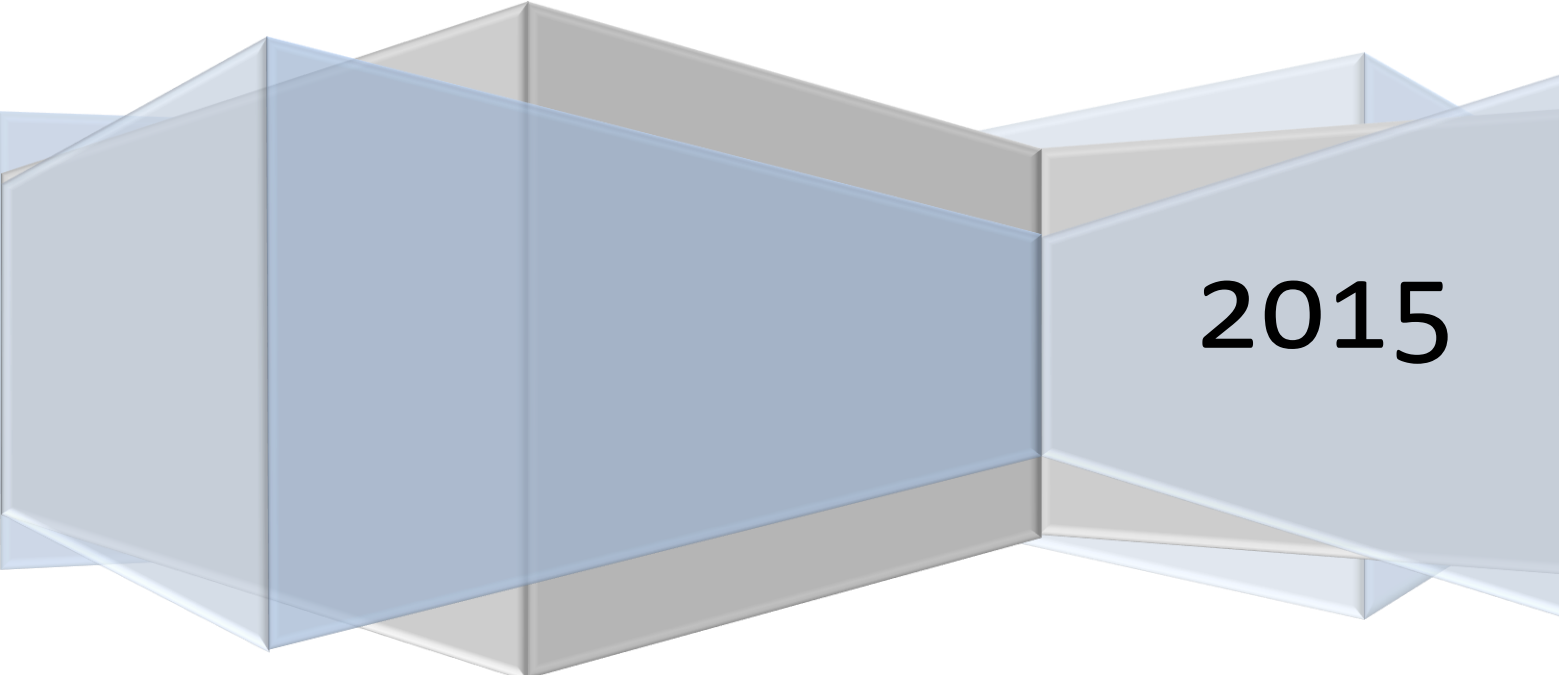**Central Statistics Office**

A consistency check between five EU-SILC indicators compiled from EU-SILC 2010 and HBS 2010

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This technical note provides a comparison between five EU-SILC indicators compiled from two independent data sources, i.e. the 2010 EU-SILC data and the 2010 Household Budget Survey (HBS) data. The aim of this comparison is to evaluate the reliability and validity of the 2010 indicators compiled from Ireland's EU-SILC data and to evaluate the performance of Ireland's EU-SILC data in comparison with our peers in other European countries.

The data sources are independent in the sense they are taken from two separately selected random samples. The samples are not necessarily comparable in terms of size and other quality measures.

It is worth noting that the main focus of the HBS is consumption expenditure and the main focus of EU-SILC is the measurement of income, poverty, social exclusion and living conditions. Although the HBS is not designed to provide estimates of the five indicators examined in this study, it is possible to derive estimates based on the HBS data. The comparisons are for 25 European countries. For more information on the data sources see: Household Budget Survey - 2010 Wave – EU Quality Report Doc. LC/142/15/EN Eurostat (2015).

Earlier in 2015 the Central Statistics Office (CSO) conducted a similar type of comparison between the 2013 Household Finance and Consumption data and 2013 EU-SILC data (CSO, 2015a). This comparison between the two data sources found an average gross weekly equivalised household income of €538.06 for the HFCS while the corresponding figure for SILC 2013 was €537.66, a difference of only 40 cents. In other countries which have conducted both the HFCS and SILC survey, estimates of HFCS gross income per household as a percentage of SILC income per household range from 81% for Slovenia to 112% for Belgium but most countries are reasonably close to 100%.

At-risk-of-poverty threshold:

At-risk-of-poverty threshold: This is 60% of the national median income. The threshold is calculated by ranking persons by income[1] from smallest to largest and the median value is extracted. Anyone with an income of less than 60% of the median is considered at-risk-of-poverty at a 60% level.

The following graph plots the HBS estimate of the 'at risk of poverty threshold' versus that of EU-SILC for 25 European countries. The black line is the line of equality (if a country's estimate from HBS is exactly equal to the estimate from EU-SILC the data point will fall on this line). Countries below the line of equality produced a HBS figure that underestimates the EU-SILC figure. Similarly, countries above the line of equality produced a HBS figure that overestimates the EU-SILC figure. The red trend line is the least square regression line and represents the average consistency achieved across the 25 countries.
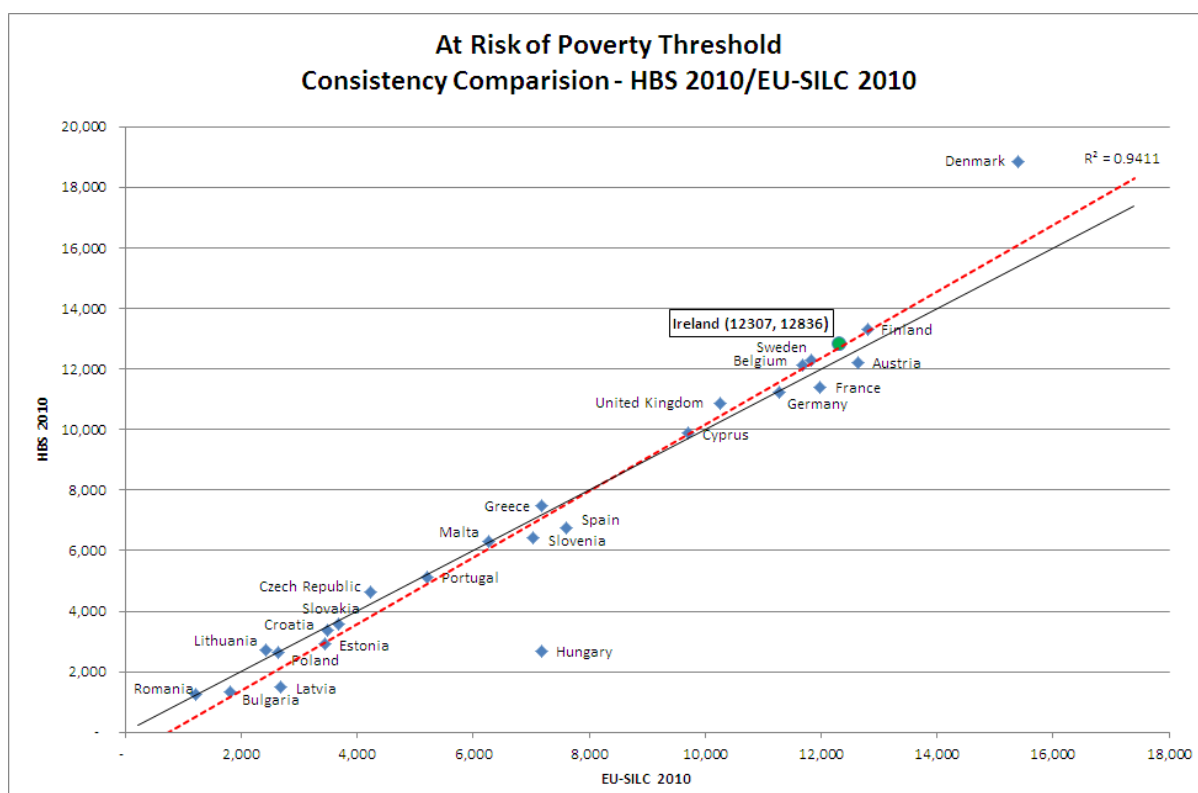

It is clear from this graph that the difference between the two survey estimates for Ireland is very similar to those experienced by other European countries, on average. Denmark and Hungary are clear outliers; in the case of Denmark, the HBS estimate is much higher than that EU-SILC and the opposite is true for Hungary.

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[1] Income and other variables are defined in accordance with Eurostat requirements and these may differ slightly from national definitions (see background notes, CSO, 2015b).

At-risk-of-poverty rate:

At-risk-of-poverty rate: This is the share of persons with an income below a given percentage (usually 60%) of the national median income.

The following graph plots the HBS estimate of the 'at risk of poverty rate' versus that of EU-SILC for 25 European countries.   The interpretation is similar to that of the previous graph.
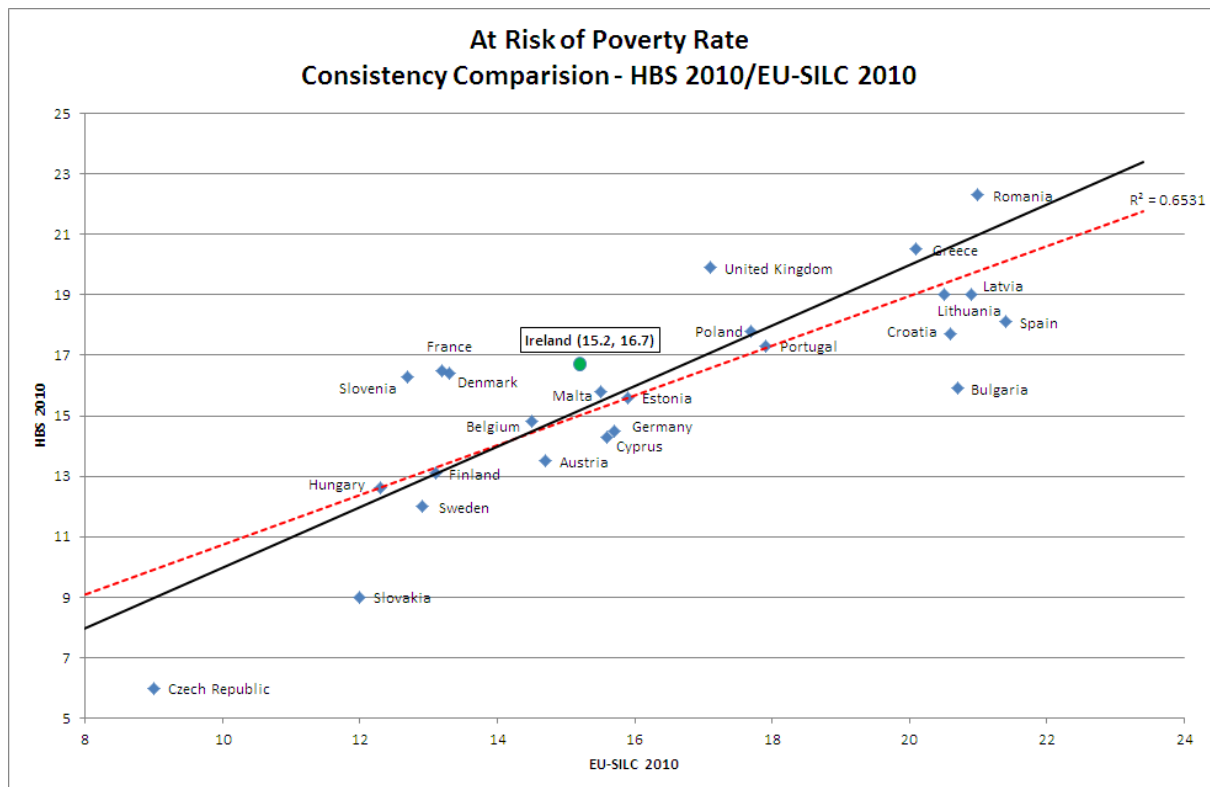

Again, the difference for Ireland between the EU-SILC estimate and that from the HBS is similar to the differences observed in most other countries. However, for a number of countries the estimates diverge considerably (e.g. Czech Republic and Slovakia).

Relative at-risk-of-poverty gap:

Relative at-risk-of-poverty gap: This is the difference between the median income of persons below the at-risk-of-poverty threshold and the at-risk-of-poverty threshold, expressed as a percentage of the at-risk-of-poverty threshold.

The following graph plots the HBS estimate of the 'relative at risk of poverty gap' versus that of EU-SILC for 25 European countries. The interpretation is similar to that of the previous graphs. The overall consistency between the two surveys is more evident for the 'at risk of poverty threshold' and the 'at risk of poverty rate' than for 'relative at risk of poverty gap'.
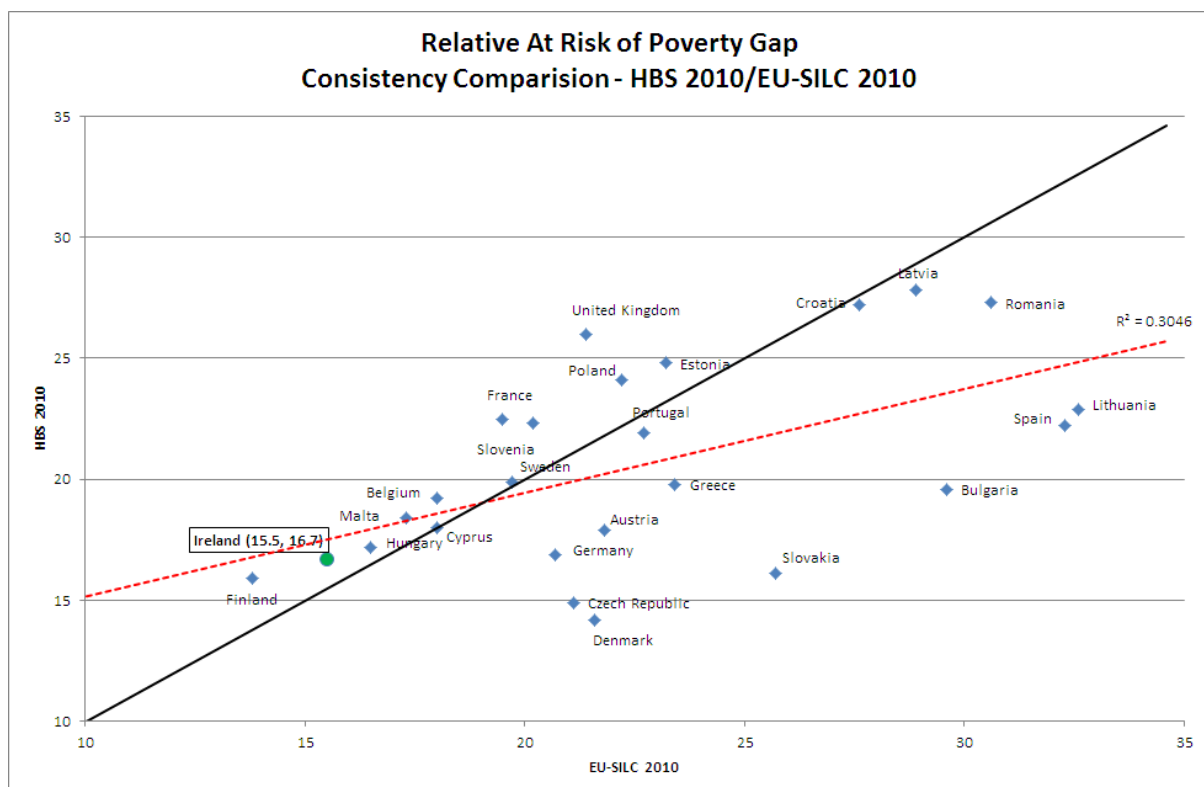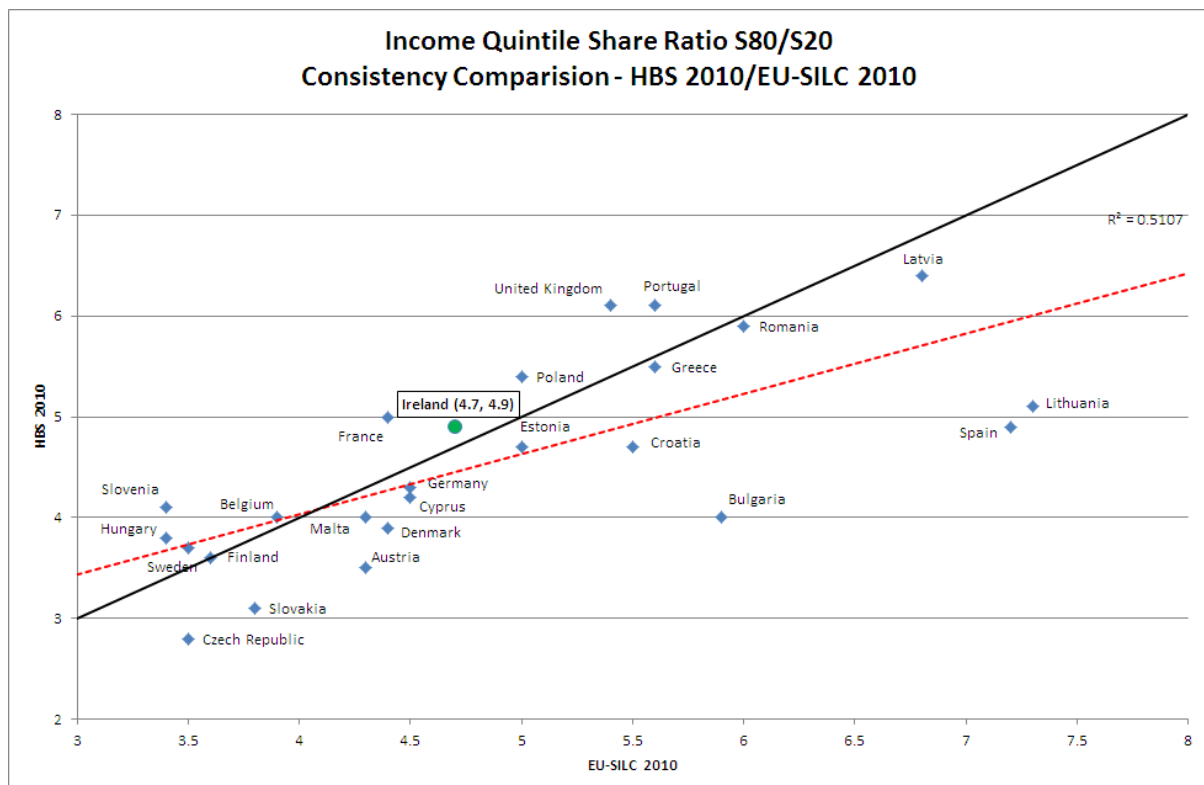

In comparison to many other European countries, Ireland performs particularly well in providing a consistent measure of the 'relative at risk of poverty gap' using the HBS and EU-SILC 2010 datasets.

Inequality of income distribution (S80/S20 quintile share ratio):

Inequality of income distribution (S80/S20 quintile share ratio): This is the ratio of total income received by the 20% of persons with the highest income (top income quintile) to that received by the 20% of persons with the lowest income (lowest income quintile).

The following graph plots the HBS estimate of the quintile share ratio versus that of EU-SILC for 25 European countries. The interpretation is similar to that of the previous graphs.

Income Quintile Share Ratio S80/S20
Consistency Comparision - HBS 2010/EU-SILC 2010

$R^2 = 0.5107$

(Chart: y-axis labelled "HBS 2010" ranging from 2 to 8; x-axis labelled "EU-SILC 2010" ranging from 3 to 8. Data points labelled with country names: Slovenia, Hungary, Belgium, Sweden, Finland, Malta, Austria, Slovakia, Czech Republic, France, Germany, Cyprus, Denmark, Ireland (4.7, 4.9), Estonia, Croatia, Bulgaria, Poland, Greece, United Kingdom, Portugal, Romania, Spain, Lithuania, Latvia.)

For many countries, the HBS consistently underestimates the quintile share ratio. However, once again, Ireland seems to be providing consistent measures across both data sources.

Gini coefficient:

Gini coefficient: This is the relationship between cumulative shares of the population arranged according to the level of income and the cumulative share of total income received by them. If there was perfect equality, (i.e. each person receives the same income) the Gini coefficient would be 0%. A Gini coefficient of 100% would indicate there was total inequality and the entire income was in the hands of one person.

The following graph plots the HBS estimate of the Gini coefficient versus that of EU-SILC for 25 European countries.   The interpretation is similar to that of the previous graphs.
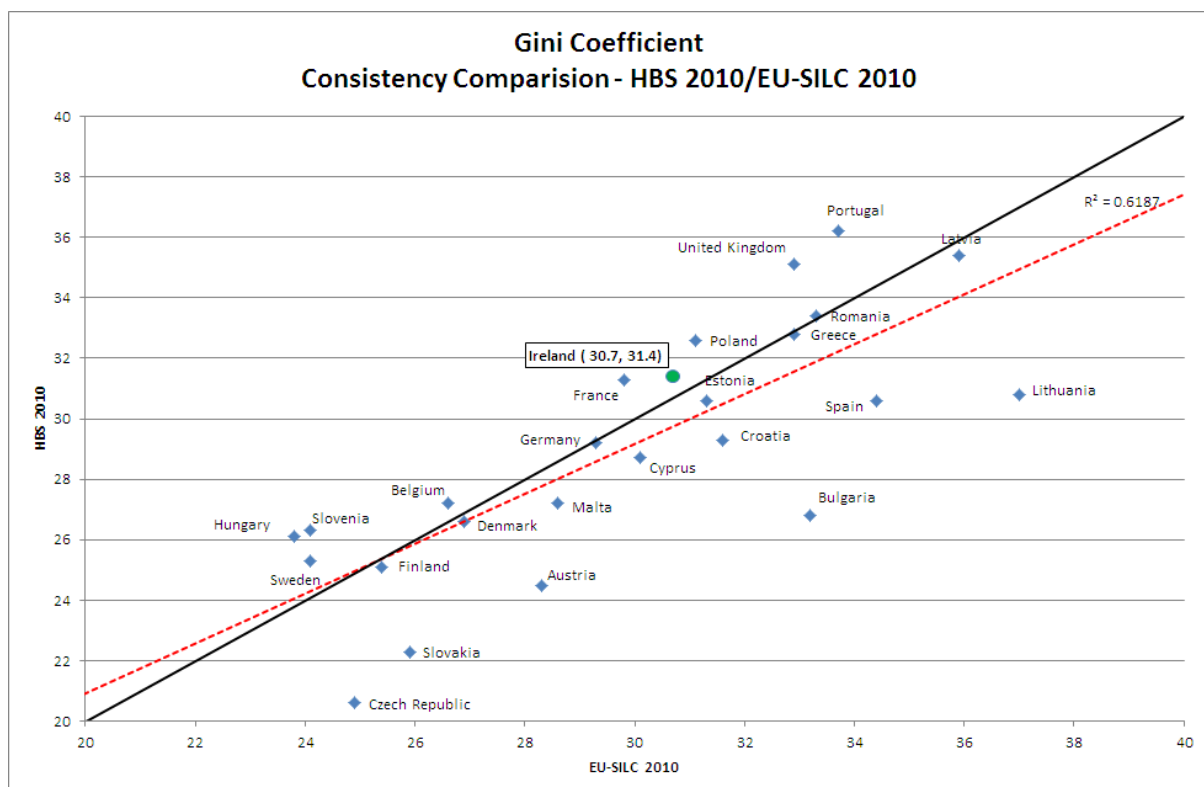
Ireland provides a very consistent measure of the Gini coefficient across both data sources. In some countries such as the UK and Portugal, the HBS overestimates the Gini coefficient. In many countries, most notably in the Czech Republic, Slovakia, Austria, Bulgaria and Lithuania, the HBS underestimates the Gini coefficient.

Table A: Comparison HBS 2010/EU-SILC 2010

	At-risk-of-poverty		At-risk-of-poverty		Relative at-risk-of		Income quintile		Gini Coefficient	
	EU-SILC	HBS	EU-SILC	HBS	EU-SILC	HBS	EU-SILC	HBS	EU-SILC	HBS
Austria	12,635	12,213	14.7	13.5	21.8	17.9	4.3	3.5	28.3	24.5
Belgium	11,678	12,129	14.5	14.8	18	19.2	3.9	4	26.6	27.2
Bulgaria	1,810	1,326	20.7	15.9	29.6	19.6	5.9	4	33.2	26.8
Cyprus	9,708	9,881	15.6	14.3	18	18	4.5	4.2	30.1	28.7
Germany	11,278	11,211	15.7	14.5	20.7	16.9	4.5	4.3	29.3	29.2
Denmark	15,401	18,836	13.3	16.4	21.6	14.2	4.4	3.9	26.9	26.6
Czech Rep	4,235	4,626	9	6	21.1	14.9	3.5	2.8	24.9	20.6
Estonia	3,436	2,914	15.9	15.6	23.2	24.8	5	4.7	31.3	30.6
Spain	7,600	6,732	21.4	18.1	32.3	22.2	7.2	4.9	34.4	30.6
Finland	12,809	13,305	13.1	13.1	13.8	15.9	3.6	3.6	25.4	25.1
France	11,976	11,395	13.2	16.5	19.5	22.5	4.4	5	29.8	31.3
Greece	7,178	7,486	20.1	20.5	23.4	19.8	5.6	5.5	32.9	32.8
Croatia	3,486	3,358	20.6	17.7	27.6	27.2	5.5	4.7	31.6	29.3
Hungary	7,178	2,678	12.3	12.6	16.5	17.2	3.4	3.8	24.1	26.3
Ireland	12,307	12,836	15.2	16.7	15.5	16.7	4.7	4.9	30.7	31.4
Lithuania	2,418	2,698	20.5	19	32.6	22.9	7.3	5.1	37	30.8
Latvia	2,682	1,486	20.9	19	28.9	27.8	6.8	6.4	35.9	35.4
Malta	6,261	6,299	15.5	15.8	17.3	18.4	4.3	4	28.6	27.2
Poland	2,643	2,623	17.7	17.8	22.2	24.1	5	5.4	31.1	32.6
Portugal	5,207	5,132	17.9	17.3	22.7	21.9	5.6	6.1	33.7	36.2
Romania	1,222	1,254	21	22.3	30.6	27.3	6	5.9	33.3	33.4
Sweden	11,825	12,303	12.9	12	19.7	19.9	3.5	3.7	24.1	25.3
Slovenia	7,042	6,412	12.7	16.3	20.2	22.3	3.4	4.1	23.8	26.1
Slovakia	3,670	3,586	12	9	25.7	16.1	3.8	3.1	25.9	22.3
United Ki	10,263	10,875	17.1	19.9	21.4	26	5.4	6.1	32.9	35.1

Source: Eurostat 'Household Budget Survey 2010 Wave EU Quality Report'. Doc. LC/142/15/EN

Conclusion:

The comparisons outlined in this technical note provide evidence that in Ireland's case EU-SILC data yields robust and reliable measures of income, poverty, social exclusion and living conditions. When compared to its European peers Ireland's performance is reassuring. The information for this technical note is taken from a Eurostat study and when coupled with the results from the earlier comparison conducted between the 2013 Household Finance and Consumption and 2013 EU-SILC data sources, there appears to be growing evidence that in Ireland's case EU-SILC data is coherent, reliable and robust.

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