accepted for database DB135=1	6316	100.0	7980	100.0	4637	100.0	72	100.0	6062	100.0	5990	100.0	72	100.0
Interview rejected DB135=2	0	0.0	2	0.0	2	0.0	0	0.0	0	0.0	0	0.0	0	0.0

The above columns for 2006 and 2007 fall under the heading **Longitudinal Sample 2005-2007**.

Table 2: Households and persons in the longitudinal component

	Longitudinal Sample 2005-2007			
	2005	**2006**	**2007**	**Total**
Used Addresses	9,923	11,894	8,449	30,266
Addresses successfully contacted	8,993	10,780	7,510	27,283
Interview accepted for database	6,316	7,980	6,062	20,358
Persons	15,006	19,238	16,438	50,682
Personal interviews	11,832	14,968	11,404	38,204

2.1.5 Sample selection schemes

EU-SILC UK uses a two-stage sampling scheme:

1. Selection of a Primary Sampling Units (PSUs) utilising a probability proportional to size sampling scheme, and selecting one PSU per stratum with a systematic selection procedure based on a random starting point.
2. Systematic random sampling of 23 addresses within a PSU.

2.1.6 Sample distribution over time

Household interviews for EU-SILC UK are spread evenly throughout the calendar year. Typically a small number of interviews will be completed in January of the following year, however in the 2006 survey, due to a shortage of interviewers, a larger number of interviews and re-issues remained unallocated, and so the field period was extended until April 2007.

Table 3: Sample distribution over time

	Year of Survey		
	2005	**2006**	**2007**
January		584	428
February		665	467
March		743	501
April	576	618	467
May	740	690	578
June	727	668	521
July	618	635	439
August	740	717	594
September	735	657	557
October	775	660	541
November	743	693	520
December	548	550	373
January	68[*]	75[#]	73[&]
February	46[*]	16[#]	3[&]
March		4[#]	
April		5[#]	
Total	6316	7980	6062

* data collected in 2006
\# data collected in 2007
& data collected in 2008

2.1.7 Renewal of sample: rotational groups

In the UK, 2005 was the first year for the EU-SILC survey. To accommodate EU-SILC, the GHS adopted a new sample design in line with Eurostat requirements, changing from a cross-sectional to a longitudinal format.

The sample design follows a four-year sample rotation in which households remain in the sample for four years (waves) with one quarter of the sample being replaced each year. Each quarter of the sample is known as a replication, and each replication is representative of the target population. Figure 1 illustrates how the design operates.

Once the system is fully established (from year 4 onwards - 2008) the sample for any one year consists of four replications which have been in the survey for 1, 2, 3 or 4 years. As 2007 is the third year of this longitudinal design, the 2007 cross-sectional sample contains households being re-interviewed for the first time (approximately 75% of households were from sample replications 3, 4 and 5).

Figure 1: Renewal of sample: Rotational groups

Sample replication	Year 1 (2005)	Year 2 (2006)	Year 3 (2007)	Year 4 (2008)	Year 5 (2009)	Year 6 (2010)
1	1st					
2	1st	2nd				
3	1st	2nd	3rd			
4	1st	2nd	3rd	4th		
5		1st	2nd	3rd	4th	
6			1st	2nd	3rd	4th
7				1st	2nd	3rd
8					1st	2nd
9						1st

Table 4: Addresses and completed interviews by rotational group

	2005		2006		2007	
	Used addresses	Completed and accepted interviews	Used addresses	Completed and accepted interviews	Used addresses	Completed and accepted interviews
R3	4525	2918	2987	2163	2327	1718
R4	5398	3398	3459	2545	2763	2026
R5			5448	3272	3359	2318
Total	9923	6316	11894	7980	8449	6062

2.1.8 Weightings

This section describes the methods used to calculate weights for the UK EU-SILC 2007 survey. The methods are broadly consistent with those recommended by Eurostat

2.1.8.1   Design factor

For the first wave, addresses are selected under the design outlined in the preceding sections of this report. The design weight for a household is calculated as the inverse of the inclusion probability for the sampled address.

2.1.8.2   Non-response adjustments (first wave)

Non-response to the surveys (GHS and LCS) used to produce EU-SILC can introduce bias. For the UK, an attempt is made to correct for this bias by weighting households based on their propensity to respond. For EU-SILC, non-response can occur at any given wave.

For the first wave for a given rotational group, information from the 2001 Census and GHS is used to weight for non-response. The Census is mandatory in the UK and so both responders and non-responders to the GHS can be matched to Census records. This was done using 2001 data and response classes were formed based on propensity to respond, given certain characteristics. For EU-SILC, households are given a different non-response weight depending on the response class to which they belong.

2.1.8.3   Adjustments to external data (first wave)

The UK produces population projections or totals (from the Census) using information on registered births, deaths and migration. These estimates are used in the estimators for EU-SILC.

The population totals of the number of people living in private households within the UK are broken down by 12 age by sex categories and seven regional categories to give 19 calibration groups as shown below. A generalised regression model is then used to produce a set of calibration weights at a household level, such that the sum of the weights across persons within each of the calibration groups equal the population totals. This procedure is carried out using Stats Canada's GES package. The calibration weight is applied to the product of the design weights and non-response weight.

Age-group by sex

0-4	Males and Females		
5-15	Males and Females		
16-24	Males	16-24	Females
25-44	Males	25-44	Females
45-64	Males	45-64	Females
65-74	Males	65-74	Females
75+	Males	75+	Females

Regions

Metropolitan
Non-metropolitan
London
South East

Wales
Scotland
Northern Ireland

2.1.8.4 Final longitudinal weight

The longitudinal weights (RB062 and RB063) are only given for the last year (i.e. 2007). For the first wave for a given rotational group, the longitudinal base weight (RB060) is calculated as the design weight adjusted for non-response and calibrated to the UK population totals.

2.1.8.5 Non-response adjustments (attrition in subsequent waves)

Attrition is a form of non-response found on longitudinal surveys between waves. The 2007 EU-SILC is the survey's third year in the UK; this meant that approximately three-quarters of sampled households had been surveyed in 2006. As these sampled households had previously participated in the survey, details of respondents and non-respondents were linked back to their corresponding information at the previous wave. Logistic regression was used to model the likelihood of response in the current wave against the characteristics of households at their interview in the previous wave. A variety of household variables such as household composition, tenure, region and car ownership were tested for inclusion. Characteristics determined as significant by the logistic regression model (at the five per cent significance level) were used to weight for this attrition. The variables reaching significance are listed in Table 5 below.

Table 5: Variables included in the logistic regression model of household attrition in 2007

Variable
Current wave
Government Office Region
Accommodation type
Household composition
Age of household reference person
Ethnicity of household reference person
Year of arrival into the United Kingdom of the household reference person
ILO employment status of household reference person
Employment contract of household reference person
Total number of hours worked by household reference person
Personal income benefits received by the household reference person
Total number of residents in the household who smoke
Total number of residents in the household who consume alcohol

2.1.8.6 Adjustments to external data (longitudinal population)

Reliable external data relating to the longitudinal population were not available, so the longitudinal weights did not undergo a further stage of calibration.

2.1.8.7   Final longitudinal weight (subsequent waves)

For subsequent waves of a given rotational group, the base weight (RB060) is the previous year's weight adjusted for attrition. Furthermore, co-residents joining the sample households receive a zero weight and newborns receive their mother's weight. The weights are also scaled to the longitudinal population in scope at each wave from the start of the panel.

RB060 is produced from the base weights and are scaled so that the sum of the weights over those individuals in scope and sampled in both 2006 and 2007 equals the size of the longitudinal population for 2006-2007.

For the longitudinal weights (RB062, RB063), persons that have moved in from outside the sample, are newly born, have moved out or died are given a zero weight.

2.1.8.8   Final household cross-sectional weight

The final cross sectional weight (DB090) is calculated from the base weights.

2.1.9 Substitutions

In 2007, no substitutions were made.

2.2   Sampling errors

The following tables present the means, number of observations and standard errors for the key income variables for the cross-sectional component in 2007 and for each wave of the longitudinal component 2005-2007. The means are calculated across all households, including those who have not recorded any income against the component.

Table 6: Mean, Total Number of Observations and Standard Errors for Income Components (weighted) - 2007 Cross-Sectional

Income Component	Mean	Unweighted Number of Observations		Standard Error
		Before Imputation	After Imputation	
Total household income variables				
Total household gross income	36,041	5,645	9,275	479.1
Total disposable household income	27,145	5,876	9,275	323.2
Total disposable household income before social transfers other than old-age and survivor benefits	24,746	6,299	9,275	341.4
Total disposable household income before social transfers including old-age and survivors' benefits	20,059	6,881	9,275	288.7
Gross income components at household level				
Income from rental of a property or land	337	9,197	9,275	32.1
Family/child related allowances	722	8,843	9,275	14.5
Social exclusion not elsewhere classified	398	9,064	9,275	18.0
Housing allowances	453	9,111	9,275	21.0
Regular inter-household cash transfer received	107	9,256	9,275	10.9
Interest, dividends, etc.	1,129	7,933	9,275	72.3
Interest repayments on mortgage	2,065	9,193	9,275	44.5
Income received by people aged under 16	11	9,273	9,275	1.9
Regular taxes on wealth	1,002	8,789	9,275	7.2
Regular inter-household cash transfer paid	162	9,240	9,275	16.4
Tax on income and social contributions	7,732	6,762	9,275	161.2
Gross income components at personal level				
Employee cash or near cash income	12,280	15,733	17,484	198.7
Non-cash employee income	197	17,484	17,484	10.6
Employer's social insurance contribution	791	4,522	17,484	38.3
Contributions to individual private pension plans	164	17,022	17,484	9.3
Cash benefits or losses from self-employment	1,658	17,205	17,484	98.4
Value of goods produced for own consumption	0	17,484	17,484	0
Pension from individual private plans	135	17,248	17,484	14.9
Unemployment benefits	42	17,452	17,484	5
Old-age benefits	2,638	16,018	17,484	121.4
Survivor's benefits	37	17,463	17,484	6.1
Sickness benefits	127	17,367	17,484	6.3
Disability benefits	120	17,325	17,484	6.7
Education-related allowances	40	17,453	17,484	5.5
Gross monthly earnings for employees	1,661	16,043	17,484	23.5

Table 7: Mean, Total Number of Observations and Standard Errors for Income Components 2005 part of longitudinal (weighted)

Income Component	Mean	Unweighted Number of Observations		Standard Error
		Before Imputation	After Imputation	
Total household income variables				
Total household gross income	33,198	3,693	6,316	
Total disposable household income	24,649	3,938	6,316	
Total disposable household income before social transfers other than old-age and survivor benefits	22,475	4,195	6,316	
Total disposable household income before social transfers including old-age and survivors' benefits	18,369	4,574	6,316	
Gross income components at household level				
Income from rental of a property or land	281	6,247	6,316	
Family/child related allowances	685	6,014	6,316	
Social exclusion not elsewhere classified	378	6,137	6,316	
Housing allowances	425	6,217	6,316	
Regular inter-household cash transfer received	227	6,278	6,316	
Interest, dividends, etc.	863	5,291	6,316	
Interest repayments on mortgage	1,593	6,215	6,316	
Income received by people aged under 16	10	6,316	6,316	
Regular taxes on wealth	893	5,877	6,316	
Regular inter-household cash transfer paid	156	6,276	6,316	
Tax on income and social contributions	7,500	4,549	6,316	
Gross income components at personal level				
Employee cash or near cash income	11,437	10,441	11,832	
Non-cash employee income	223	11,749	11,832	
Contributions to individual private pension plans	98	11,768	11,832	
Cash benefits or losses from self-employment	1,783	11,609	11,832	
Value of goods produced for own consumption	0	11,832	11,832	
Pension from individual private plans	107	11,687	11,832	
Unemployment benefits	35	11,798	11,832	
Old-age benefits	2,316	10,842	11,832	
Survivor's benefits	25	11,806	11,832	
Sickness benefits	121	11,742	11,832	
Disability benefits	102	11,710	11,832	
Education-related allowances	31	11,808	11,832	

Table 8: Mean, Total Number of Observations (before and after imputation) and Standard Errors for Income Components 2006 part of longitudinal (weighted)

Income Component	Mean	Unweighted Number of Observations		Standard Error
		Before Imputation	After Imputation	
Total household income variables				
Total household gross income	33,762	4,852	7,980	
Total disposable household income	25,211	5,115	7,980	
Total disposable household income before social transfers other than old-age and survivor benefits	23,006	5,420	7,980	
Total disposable household income before social transfers including old-age and survivors' benefits	18,625	5,824	7,980	
Gross income components at household level				
Income from rental of a property or land	233	7,914	7,980	
Family/child related allowances	641	7,737	7,980	
Social exclusion not elsewhere classified	346	7,796	7,980	
Housing allowances	428	7,910	7,980	
Regular inter-household cash transfer received	106	7,965	7,980	
Interest, dividends, etc.	825	6,698	7,980	
Interest repayments on mortgage	1,690	7,907	7,980	
Income received by people aged under 16	10	7,980	7,980	
Regular taxes on wealth	909	7,540	7,980	
Regular inter-household cash transfer paid	149	7,959	7,980	
Tax on income and social contributions	7,493	5,778	7,980	
Gross income components at personal level				
Employee cash or near cash income	11,876	13,225	14,968	
Non-cash employee income	201	14,968	14,968	
Contributions to individual private pension plans	163	14,657	14,968	
Cash benefits or losses from self-employment	1,549	14,749	14,968	
Value of goods produced for own consumption	0	14,968	14,968	
Pension from individual private plans	168	14,803	14,968	
Unemployment benefits	43	14,931	14,968	
Old-age benefits	2,544	13,650	14,968	
Survivor's benefits	31	14,937	14,968	
Sickness benefits	142	14,843	14,968	
Disability benefits	92	14,868	14,968	
Education-related allowances	39	14,952	14,968	

Table 9: Mean, Total Number of Observations (before and after imputation) and Standard Errors for Income Components 2007 part of longitudinal (weighted)

Income Component	Mean	Unweighted Number of Observations		Standard Error
		Before Imputation	After Imputation	
Total household income variables				
Total household gross income	36,252	3,785	6,062	
Total disposable household income	27,081	3,896	6,062	
Total disposable household income before social transfers other than old-age and survivor benefits	25,118	4,157	6,062	
Total disposable household income before social transfers including old-age and survivors' benefits	20,442	4,554	6,062	
Gross income components at household level				
Income from rental of a property or land	305	6,015	6,062	
Family/child related allowances	630	5,837	6,062	
Social exclusion not elsewhere classified	278	5,967	6,062	
Housing allowances	416	5,963	6,062	
Regular inter-household cash transfer received	102	6,056	6,062	
Interest, dividends, etc.	1,142	5,225	6,062	
Interest repayments on mortgage	2,001	6,024	6,062	
Income received by people aged under 16	11	6,061	6,062	
Regular taxes on wealth	1,013	5,810	6,062	
Regular inter-household cash transfer paid	142	6,040	6,062	
Tax on income and social contributions	7,943	4,528	6,062	
Gross income components at personal level				
Employee cash or near cash income	12,167	10,411	11,404	
Non-cash employee income	204	11,404	11,404	
Contributions to individual private pension plans	166	11,149	11,404	
Cash benefits or losses from self-employment	1,607	11,240	11,404	
Value of goods produced for own consumption	0	11,404	11,404	
Pension from individual private plans	148	11,245	11,404	
Unemployment benefits	36	11,392	11,404	
Old-age benefits	2,612	10,432	11,404	
Survivor's benefits	38	11,388	11,404	
Sickness benefits	103	11,385	11,404	
Disability benefits	88	11,313	11,404	
Education-related allowances	38	11,385	11,404	

Table 10: The mean, the number of observations (before and after imputations) and the standard error for the equivalised disposable income 2005 (weighted R3, R4)

| Equivalised disposable income | Mean | Number of observations | | Standard error | S.E./Mean % |
		Before Imputation	After imputation		
By household size					
1 household member	12,946	1,293	1,778		
2 household members	16,059	2,918	4,580		
3 household members	17,308	1,524	2,850		
4 and more household members	15,161	3,005	5,798		
By age groups					
< 25	14,495	2,602	4,612		
25 - 34	17,928	1,124	1,841		
35 - 44	17,241	1,327	2,238		
45 - 54	18,387	1,086	1,959		
55 - 64	16,045	1,095	1,911		
65 +	11,309	1,506	2,445		
By sex					
Male	15,927	4,209	7,230		
Female	15,195	4,531	7,776		
Total					

Source: EU-SILC longitudinal sample 2005-7

Table 11: The mean, the number of observations (before and after imputations) and the standard error for the equivalised disposable income 2006 (weighted R3, R4 & R5)

| Equivalised disposable income | Mean | Number of observations | | Standard error | S.E./Mean % |
		Before Imputation	After imputation		
By household size					
1 household member	13,588	1,572	2,169		
2 household members	16,967	3,866	5,681		
3 household members	16,584	2,043	3,521		
4 and more household members	14,736	4,109	7,159		
By age groups					
< 25	14,196	3,361	5,460		
25 - 34	17,590	1,385	2,046		
35 - 44	17,442	1,739	2,769		
45 - 54	18,032	1,477	2,492		
55 - 64	16,829	1,547	2,505		
65 +	11,881	2,081	3,258		
By sex					
Male	16,080	5,594	8,867		
Female	15,141	5,996	9,663		

Source: EU-SILC longitudinal sample 2005-7

Table 12: The mean, the number of observations (before and after imputations) and the standard error for the equivalised disposable income 2007 (weighted R3, R4 & R5)

Equivalised disposable income	Mean	Number of observations		Standard error	S.E./Mean %
		Before Imputation	After imputation		
By household size					
1 household member	14,512	1,112	1,618		
2 household members	17,867	2,980	4,292		
3 household members	17,876	1,578	2,621		
4 and more household members	16,203	3,354	5,449		
By age groups					
< 25	15,663	2,554	3,995		
25 - 34	19,215	979	1,324		
35 - 44	18,818	1,430	2,070		
45 - 54	18,817	1,141	1,922		
55 - 64	17,414	1,249	1,974		
65 +	12,928	1,671	2,695		
By sex					
Male	17,294	4,376	6,705		
Female	16,350	4,648	7,275		

Source: EU-SILC longitudinal sample 2005-7

Table 13: The mean, the number of observations (before and after imputations) and the standard error for the equivalised disposable income for the cross-sectional component of 2007 (weighted)

Equivalised disposable income	Mean	Number of observations		Standard error	S.E./Mean %
		Before Imputation	After imputation		
By household size					
1 household member	14,530	1,770	2,578		
2 household members	18,410	4,344	6,824		
3 household members	17,331	2,298	4,206		
4 and more household members	16,432	4,651	8,334		
By age groups					
< 25	15,396	3,733	6,438		
25 - 34	19,440	1,398	2,225		
35 - 44	18,605	2,098	3,299		
45 - 54	18,840	1,700	2,966		
55 - 64	18,458	1,754	2,972		
65 +	13,483	2,380	4,042		
By sex					
Male	17,403	6,329	10,625		
Female	16,475	6,734	11,317		

Source: EU-SILC cross-sectional sample 2007

2.3 Non-sampling errors

Survey results are subject to various sources of error. The total error in a survey estimate is the difference between the estimate derived from the sample data collected and the true value for the population.

2.3.1 Sampling frame and coverage errors

The target population of EU-SILC UK is all private households and their current members at the time of data collection. Persons living in collective households and in institutions are excluded from the target population.

The sampling frame for the first wave is the Small Users file of the Postcode Address File (PAF). This is an up to date list of all addresses maintained by the UK Post Office. For the GHS (and therefore EU-SILC) all Scottish offshore islands and the Isles of Scilly are excluded from the frame because of excessive interview travel costs. The impact of such coverage error on UK EU-SILC is minimal.

2.3.2 Measurement and processing errors

2.3.2.1 Measurement errors

Substantial efforts have been made to avoid measurement errors, for example, through extensive interviewer training and thorough questionnaire testing. With regards interviewer training, face-to-face and telephone interviewers who work on EU-SILC UK are recruited only after careful selection procedures after which they take part in an initial training course. Before working on EU-SILC they attend a briefing and new recruits are always supervised either by being accompanied in the field by a Field Manager or monitored by a Telephone Interviewing Unit supervisor (TIUs). All interviewers who continue to work on EU-SILC are observed regularly in their work.

2.3.2.2 Processing errors

Data collection is carried out by face-to-face interviewers using Computer Assisted Personal Interviewing (CAPI) on laptop computers. Blaise software (developed by Statistics Netherlands) is used, which is an integrated system for survey processing. The use of Blaise enables a reduction in processing-errors as data can be "checked" as it is entered by interviewers. For example, income data are "checked" at the point of collection to make sure that Net values are not greater than Gross values for an individual. Data are also rotated forward from the previous wave for certain questions, including qualifications and family information. This allows the interviewer to query and correct any inconsistencies between waves.

Data are converted from Blaise to SPSS and are edited using this software. At this stage there is further checking for the consistency and plausibility of data. For example, comparisons are made with the income data recorded at the previous wave to check for consistency.

2.3.3 Non-response errors

There are two main types of non-response errors - unit non-response and item non-response.

In strictly controlled circumstances, interviewers are allowed to conduct a proxy interview with a close household member to reduce unit non-response errors. Proxy interviews are only used where it has proved impossible, despite repeated calls, to contact a particular member of a household in person. In these cases, some questions are omitted, for example those which are more subjective such as those relating to health.

Further effort is directed towards reducing item non-response by converting these proxy interviews to full interviews. Attempts are made to contact the household member, who was unavailable during the initial face-to-face interview, and ask them the questions that were omitted from the proxy interview. It was established through extensive research that the most efficient way of re-contacting these respondents was by employing Telephone Unit (TIU) interviewers who could contact a widely dispersed population more efficiently than would be possible by conducting face-to-face interviews.

A problem specific to the UK concerns missing income data for some respondents. In the 2005 and 2006 surveys and for the first 3 months of the 2007 survey, respondents were allowed to refuse to answer all income questions. As such, information for these respondents is missing (approximately 60 individuals in 2007). In addition, proxy respondents are not asked any income questions, apart from one question relating to 'total personal disposable income' (this has also been rectified, since November 2007 proxy respondents have been asked to provide full-income information).

As a consequence of this, for the survey years 2005, 2006 & 2007 there are a relatively large number of individuals for whom income information has been wholly imputed. In the cross-sectional 2005 dataset, income information was wholly imputed for 11% of individual respondents, and in 2006 the corresponding rate was 13%.

2.3.3.1   Achieved sample size

Table 14: Sample size and accepted interviews by year and rotational group

		2005	2006	2007	Total
Accepted household interviews	R3	2,918	2,163	1,718	6,799
	R4	3,398	2,545	2,026	7,969
	R5		3,272	2,318	5,590
Personal interview accepted					
Number of persons aged 16 and above	R3	5,456	4,078	3,253	12,787
	R4	6,376	4,809	3,816	15,001
	R5	-	6,081	4,335	10,416
Sample persons	R3	5,456	3,951	3,088	12,495
	R4	6,376	4,632	3,587	14,595
	R5	-	6,081	4,240	10,321
Co-residents	R3	-	127	165	292
	R4	-	177	229	406
	R5	-	-	95	95

2.3.3.2 Unit non-response

Table 15: Indicators on unit non-response by rotational group (2005)

	R3	R4	Total
Addresses successfully contacted	4,106	4,887	8,993
Valid addresses selected	4,144	4,934	9,078
Ra - address contact rate	99.1%	99.0%	99.1%
Household interviews completed	2,918	3,398	6,316
Eligible households	4,106	4,887	8,993
Rh - proportion of completed interviews	71.1%	69.5%	70.2%
NRh - household non-response rate	28.9%	30.5%	29.8%
Person interviews completed	5,456	6,376	11,832
Number of eligible individuals	5,456	6,376	11,832
Rp - proportion of completed interviews	100.0%	100.0%	100.0%
*NRp – overall individual non-response rates	29.5	31.2	30.4

Table 16: Household response rates - Comparison of results codes between wave 2 2006 and wave 1 2005 (R4)

Sample outcome in wave 1 - 2005		Sample outcome in wave 2 - 2006											
		DB130=11											
		DB135 = 1	DB135 = 2	DB120=22	DB130=22	DB130=23	DB130=24	DB130=21	DB120=21	NC	DB110=10	DB120=23	**Total**
DB130=11	DB135 = 1	2,499	1	0	0	27	134	456	1	280	0	0	3,398
	DB135 = 2	0	0	0	0	0	0	0	0	0	0	0	0
	Total	2,499	1	0	0	27	134	456	1	280	0	0	3,398
New household in wave 2 -2006													
2006	DB110=8	43	0	0	0	0	2	4	9	NA	NA	0	58
	DB110=9	0	0	0	0	0	0	0	0	NA	NA	0	0
	Total	2,542	1	0	0	27	136	460	10	NA	NA	0	3,505
		A	B	C	D	E	F	G	H	I	J	K	T

Wave response rate =	0.725
Refusal rate =	0.131
No-contacted and others =	0.042
Longitudinal follow-up rate =	0.783
Follow-up ratio =	0.796
Achieved sample size ratio =	0.750

Table 17: Household response rates - Comparison of results codes between wave 3 2007 and wave 2 2006 (R4)

Sample outcome in wave 2 - 2006		DB130=11		Sample outcome in wave 3 - 2007									
		DB135 = 1	DB135 = 2	DB120=22	DB130=22	DB130=23	DB130=24	DB130=21	DB120=21	NC	DB110=10	DB120=23	**Total**
DB130=11	DB135 = 1	1,995	0	0	0	37	5	329	1	166	1	0	2,534
	DB135 = 2	0	0	0	0	0	0	0	0	0	0	0	0
	Total	1,995	0	0	0	37	5	329	1	166	1	0	2,534
DB120 = 22	NH	0	0	0	0	0	0	0	0	0	0	0	0
DB130=22	NH	0	0	0	0	0	0	0	0	0	0	0	0
DB130=23	NH	0	0	0	0	27	0	0	0	0	0	0	27
DB130=24	NH	0	0	0	0	0	3	1	0	131	0	0	135
New household in wave 3 -2007													
2007	DB110=8	31	0	0	0	0	3	5	0	NA	NA	0	39
	DB110=9	0	0	0	0	0	0	0	0	NA	NA	0	0
	Total	2,026	0	0	0	37	8	334	1	NA	NA	0	2,735

Wave response rate =	**0.741**
Refusal rate =	**0.122**
No-contacted and others =	0.004
Longitudinal follow-up rate =	0.756
Follow-up ratio =	0.768
Achieved sample size ratio =	0.796

Table 18: Person Interview outcome in wave 2 (R4)

2006

Row		RB250=11,12,13	RB250=21	RB250=22	RB250=23	RB250=31	RB250=32	RB250=33	HHinc1 DB110=3-6	HHinc2 DB110=7	Pn RB110=6 or RB120=2,3	P1 RB110=4 or -1	Total
	Sample persons from previous wave												
1	RB110=1-2	4,567	0	0	0	0	0	0					4,567
2	RB110=6												0
3	RB110=-1												0
4	RB120=2												0
5	RB120=3												0
6	RB120=4												0
7	DB135=2,-1 or DB110=7 or DB120=21-23,-1 or DB130=21-24,-1												0
8	DB110=3-6												0
	New sample persons												
9	Reached age 16	58	0	0	0	0	0	0	0	0	0	0	58
10	Sample additions	0	0	0	0	0	0	0					0
	Non-sample persons 16+												
11	From Wave 1 -2005	0	0	0	0	0	0	0	0	0	0	0	0
	Not from Wave 1- 2005	0	0	0	0	0	0	0	0	0	0	0	0
	Sample persons from sample not forwarded from last wave (excluding died or not eligible according to tracing rules)												
13	From 2005												0
	Sum of rows:												
	1,3,6,7,9,10	4,625	0	0	0	0	0	0	0	0	0	0	4,625
	1,3,6,7,9,10,13	4,625	0	0	0	0	0	0	0	0	0	0	4,625
	1,3,6,7,9,10,11	4,625	0	0	0	0	0	0	0	0	0	0	4,625

Wave response rate of sample persons =	1.000	Achieved sample size ratio for sample persons =	0.974
Wave response rate of co-residents =	1.000	Achieved sample size ratio for sample persons and co-residents =	0.974
Longitudinal follow-up rate =	1.000	Achieved sample size ratio for co-residents selected the first wave =	-
Rate (RB250=21) =	0.000	Response rate for non-sample persons =	-
Rate (RB250=22) =	0.000		
Rate (RB250=23) =	0.000		
Rate (RB250=31) =	0.000		
Rate (RB250=32) =	0.000		
Rate (RB250=33) =	0.000		

Table 19: Person Interview outcome in wave 3 (R4)

2007

Row		RB250=11,12,13	RB250=21	RB250=22	RB250=23	RB250=31	RB250=32	RB250=33	HHinc1	HHinc2	Pn	P1	Total
	Sample persons from previous wave												
1	RB110=1-2	3,558	1	0	13	0	1	11					3,584
2	RB110=6												19
3	RB110=-1												0
4	RB120=2												4
5	RB120=3												2
6	RB120=4												32
7	DB135=2,-1 or DB110=7 or DB120=21-23,-1 or DB130=21-24,-1												27
8	DB110=3-6												0
	New sample persons												
9	Reached age 16	29	0	0	0	0	0	0	0	0	0	0	29
10	Sample additions	0	0	0	0	0	0	0					0

Non-sample persons 16+

11	From Wave 1 -2005	0	0	0	0	0	0	0	0	0	0	0	0
	Not from Wave 1- 2005	0	0	0	0	0	0	0	0	0	0	0	**0**

Sample persons from sample not forwarded from last wave (excluding died or not eligible according to tracing rules)

13	From 2006												0

Sum of rows:

	1,3,6,7,9,10	3,587	1	0	13	0	1	11	0	0	0	0	3,672
	1,3,6,7,9,10,13	3,587	1	0	13	0	1	11	0	0	0	0	3,672
	1,3,6,7,9,10,11	3,587	1	0	13	0	1	11	0	0	0	0	3,672

Wave response rate of sample persons =	0.977	Achieved sample size ratio for sample persons =	1.000
Wave response rate of co-residents =	1.000	Achieved sample size ratio for sample persons and co-residents =	0.972
Longitudinal follow-up rate =	0.977	Achieved sample size ratio for co-residents selected the first wave =	-
Rate (RB250=21) =	0.000	Response rate for non-sample persons =	-
Rate (RB250=22) =	0.000		
Rate (RB250=23) =	0.004		
Rate (RB250=31) =	0.000		
Rate (RB250=32) =	0.000		
Rate (RB250=33) =	0.003		

2.3.3.3   Distribution of households

Table 20: Distribution of households by DB110

		Total	1	2	5	7	8	9	10
2005		9,923	0	0	0	0	0	9,923	0
	%	100.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0
2006		11,894	5,696	93	0	531	127	5,447	0
	%	100.0	47.9	0.8	0.0	4.5	1.1	45.8	0.0
2007		8,449	7,197	210	8	857	174	0	3
	%	100.0	85.2	2.5	0.1	10.1	2.1	0.0	0.0

Table 21: Distribution of households by DB120

		Total	11	21	22	23
2005		9,849	8,993	10	1	845
	%	100.0	91.3	0.1	0.0	8.6
2006		5,609	5,084	52	1	472
	%	100.0	90.6	0.9	0.0	8.4
2007		337	302	27	8	0
	%	100.0	89.6	8.0	2.4	0.0

Table 22: Distribution of households by DB130

		Total	11	21	22	23
2005		8,993	6,316	2,168	142	367
	%	100.0	70.2	24.1	1.6	4.1
2006		10,780	7,982	2,379	156	263
	%	100.0	74.0	22.1	1.4	2.4
2007		6,809	6,062	606	116	25
	%	100.0	89.0	8.9	1.7	0.4

Table 23: Distribution of households by DB135

		Total	1	2
2005		9,923	6,316	0
	%	100.0	100.0	0.0
2006		7,982	7,980	2
	%	100.0	100.0	0.0
2007		6,062	6,062	0
	%	100.0	100.0	0.0

2.3.3.4 Distribution of persons

Table 24: Distribution of persons by membership status RB110

			Current household members				Not current household members	
		Total	**1**	**2**	**3**	**4**	**5**	**6**
2005		15,006	15,006	0	0	0	0	0
	%	100.0	100.0	0.0	0.0	0.0	0.0	0.0
2006		19,238	18,359	81	346	99	339	14
	%	100.0	95.4	0.4	1.8	0.5	1.8	0.1
2007		16,438	13,796	137	323	157	1,977	48
	%	100.0	83.9	0.8	2.0	1.0	12.0	0.3

2.3.3.5 Item non-response

All income variables provided for EU-SILC 2007 (UK) have been fully imputed.

Table 25: Item non-response at household and personal level 2005

		Longitudinal sample 2005-2007: 2005 part							
		Households having received an amount		Full information		Partial information		Missing information	
		Total	%	Total	%	Total	%	Total	%
Total income component									
HY010	Total gross household income	6,294	99.7	3,671	58.3	2,384	37.9	239	3.8
HY020	Total disposable household income	6,306	99.8	3,928	62.3	2,325	36.9	53	0.8
HY022	Total disposable household income before social transfers other than old-age and survivors benefits	6,135	97.1	4,014	65.4	2,021	32.9	100	1.6
HY023	Total disposable household income before social transfers including old-age and survivors benefits	5,908	93.5	4,166	70.5	1,551	26.3	191	3.2
Gross income components at household level									
HY040	Income from rental of property or land	281	4.4	212	75.4	3	1.1	66	23.5
HY050	Family related allowance	2,025	32.1	1,723	85.1	146	7.2	156	7.7
HY060	Social exclusion not elsewhere classified	752	11.9	573	76.2	44	5.9	135	18.0
HY070	Housing allowance	805	12.7	706	87.7	4	0.5	95	11.8
HY080	Regular inter household cash transfer received	249	3.9	211	84.7	2	0.8	36	14.5

		Total	%	Total	%	Total	%	Total	%
HY090	Interest, dividends etc	2,957	46.8	1,932	65.3	204	6.9	821	27.8
HY100	Interest repayments on mortgage	2,401	38.0	2,401	100.0				
HY110	Income received by people aged under 16	71	1.1	71	100.0				
HY120	Regular taxes on wealth	5,671	89.8	5,232	92.3			439	7.7
HY130	Regular inter household cash transfer paid	265	4.2	225	84.9	2	0.8	38	14.3
HY140	Tax on income and social contributions	5,248	83.1	3,481	66.3	1,179	22.5	588	11.2
Gross income components at personal level									
PY010	Employee cash or near cash income	6,114	51.7	4,723	77.2	386	6.3	1,005	16.4
PY020	Non-Cash employee income	555	4.7	472	85.0	60	10.8	23	4.1
PY035	Contribution to individual private pension plans	778	6.6	778	100.0				
PY050	Cash benefits or losses from self-employment	913	7.7	690	75.6	4	0.4	219	24.0
PY070	Value of goods produced by own-consumption	-	-	-	-	-	-	-	-
PY080	Pension from individual private plans	347	2.9	202	58.2			145	41.8
PY090	Unemployment benefits	151	1.3	117	77.5			34	22.5
PY100	Old-age benefits	3,406	28.8	2,416	70.9	704	20.7	286	8.4
PY110	Survivor benefits	69	0.6	43	62.3	14	20.3	12	17.4
PY120	Sickness benefits	373	3.2	283	75.9	1	0.3	89	23.9
PY130	Disability benefits	381	3.2	259	68.0	35	9.2	87	22.8
PY140	Education-related allowances	110	0.9	86	78.2			24	21.8

Table 26: Item non-response at household and personal level 2006

		Longitudinal sample 2005-2006: 2006 part							
		Households having received an amount		Full information		Partial information		Missing information	
		Total	%	Total	%	Total	%	Total	%
Total income component									
HY010	Total gross household income	7,948	99.6	4,820	60.6	2,911	36.6	217	2.7
HY020	Total disposable household income	7,964	99.8	5,099	64.0	2,797	35.1	68	0.9
HY022	Total disposable household income before social transfers other than old-age and survivors benefits	7,741	97.0	5,181	66.9	2,438	31.5	122	1.6
HY023	Total disposable household income before social	7,448	93.3	5,292	71.1	1,913	25.7	243	3.3

	transfers including old-age and survivors benefits								
Gross income components at household level									
HY040	Income from rental of property or land	322	4.0	256	79.5	12	3.7	54	16.8
HY050	Family related allowance	2,371	29.7	2,128	89.8	188	7.9	55	2.3
HY060	Social exclusion not elsewhere classified	855	10.7	671	78.5	83	9.7	101	11.8
HY070	Housing allowance	962	12.1	892	92.7			70	7.3
HY080	Regular inter household cash transfer received	243	3.0	228	93.8			15	6.2
HY090	Interest, dividends etc	3,908	49.0	2,626	67.2	299	7.7	983	25.2
HY100	Interest repayments on mortgage	3,049	38.2	3,049	100.0				
HY110	Income received by people aged under 16	78	1.0	78	100.0				
HY120	Regular taxes on wealth	7,072	88.6	6,632	93.8	1	0.0	439	6.2
HY130	Regular inter household cash transfer paid	302	3.8	281	93.0			21	7.0
HY140	Tax on income and social contributions	6,728	84.3	4,526	67.3	1,609	23.9	593	8.8
Gross income components at personal level									
PY010	Employee cash or near cash income	7,720	51.6	5,977	77.4	407	5.3	1,336	17.3
PY020	Non-Cash employee income	638	4.3	638	100.0				
PY035	Contribution to individual private pension plans	1,374	9.2	1,373	99.9	1	0.1		
PY050	Cash benefits or losses from self-employment	1,080	7.2	861	79.7	3	0.3	216	20.0
PY070	Value of goods produced by own-consumption	-	-	-	-	-	-	-	-
PY080	Pension from individual private plans	486	3.2	322	66.3			164	33.7
PY090	Unemployment benefits	196	1.3	159	81.1			37	18.9
PY100	Old-age benefits	4,474	29.9	3,156	70.5	999	22.3	319	7.1
PY110	Survivor benefits	87	0.6	56	64.4	7	8.0	24	27.6
PY120	Sickness benefits	486	3.2	361	74.3			125	25.7
PY130	Disability benefits	463	3.1	363	78.4	18	3.9	82	17.7
PY140	Education-related allowances	138	0.9	122	88.4			16	11.6

Table 27: Item non-response at household and personal level 2007

		Longitudinal sample 2005-2007: 2007 part							
		Households having received an amount		Full information		Partial information		Missing information	
		Total	%	Total	%	Total	%	Total	%
Total income component									
HY010	Total gross household income	6,053	99.9	3,776	62.4	2,188	36.1	89	1.5
HY020	Total disposable household income	6,062	100.0	3,896	64.3	2,144	35.4	22	0.4
HY022	Total disposable household income before social transfers other than old-age and survivors benefits	5,994	98.9	4,089	68.2	1,835	30.6	70	1.2
HY023	Total disposable household income before social transfers including old-age and survivors benefits	5,924	97.7	4,416	74.5	1,357	22.9	151	2.5
Gross income components at household level									
HY040	Income from rental of property or land	254	4.2	207	81.5	4	1.6	43	16.9
HY050	Family related allowance	1,876	30.9	1,651	88.0	180	9.6	45	2.4
HY060	Social exclusion not elsewhere classified	518	8.5	423	81.7	66	12.7	29	5.6
HY070	Housing allowance	713	11.8	614	86.1			99	13.9
HY080	Regular inter household cash transfer received	181	3.0	175	96.7			6	3.3
HY090	Interest, dividends etc	3,252	53.6	2,415	74.3	208	6.4	629	19.3
HY100	Interest repayments on mortgage	2,316	38.2	2,316	100.0				
HY110	Income received by people aged under 16	58	1.0	57	98.3			1	1.7
HY120	Regular taxes on wealth	5,784	95.4	5,532	95.6			252	4.4
HY130	Regular inter household cash transfer paid	253	4.2	231	91.3	2	0.8	20	7.9
HY140	Tax on income and social contributions	5,218	86.1	3,684	70.6	1,180	22.6	354	6.8
Gross income components at personal level									
PY010	Employee cash or near cash income	5,824	51.1	4,831	82.9	343	5.9	650	11.2
PY020	Non-Cash employee income	462	4.1	462	100.0				
PY035	Contribution to individual private pension plans	1,138	10.0	1,138	100.0				
PY050	Cash benefits or losses from self-employment	821	7.2	657	80.0	3	0.4	161	19.6
PY070	Value of goods	-	-	-	-	-	-	-	-

	produced by own-consumption								
PY080	Pension from individual private plans	450	3.9	291	64.7			159	35.3
PY090	Unemployment benefits	115	1.0	103	89.6			12	10.4
PY100	Old-age benefits	3,779	33.1	2,807	74.3	812	21.5	160	4.2
PY110	Survivor benefits	76	0.7	60	78.9	4	5.3	12	15.8
PY120	Sickness benefits	270	2.4	251	93.0			19	7.0
PY130	Disability benefits	371	3.3	280	75.5	28	7.5	63	17.0
PY140	Education-related allowances	123	1.1	104	84.6			19	15.4

2.4 Mode of data collection

Table 28: Distribution of household members by data status – all household members (16+)

			RB250							
		Total	11	12	14	21	23	31	32	33
2005	Number	11,832	11,832	0	0	0	0	0	0	0
	%	100.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2006	Number	14,968	14,968	0	0	0	0	0	0	0
	%	100.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2007	Number	11,480	11,404	0	0	2	25	0	1	48
	%	100.0	99.3	0.0	0.0	0.0	0.2	0.0	0.0	0.4

Table 29: Distribution of household members by data status – sample persons 16+

			RB250							
		Total	11	12	14	21	23	31	32	33
2005	Number	11,832	11,832	0	0	0	0	0	0	0
	%	100.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2006	Number	14,664	14,664	0	0	0	0	0	0	0
	%	100.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2007	Number	10,975	10,915	0	0	2	18	0	1	39
	%	100.0	99.5	0.0	0.0	0.0	0.2	0.0	0.0	0.4

Table 30: Distribution of household members by data status – co-residents (16+)

			RB250							
		Total	11	12	14	21	23	31	32	33
2005	Number	0	0	0	0	0	0	0	0	0
	%	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2006	Number	304	304	0	0	0	0	0	0	0
	%	100.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2007	Number	505	489	0	0	0	7	0	0	9
	%	100.0	96.8	0.0	0.0	0.0	1.4	0.0	0.0	1.8

Table 31: Distribution of household members by type of interview – all household members (16+)

		RB260					
		Total	1	2	3	4	5
2005	Number	11,829	0	10,582	0	0	1,247
	%	100.0	0.0	89.5	0.0	0.0	10.5
2006	Number	14,722	0	13,246	0	0	1,476
	%	100.0	0.0	90.0	0.0	0.0	10.0
2007	Number	11,094	0	10,157	0	0	937
	%	100.0	0.0	91.6	0.0	0.0	8.4

Table 32: Distribution of household members by type of interview – sample persons (16+)

		RB260					
		Total	1	2	3	4	5
2005	Number	11,829	0	10,582	0	0	1,247
	%	100.0	0.0	89.5	0.0	0.0	10.5
2006	Number	14,419	0	13,019	0	0	1,400
	%	100.0	0.0	90.3	0.0	0.0	9.7
2007	Number	10,664	0	9,829	0	0	835
	%	100.0	0.0	92.2	0.0	0.0	7.8

Table 33: Distribution of household members by type of interview – co-residents (16+)

		RB260					
		Total	1	2	3	4	5
2005	Number	0	0	0	0	0	0
	%	100.0	0.0	0.0	0.0	0.0	0.0
2006	Number	303	0	227	0	0	76
	%	100.0	0.0	74.9	0.0	0.0	25.1
2007	Number	430	0	328	0	0	102
	%	100.0	0.0	76.3	0.0	0.0	23.7

2.5   Imputation procedure

The strategy used to impute UK EU-SILC was consistent with the options proposed in the following Eurostat task-force documents associated with donor-based imputation methodology:

EU-SILC 74/02
EU-SILC 136/04
EU-SILC 154/05

The UK EUSILC Imputation Strategy was developed with the primary aims of imputing for all item level missingness, resolving inconsistencies, and preserving both cross-sectional and longitudinal relationships in the responses for the households and persons affected. The strategy was also designed to preserve the maximum amount of observed data.

Meeting the aims of the strategy was not trivial as the cross-sectional and longitudinal correlations were both nested and complex. In any one year, the UK EUSILC dataset contained over 400 routing and income variables: routing variables indicated whether or not the respondent received an amount, whilst the amount itself was specified by one or more consecutive variables. Missing values were present in both the routing and the amounts collected.

Further complications included:

- legal constraints which make some combinations of the routing variables invalid;

- highly correlated relationships amongst subsets of the variables, for example: earnings before and after taxation followed by an associated time period for which the payment relates;

- panel aspects of the survey that introduced further correlations between years in addition to those within year.

To meet the aims of the imputation strategy the ONS implemented an iterative, two-stage imputation process: Stage 1 focused on the imputation of missing routing; Stage 2 focused on the imputation of missing amounts and time periods.

The imputation process was supported by statistical tools and used standard statistical techniques for panel data, including:

- SAS (Statistical Analysis System) – to facilitate deductive imputation. This was applied to correct for missing values by implementing propositional relationships in the data based on logical rules and legal constraints. Methods included the application of growth factors (ratio imputation) formed from each variable by calculating ratios for both the current year and previous year which were then weighted together. Asymmetric trimming was also applied as a refinement to remove outlying values which might have otherwise caused excessive influence on the ratio. Trimming was applied using a robust method, based on the median and the inter-quartile range.

- SPSS AnswerTree - to identify key predictors to partition the data into homogeneous classes for subsequent imputation.

- CANCEIS (**CAN**adian **C**ensus **E**dit and **I**mputation **S**ystem) - for stochastic imputation. CANCEIS implements a highly efficient nearest neighbour imputation method that preserves the shape of the distribution whilst also estimates and maintains observed relationships and distributional parameters. Stochastic imputation ensures less distortion in the estimates of variance.

The quality of the final data was validated in two ways: by calculating expected values; and comparing pre and post-imputation distributions.

2.6   Imputed rent

A UK EU-SILC imputed rent variable was supplied for the first time in 2007. Estimates of imputed rent were generated through the use of hedonic regression modelling, incorporating Mill's correction (based on the Heckman method). The explanatory variables used in the regression were region, type of dwelling (flat, semidetached/terraced house, detached house), size (number of rooms), value of dwelling (Council Tax band, except Northern Ireland), thermal comfort (ability to keep home adequately warm) and seniority (Year of contract).

2.7   Company cars

In the UK, company cars are taxed based on their CO_2 emissions. Therefore, UK EU-SILC assigns the benefit of having access to a company car as being equal to the level of tax. However, it is difficult to estimate the level of tax, and therefore the following method is used.

EU-SILC UK asks several questions about company cars. First, the survey establishes whether the household has any company cars. Second, it establishes what the manufacturer's list price for the vehicle was when it was new. If the respondent is unable to provide an answer, they are asked which price band they think the company car sits in. If the respondent gives a band price the answer is translated into a mid-point price. For example, a Mazda saloon with a band price between £10,001 and £13,000 would be given a 'list' price of £11,500. If the list price is unknown, the make, model and engine size are established for each vehicle.

The estimation of the value of using a company car for private purposes (excluding payment of fuel) is done using the following elements:

1. Type of fuel used
2. Data from VCA (Vehicle Certification Agency, UK).
3. Price of the car.

Once the price of the car is known (using one of the methods described above) a factor based on fuel type and emissions of the engine is applied to that list price. However, this is problematic, as EU-SILC UK has no way of identifying what the cylinder capacity (cc) of the car in question is and therefore no real idea about what the car emissions would be. Although data on the make and model of each car is collected, the quality of answers given by respondents is extremely variable, for instance, answers such as 'a red ford' offer little value to a calculation.

Nevertheless cylinder capacity and emissions information is obtained by using data from the VCA. The VCA provide data on approximately 770 car types registered in the UK.

The 770 car types are banded together into three cylinder capacity engine group sizes in an attempt to get an average emission for each band.

Table 34: Average CO₂ emission by Cylinder Capacity

Cylinder Capacity	Average CO_2 emission
Up to 1400	140
1401 to 2000	185
2001 to 4000	245

Once this process is completed an assumption is made that the cylinder capacity of a car is linked to the price of the car.

The data for 2006/07 is shown in Table 35.

Table 35: Band price of a motor vehicle based on CC and average CO₂ emissions

Cylinder Capacity	Average CO_2 emissions	Car price (£)
Up to 1400cc	140	0 – 11,999
1401 to 2000cc	185	12,000 – 24,999
2001 to 4000cc	245	25,000 – 99,999

Cars that fall into a price band are given the appropriate cylinder capacity and the data in Table 36 are used to apply an appropriate tax rate (the tax rate used by Her Majesties Revenue and Customs to value the benefit for tax purposes.

Table 36: Tax rate based on CO₂ emission rates (per cent)

2006/2007	CO_2 tax emission rate (percentage rate)
140	16
185	25
245	35

These percentage rates are the factor that is applied to the car price to produce a monetary benefit for each company car in a household.

Car benefit = (car price)*CO_2 tax emission rate

3.   Comparability

This section reports on the differences between Eurostat definitions and the definitions the UK applied in EU-SILC 2007. It also reports on the impact of these differences with regards to comparability.

3.1   Basic concepts and definitions

Reference population
No difference to the common definition.

Private household
A household is defined as:
> "a single person or a group of people who have the address as their only or main residence and who either share one meal a day or share the living accommodation" (General Household Survey 2005, 2006 & 2007).

A group of people is not counted as a household solely on the basis of a shared kitchen or bathroom.

The household membership
A person is in general regarded as living at an address if he or she (or the informant) considers the address to be his or her main residence. There are however, certain rules which take precedent over this criterion.

Children aged 16 or over who live away from home for the purposes of either work or study and come home only for holidays are not included at the parental address under any circumstances.

Children of any age away from the home in a temporary job and children under 16 at boarding school are always included in the parental household.

Anyone who has been away from the address continuously for 6 months or longer is excluded.

Anyone who has been living continuously at the address for 6 months or longer is included even if she has his or her main residence elsewhere.

Addresses used only as second homes are never counted as a main residence.

Income reference period
EU-SILC UK, like all other official income surveys in UK, uses continuous interviewing with interviews spread evenly throughout the year. The survey measures current income. So for example, for income from earnings and benefits, respondents will provide figures which relate most commonly to the last week, two weeks, or month. With earnings in particular, respondents are asked for usual earnings. These figures, which represent current (and usual) incomes are then annualised (weekly estimates multiplied by 52, monthly by 12 etc). Income from self-employment can be reported for a variety of periods, but it is always up-rated (using the UK's average earnings index) to the interview date. For income from investment and employee non-cash income respondents are most likely provide their most recent annual or half-yearly income that they received from this source. This income would be annualised, although there is no up-rating.

This approach is adopted in the UK because it is much easier for respondents to provide estimates of current income, than income for a specific reference period, say the most recent financial year. In the UK only a relatively small proportion of the adult population fill in tax returns, and the rest of the population probably never actually calculate what their annual income is. For this reason, it would be very difficult to collect an estimate of annual income corresponding to a fixed reference year.

So the estimates of income do not correspond strictly to an income reference year. However we can regard each household's estimate of annualised current income, as corresponding to a 12 month period centred around the interview date. So for a household interviewed in early January 2007, we can regard their income as being measured for the period July 2006 to June 2007, and similarly for a household interviewed in December 2007, the income estimate can be regarded as referring to the period July 2007 to June 2008. Since interviews are spread evenly throughout the year, for any one survey year, the interview reference periods collectively, are centred around the calendar year. And therefore it is reasonable to regard aggregate statistics produced from the full annual datasets, as measuring annual income in the current survey year. So the EU-SILC UK 2007 survey, measures current annual income in 2007.

In the UK, household income statistics, and especially aggregate statistics such as those that are produced from EU-SILC, are generally used and interpreted on the assumption that this distinction between annualised current income, and what might be called a 'true' annual income, is small[1].

The period for taxes on income and social insurance contributions
As above.

The reference period for taxes on wealth
The reference period for taxes on wealth is based on data provided for the financial years April 2006–March 2007 and April 2007–March 2008. All interviewing for EU-SILC UK took place between January 2007 and 31 February 2008.

The lag between income reference period and current variables
Since the survey measures current income, there is no lag between the income variables and the other variables.

The total duration of the data collection of the sample
EU-SILC UK makes use of continuous interviewing with data collection being evenly spread over complete calendar years. In practice a small number of interviews are not completed until early the following year. In 2007, 98.6% of interviews took place between 1st January 2007 and 31st December 2007, with the remaining interviews completed between 1st January 2008 and 31st February 2008.

Basic information on activity status during the income reference period
Basic information on activity status is collected using a rolling (moving) 12-month period. Therefore, respondents are asked to provide their current activity status and their activity status for the 12-month period preceding this interview.

---

[1] A Comparison of Current and Annual Measures of Income in the British Household Panel Survey; Journal of Official Statistics, Vol. 22, No. 4, 2006, pp. 733–758

3.2   Components of income

3.2.1   Differences between the national definitions and standard EU-SILC definitions, and an assessment, if available, of the consequences of the differences mentioned

This section describes the major differences between the national definitions and standard EU-SILC definitions. The 'national definition' of household income is taken to be the Before Housing Costs (BHC) measure of income used in the Department for Work and Pensions (DWP) publication Household's Below Average Income (HBAI), the source for national poverty statistics.

Total disposable household gross income (HY010)
Total disposable household income (HY020)
Total disposable household income before social transfers other than old-age and survivor's benefits (HY022)
Total disposable household income before social transfers including old-age and survivor's benefits
Differences between the national definition and the EU-SILC definition of income have been described below, for each of the components of EU-SILC income..

Imputed rent (HY030G/N)
Imputed rent is not included in the national definition of household income. This variable was not provided as part of the 2006 EU-SILC data delivery as it is only mandatory from 2007 onwards.

Income from rental of a property or land (HY040G/N)
No major differences between the national and EU-SILC definition.

Family/children related allowances (HY050G/N)
The national definition of income includes the cash value of free school meals provided to children from disadvantaged homes. This is not included in the EU-SILC definition of income.

Social exclusion not elsewhere classified (HY060G/N)
No major differences between the national and EU-SILC definitions.

Housing allowances (HY070G/N)
No major differences between the national and EU-SILC definitions.

Regular inter-household cash transfer received (HY080G/N)
No major differences between the national and EU-SILC definitions.

Interest, dividends, profit from capital investments in unincorporated business (HY090G/N)
No major differences between national and EU-SILC definitions.

Interest repayments on mortgage (HY100G/N)
Interest repayments on mortgages are not included as deductions within either the national or EU-SILC definitions of income, because neither includes imputed rent.

Income received people aged under 16 (HY110G)
The national definition of income includes income received by people aged under 16, as does the EU-SILC definition of income.

Regular taxes on wealth (HY120G)
No difference between the national and EU-SILC definitions.

Regular inter-household cash transfer paid (HY130G/N)
No major differences between the national and EU-SILC definitions.

Tax on income and social contributions (HY140G)
In the national definition of income, contributions to private pensions are deducted from income. In the EU-SILC definition of income, contributions to private pensions are not deducted, rather they are considered as a use of disposable income.

Repayments/receipts for tax adjustments (HY145N)
This component of income is included in the national definition of income. In EU-SILC, this component is not measured directly. For most components of income, gross and net incomes are collected separately, with taxes computed as the difference between gross and net incomes. Repayments/receipts for tax adjustments are assumed to be captured as part of this difference between gross and net incomes, and hence recorded under HY140G.

Cash or near-cash employee income (PY010G/N)
No major differences between the national and EU-SILC definitions.

Non-cash employee income (PY020G/N)
The national definition does not include non-cash employee income, whereas EU-SILC includes an estimate for company cars (although not any fuel provided by the employer).

Cash profits or losses from self-employment (including royalties) (PY050G/N)
No conceptual differences between the national and EU-SILC definitions.

Value of goods produced for own consumption(PY070G/N)
This component of income is assumed to be zero in the UK in both the national definition, and in UK EU-SILC.

Unemployment benefits (PY090G/N)
No major differences between the national and EU-SILC definitions.

Old-age benefits (PY100G/N)
All benefits included as old-age benefits are also included in the national definition of income. However in the national definition, income from private pensions is included whereas in EU-SILC, income from private pensions is only be included in the definition of income from 2007 onwards. In addition, the national definition also includes the value free television licences provided to those over the age of 75.

Survivors' benefits (PY110G/N)
No major differences between the national and EU-SILC definitions.

Sickness benefits (PY120G/N)
No major differences between the national and EU-SILC definitions.

Disability benefits (PY130G/N)
No major differences between the national and EU-SILC definitions.

Education-related allowances (PY140G/N)

In the national definition of income, student loans are included as income, and student loan repayments are deducted from income. However in EU-SILC, student loans are not treated as income, and loan repayments are not deducted from income.

Gross monthly earnings for employees (PY200G/N)
No major differences between the national and EU-SILC definitions.

3.2.2   The source or procedure for the collection of income variables

All income variables are collected at the point of interview. Respondents are not asked to provide any documentation to support their answers. Increasingly, interviewers are being encouraged to ask respondents whether it is possible to consult their payslip (if they are working). However this is not mandatory.

No information is collected from registers.

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

For most income components which are subject to taxation and/or social security contributions, respondents are asked to provide net and gross amounts. The only exception to this is income from interest, dividends, and capital investments, which is collected either gross or net, and for which tax paid is then estimated.

Total income for an individual/household refers to income at the time of the interview. If the last pay packet/cheque was unusual, for example it included holiday pay in advance or a tax refund, the respondent is asked for usual pay. No account is taken of whether a job is temporary or permanent.

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

Gross and net income variables were asked separately, if applicable.

See section 2.6 for more detail.

3.3   Tracing rules

For UK EU-SILC 2006, persons aged 14 and above who could not be contacted in 2005 where not always re-contacted in 2006. Furthermore, information on *former residents* was not collected. A similar process was followed between 2006 and 2007.

4. Coherence

Coherence refers to the comparison of target variables with external sources. The target variables in EU-SILC UK are a set of compulsory variables, defined by Eurostat.

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

Results from two other survey sources have been used to validate EU-SILC results – the family resources survey, and the expenditure and food survey.

Family Resources Survey

The Family Resources Survey (FRS) collects information on the incomes and circumstances of private households in the United Kingdom (or Great Britain before 2002-03).

The survey is sponsored by the Department for Work and Pensions.

The FRS is used primarily to validate the indicators of poverty and social exclusion. Before the introduction of EU-SILC, the Laeken and Pensions indicators were produced using data from the FRS. Comparisons between EU-SILC and FRS-based indicators continue so that any apparent differences between national poverty estimates and EU-SILC estimates can be explained. This work will be ongoing, and in the first four years of EU-SILC, has served as a useful way of validating the new EU-SILC data, and highlighting any possible problems that there might be with the EU-SILC data.

Expenditure Food Survey

The Expenditure and Food Survey is a comprehensive overview of all aspects of household expenditure and income for the year 2007 derived from a survey of around 7,000 households in the UK. It contains analyses of household expenditure on goods and services by household income, composition, size, type and location. The results are widely seen as providing one of the most accurate pictures available of what households in the UK spend their money on today.

EU-SILC income variables have been compared with the detailed income information collected through the EFS, particularly that which is published in the ONS report 'The Effects of Taxes and Benefits on Household Income'.

Annex 1: Government Office Region regional stratifier

The Government Office Region regional stratifier:
1. North East Metropolitan
2. North East Non-Metropolitan
3. North West Metropolitan
4. North West Non-Metropolitan
5. Merseyside
6. Yorkshire and Humberside Metropolitan
7. Yorkshire and Humberside Non-Metropolitan
8. East Midlands
9. West Midlands Metropolitan
10. West Midlands Non-Metropolitan
11. Eastern Outer Metropolitan
12. Eastern Other
13. Inner London North-East
14. Inner London North-West
15. Inner London South-East
16. Inner London South-West
17. Outer London North-East
18. Outer London North-West
19. Outer London South-East
20. Outer London South-West
21. South East Outer Metropolitan
22. South East Other
23. South West
24. Wales 1 – Glamorgan, Gwent
25. Wales 2 – Clwydd, Gwynedd, Dyfed, Powys
26. Highlands, Grampian, Tayside
27. Fife, Central, Lothian
28. Glasgow Metropolitan
29. Strathclyde (excluding Glasgow)
30. Borders, Dumfries, Galloway

Annex 2 Socio-economic groups (Operational categories and sub-categories of NS-SEC)

Group	Operational categories and sub-categories
1	Employers in large organisations
2	Higher managerial occupations
3	Higher professional occupations
4	Lower professional and higher technical occupations
5	Lower managerial occupations
6	Higher supervisory occupations
7	Intermediate occupations
8	Employers in small organisations
9	Own account workers
10	Lower supervisory occupations
11	Lower technical occupations
12	Semi-routine occupations
13	Routine occupations
14	Never worked and long-term unemployed
15	Full-time students
16	Occupations not stated or inadequately described
17	Not classifiable for other reasons

The category names used for NS-SEC (National Statistics – Socio-Economic Classification) do not refer to 'skill'. This is quite deliberate since the classification is not based on skill levels.