

# **Monitoring the evolution of income poverty and real incomes over time**

**A B Atkinson, Anne-Catherine Guio and Eric Marlier**

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## **Editorial note and acknowledgements**

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## **Abstract**

This paper brings together two approaches to the monitoring of household living standards: the macro-economic (national accounts) analysis of aggregates and the social indicators based on household microdata (European Union Statistics on Income and Living Conditions [EU-SILC]). Both are essential. The national accounts are necessary to provide an overall perspective; the distributional data in EU-SILC are necessary to measure income poverty. The progress, or lack of progress, in reducing income poverty has to be seen in relation to what is happening to the level of real incomes. We begin with the EU-SILC-based headline at-risk-of-poverty indicator, and then consider its relation to the level of household real income as presented in the national accounts. Moving step by step, we seek to identify the reasons for differences between EU-SILC and national accounts measures of real incomes. From this, we make a number of recommendations about possible improvements in the underlying data and in the construction of the social indicators. The substantive results help illuminate the differing experience of the pre-crisis period 2005 to 2008 and the subsequent three year period 2008 to 2011 (income reference years).

Key words: poverty, inequality, national accounts, social indicators

JEL classification: D31

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## Introduction

For many years, there has been a sharp separation between the macro-economic evaluation of economic policy and the analysis of the impact of policy on the living standards of households. On one side were the national accounts, where performance was judged by eagerly watched figures for Gross Domestic Product (GDP).<sup>1</sup> Recovery in the short-term and growth in the medium-term have been assessed in these aggregate terms. In the European Union (EU), these are the matters on which the European Commission's "Directorate-General for Economic and Financial Affairs" and the EU "Economic and Financial Affairs (ECOFIN)" Council have focused. On the other side were the – more slowly arriving – statistics on household living conditions, now represented by the "EU Statistics on Income and Living Conditions" (EU-SILC) instrument. These formed the basis for the EU social indicators and for judging success in terms of social inclusion across EU countries. These are the matters on which the European Commission's "Directorate-General for Employment, Social Affairs and Inclusion" and the EU "Employment, Social Policy, Health and Consumer Affairs (EPSCO)" Council have focused.

In recent years, however, there have been welcome signs of a more integrated approach. Criticism of GDP as a measure of performance has led to a "Beyond GDP" agenda that recognises not only the need to extend the boundaries of national accounts but also to relate the national accounts more directly to the everyday concerns of citizens. National income has to be reconnected with household incomes and with the distribution of these incomes. As it is put in *Employment and social developments in Europe 2013*, we need indicators of inclusive growth to complement GDP growth (European Commission, 2014). From the side of household statistics, there has come increasing recognition of the need to complement existing poverty indicators by measures of real incomes<sup>2</sup>. The Indicators Sub-Group of the Social Protection Committee (SPC) has in 2014 adopted an aggregate indicator of (unadjusted) real gross household disposable income as part of the EU social indicators' portfolio<sup>3</sup>.

In our view, this integration is essential. Its importance has been demonstrated clearly by the economic crisis, where there has been a marked divergence between aggregate measures of economic performance and the experience of individual households. Put

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<sup>1</sup> A list of acronyms is given in Annex 1.

<sup>2</sup> "Poverty" here refers systematically to the EU concept of "at-risk-of-poverty" (AROP) – i.e. a concept of relative income poverty where the threshold is set in each country at 60 per cent of the median equivalent disposable household income.

<sup>3</sup> The SPC consists of officials from mainly Employment and Social Affairs Ministries in each Member State as well as representatives of the European Commission. The SPC reports to the EU "Employment, Social Policy, Health and Consumer Affairs" (EPSCO) Council. For more information on the SPC and its Indicators Sub-Group as well as the EU social indicators' portfolio, see: <http://ec.europa.eu/social/main.jsp?catId=758&langId=en>. For the national and EU values of all EU social indicators, see Eurostat web-site.

in broad terms, in the early years GDP fell more than household incomes, where these were protected by automatic stabilisers and the initial policy packages. Later on, household incomes then fell as a result of austerity policies, raising questions about who is (will be) benefiting from any return to prosperity. These events have led to a longer-term debate about the way in which the fruits of growth have been shared in the past. In both cases – the crisis and the longer-term – there are important distributional issues. The impact of austerity has differed across the population; the longer-term perspective has raised issues about the failure to reduce significantly the rate of income poverty.

These two approaches – macro and micro – are important in substantive terms. They also raise important methodological issues. The national accounts are based on aggregate information; the social indicators are derived in large part from household surveys and, in a growing number of countries (Jäntti, Törmälehto, and Marlier (2013)), register data. These two sources need to be reconciled. Measures of the evolution of real incomes can be derived from both national accounts and EU-SILC. We should be able to understand the relation between these two sources. They may differ, for example in the underlying definitions, but we can only have confidence in the two sources if the differences can be explained.

The two themes – substantive examination of the social indicators of income poverty, and reconciliation of micro and macro evidence – are the principal focus of this paper. We start in Section 1 with the headline income poverty indicators derived from EU-SILC. We then consider the relation with overall incomes, starting first in Section 2 with what can be learned within the EU-SILC framework. In Section 3, we begin to investigate the bridge with the national accounts. What is the relation between the overall measures of income in the two sources? This analysis leads in turn to examination in Section 4 of the level of real income and the new indicator adopted by the SPC Indicators Sub-Group based on the national accounts. In Section 5, we explore the possibility of an EU-SILC based real income indicator incorporating distributional considerations. In the course of the paper, we make a number of recommendations. These and the main findings are summarised in the concluding Section 6.

## **1. The headline indicators of income poverty and income inequality in EU27**

We begin with the EU social indicators available on the Eurostat website. Figure 1 shows the change in the AROP income poverty percentage for EU27<sup>4</sup>, EU15, the “New” Member States (12), and for individual Member States between income years 2005 and 2008, the latter being the year of onset of the economic crisis.<sup>5 6</sup> Figure 2

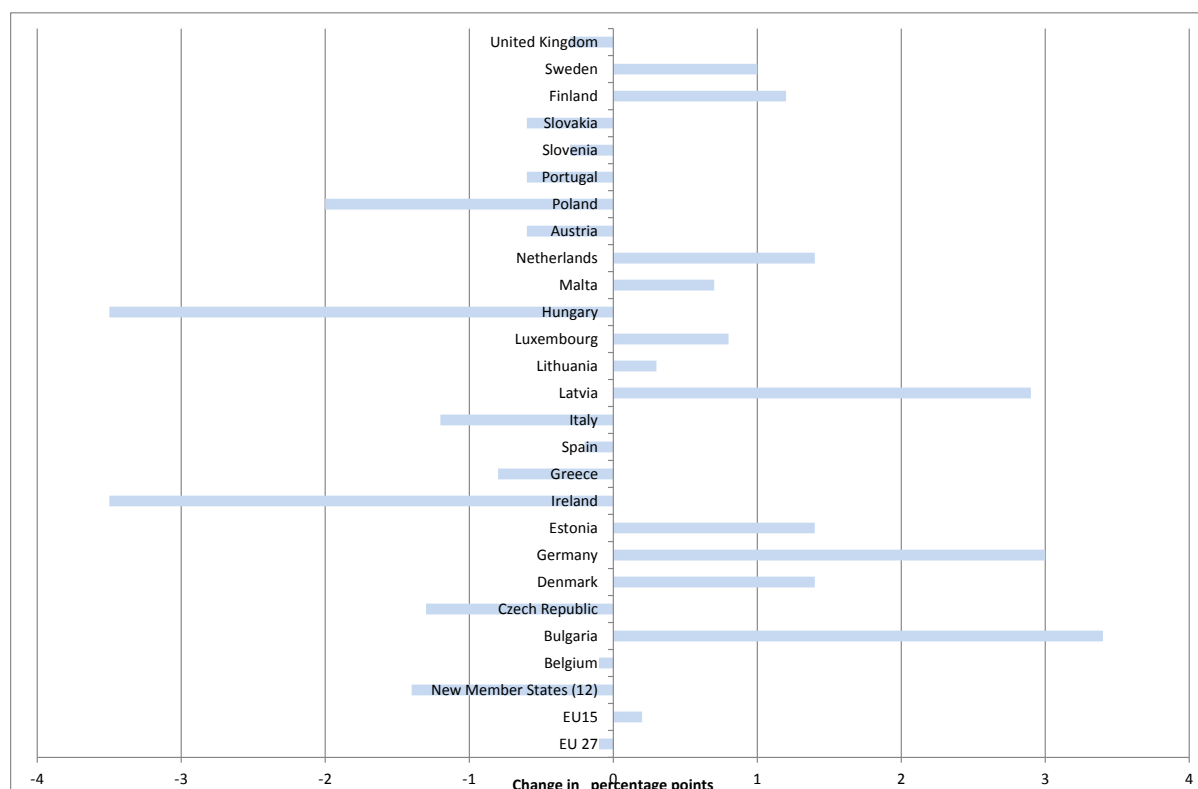
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<sup>4</sup> Croatia, which joined the EU in July 2013, is not included in our analyses.

<sup>5</sup> The income year is taken as the year preceding the EU-SILC survey year for all countries apart from the UK (total annual household income calculated on the basis of current income)

shows the change in the income poverty percentage in the next three year period between 2008 and 2011, covering the crisis and subsequent years. The change is not shown where breaks are marked in the Eurostat table. This means that there are missing observations in Figure 1 for France and Cyprus, and in Figure 2 for Austria. Romania is also missing from Figure 1 on account of missing data.

**Figure 1: Change in AROP rate from 2005 to 2008**



*Sources:* Eurostat website, Statistics/Employment and social protection indicators/Social inclusion, variable code tessi012.

*Note:* No data for France and Cyprus (break in series).

*Reading Note:* the AROP rate in Germany increased from 12.5 per cent in 2005 to 15.5 per cent in 2008; the change is shown as 3 percentage points.

The broad picture is well-known. The pre-crisis period 2005 to 2008 was disappointing in terms of (income) poverty reduction. It is true that poverty fell overall in the New Member States, but there were New Member States where poverty increased. Poverty increased by more than 2 percentage points in Bulgaria and Latvia. Poverty did not fall in the EU15, with an increase of more than 2 percentage points in

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and Ireland (calculation on the basis of a moving income reference period covering part of the year of the interview and part of the year prior to the survey). Series breaks correspond to those marked in the Eurostat tables.

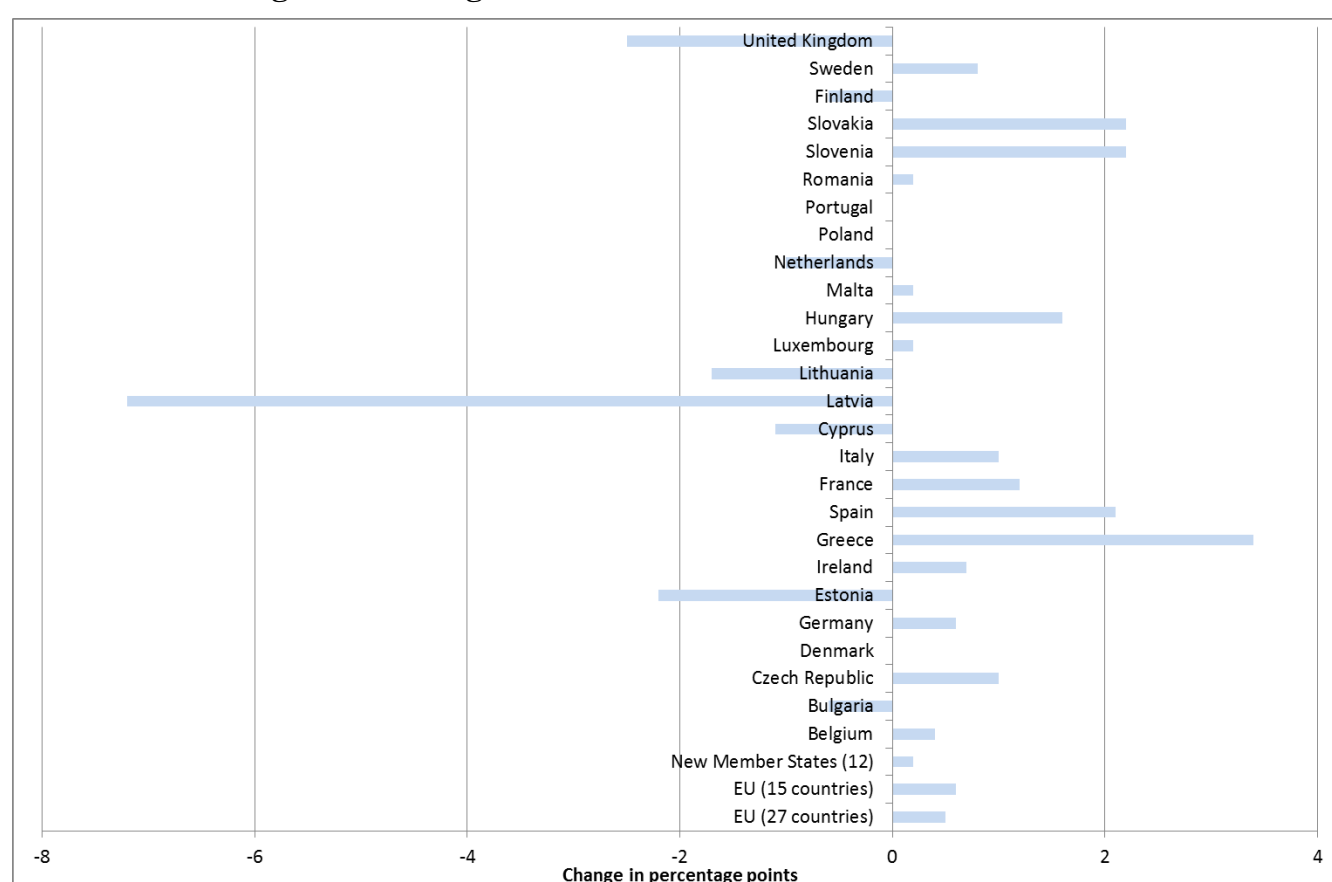
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Annex 1 provides the official abbreviations of EU countries (used in our Figures and Tables) as well as the countries included in EU-27, EU-15, EU-12 and the euro area.

Germany, which more than offset the reductions in Ireland and Italy. These differential movements meant that the overall EU27 percentage showed no change.

From 2008 to 2011, the AROP rate for EU27 as a whole went from 16.4 to 16.9 per cent. The EU15 figure rose from 16.2 to 16.8 per cent, and that for the euro zone (not shown) by a full percentage point. There were rises of more than 2 percentage points in Greece, Spain, Slovenia and Slovakia. In the opposite direction, there were reductions of more than 2 percentage points in Estonia, Latvia, and the UK. There were therefore differences in individual country experience, but the overall picture is that of little change (New Member States) or of a worsening of the poverty performance (EU15).

**Figure 2: Change in AROP rate from 2008 to 2011**



*Sources:* Eurostat website, Statistics/Employment and social protection indicators/Social inclusion, variable code tessi012.

*Note:* Data not shown for Austria (break in series).

*Reading Note:* the AROP rate in Germany increased from 15.5 per cent in 2008 to 16.1 per cent in 2011; the change is shown as 0.6 percentage points.

These figures relate to the income poverty headcount, but the intensity of poverty may have been changing. Between 2005 and 2008 there was in fact a reduction in the relative poverty gap for EU27 as a whole, from 23.3 to 21.7<sup>7</sup>. This was largely the result of a fall in the New Member States from 29.1 to 24.5. Conversely, there was an overall rise from 2008 to 2011, returning the EU27 figure to its 2005 level. In this period, the rise was principally due to the rise in EU15 from 21.0 to 22.9. Measured this way, too, there has been no overall progress.

### ***Relative indicators and real incomes***

The AROP rate is a relative measure in that it would record the same values if all incomes were doubled or all incomes were halved. There are good long-term reasons for employing such a relative measure. We would not want to judge living conditions in Europe today by the same standards as applicable to Renaissance Italy. But in the short and medium term, the relative measure has to be interpreted in relation to the changes in the overall level of living.

In the two periods under consideration (2005 to 2008 and 2008 to 2011), these issues arise in different ways. Where overall incomes are rising in real terms, as broadly happened in the earlier period, a constant AROP rate is consistent with those below the income poverty threshold still seeing an improvement in their real incomes. This is certainly true for a person at the AROP threshold. Put differently, if we were to anchor the threshold at the 2005 level of purchasing power (i.e. uprate annually the 2005 threshold on the basis of the annual inflation rate, as is done with the EU indicator of “at-risk-of-poverty rate anchored at a fixed moment in time”), then the poverty rate might record a decline.

Where, on the other hand, mean incomes are falling, the situation is different. It is now the case that a constant (or even decreasing) AROP rate is consistent with those below the income poverty threshold suffering a worsening in their living standards. Application of an anchored income poverty indicator, as in the 2013 Report of the Social Protection Committee (Social Protection Committee, 2014, pages 26-27) can then show a rise in the poverty rate: the Eurostat estimates for EU15 using a poverty threshold anchored at 2007 levels show a rise in the poverty rate from 16.4 per cent in 2007 to 19.0 per cent in 2012, whereas the AROP figure rises ‘only’ by 0.4 percentage point.<sup>8</sup>

From this, we can see the importance of setting the headline indicator of income poverty in the context of what is happening to overall incomes. This in turn raises the issue of the relation between incomes as measured in the EU-SILC dataset and incomes as measured in the national accounts. When the AROP rate is anchored in the EU-SILC data, to give a measure at a constant level of real income, how does this EU-

<sup>7</sup>

The EU indicator of relative median poverty gap is the difference between the median equivalised income of persons aged 0+ below the at-risk-of-poverty threshold and the threshold itself, expressed as a percentage of the at-risk-of-poverty threshold.

<sup>8</sup>

See also Figure 13 in Social Protection Committee (2014).



SILC income threshold relate to average household incomes in the national accounts? It is to this that we turn in the next section.

## 2. The AROP social indicator and overall living standards

To introduce the issues involved in building a bridge between EU-SILC-based indicators and the national accounts, we begin with a simple comparison: between the AROP threshold, set at 60 per cent of median equivalent disposable household income from the EU-SILC data, and the national accounts (NA) figure for adjusted gross household disposable income (GHDI)<sup>9</sup> per capita. The former is used for calculating the EU “at-risk-of-poverty” Social Inclusion primary indicator; the latter is the Eurostat headline household disposable income indicator. Both are measured in Purchasing Power Standards (PPS).<sup>10</sup> It should be noted that the *adjusted* GHDI figure includes social transfers in kind. We have taken this figure, as it is that most commonly cited in the macro-economic debate, but we later argue that it is more appropriate to use the *unadjusted* GHDI where social transfers in kind are excluded in line with the basis for the EU social indicator recently adopted by the SPC Indicators Sub-Group.<sup>11</sup> All of the national accounts figures relate to the (European System of Accounts) ESA95, not to the new ESA 2010 accounts.<sup>12</sup>

The NA figure for GHDI is the sum of employee compensation, operating surplus/mixed income, property income and transfers minus taxes and social contributions paid. It is therefore the analogue of the disposable household income measure in EU-SILC. There are however several major reasons why the AROP threshold should not be equal to 60 per cent of the NA figure:

- a. The difference between the median (in the threshold) and the mean (in the NA).
- b. The use of equivalised income (in the threshold) rather than a per capita calculation.
- c. Differences in the definition of income.
- d. Differences in the accuracy with which different elements of income are measured.
- e. Inclusion in the NA of the Non-Profit Institutions serving households (NPISH).

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<sup>9</sup> In national accounts terminology, “gross” refers to items calculated before the deduction of consumption of fixed capital and “net” refers to items calculated after this deduction.

<sup>10</sup> The Purchasing Power Standards (PPS) are designed to remove differences in purchasing power: i.e. differences in price levels across countries. Since they are applied to both denominator and numerator, the present calculation is not affected. We return to adjustments in purchasing power later in the paper.

<sup>11</sup> The indicator adopted by the Indicators Sub-Group is the “growth rate in real gross household disposable income”; we discuss the definition further below.

<sup>12</sup> ESA 2010 is the new internationally comparable EU accounting framework implemented in September 2014.

Of these, (a) and (e) are likely to cause the threshold to fall below 60 per cent of the NA total; the effect of (b), on the other hand, operates in the opposite direction. The effects of (c) and (d) can only be identified from a detailed comparison of income components.

Figures 3 to 5 show the ratio of AROP threshold to the NA Adjusted GHDI figures for the income years 2004 to 2011 (NA data for Malta are not available). From these, we can see a number of interesting features, concerning both levels and changes over time. To begin with, we can see from Figure 3 that, even for countries that one might expect to be relatively similar there are differences in level. The figure for Belgium in 2011, for example, is around 49 per cent, whereas those for the Netherlands and Denmark are some 5 percentage points higher. If the NA figure had been used, with the same percentage in all countries, then the threshold would have had to be raised in Belgium (by a factor of 54/49), increasing the recorded poverty. Secondly, the differences are not constant. At the beginning of the period, the Netherlands was closer to Belgium than to Denmark. This means that, relative to the national income figure for household income, the threshold rose in the Netherlands between 2004 and 2011.

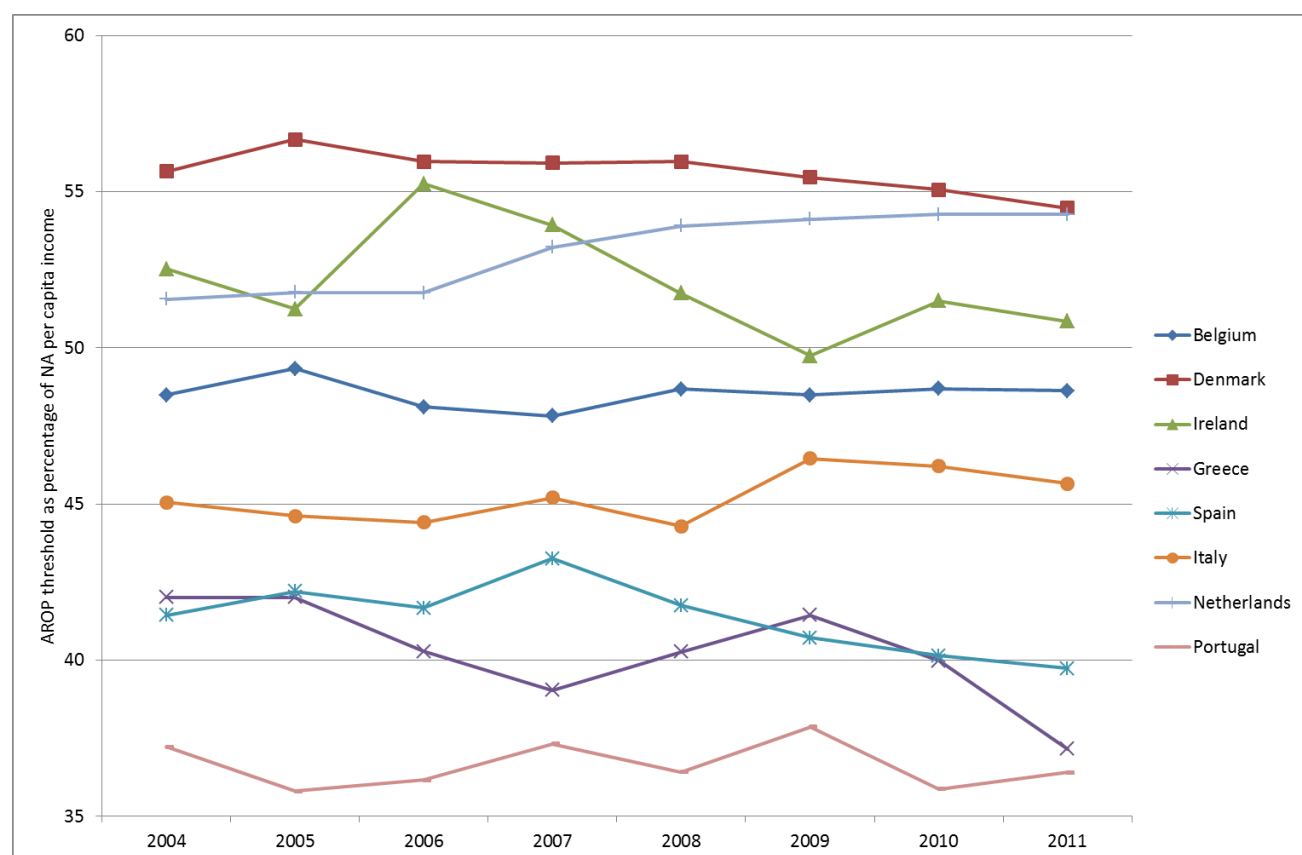
The differences and the changes over time become even more marked when we look at the Southern European countries in Figure 3. The figures for Southern Europe are all below those for Belgium, and in 2011 those for Spain, Greece and Portugal are all below 40 per cent. The figure for Portugal in 2011 is three-quarters that for Belgium. It may be that such a difference can be explained by the factors listed above, such as the greater inequality of income (so that the median is further below the mean), but this clearly warrants investigation. This is reinforced by the changes over time. In Portugal the series is fairly flat, but in Spain the proportion fell from 43.3 in 2007 to 39.7 in 2011. In Ireland, over the same period there was a fall from 53.9 to 50.9.

Figure 4 shows the corresponding figures for the remainder of the EU15 countries. The range is smaller, but there is still a spread in 2011 between 45 and 55 per cent. There are also substantial changes over time. The figure for Sweden rose from 48 per cent in 2004 to 54 per cent in 2011. Figure 5 shows the New Member States. The differences are even larger and the changes over time more marked. The threshold in Cyprus, Slovenia and Latvia is around twice, as a percentage of the NA figure, the threshold in Romania. There seems to have been a number of cases, such as Bulgaria, Latvia and Lithuania, where there was a rise in the threshold in the first part of the period, followed by a fall in the later part.

Overall, the difference between the AROP threshold and the NA GHDI per capita figure may be summarized in terms of the (unweighted over EU27 apart from Malta) country average in 2011, which was 45.3 per cent, rather than 60 per cent. In order to understand the reasons for this difference, we take each of the elements (a) to (e) in turn. The first two concern only the EU-SILC data and are discussed in the remainder of this section. The other three concern the relation between EU-SILC and the national accounts, and are the subject of Section 3.

The EU-SILC data are essential as a source of distributional data. The national accounts cannot provide any evidence about the median income, nor, evidently, about the rate of income poverty. The EU-SILC data are the basis for the figures we have downloaded from the Eurostat website to construct Figures 1 to 5. In order to take the analysis further, we need to make use of the micro-data which the European Statistical System makes available to researchers for scientific research purposes<sup>13</sup>.

**Figure 3: Comparison of AROP threshold with NA Adjusted GHDI per capita, EU15 Member States**



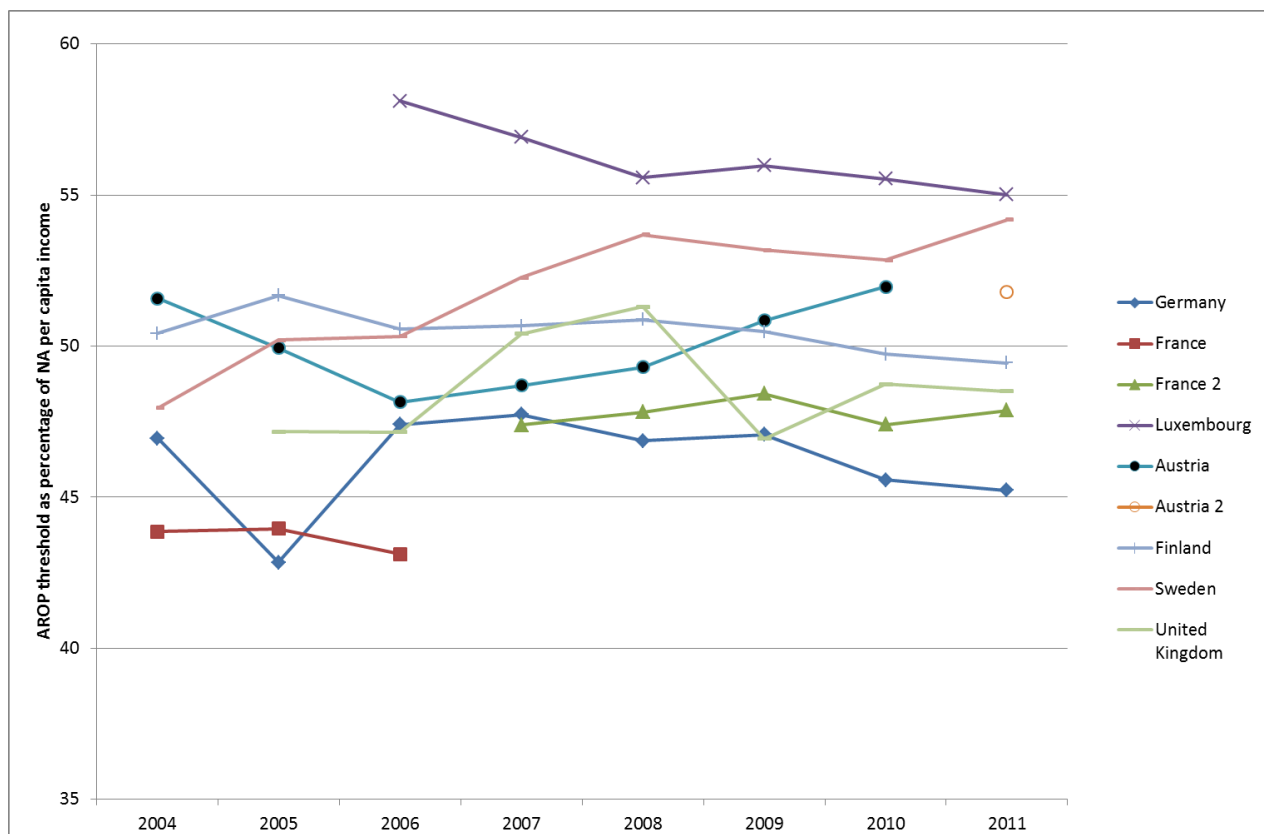
*Sources:* AROP threshold from Eurostat website, Statistics/Employment and social protection indicators/Social inclusion, variable code tessi014; NA adjusted GHDI from Statistics/National accounts/Annual sector accounts, nasa\_nf\_tr, variable tee00113.

*Reading Note:* in 2004 the AROP threshold in Belgium was 48.5 per cent of the NA adjusted GHDI per capita.

<sup>13</sup>

The conditions for getting access to the EU-SILC users' database (UDB) are explained on the Eurostat web-site (<http://epp.eurostat.ec.europa.eu/portal/page/portal/microdata/introduction>).

**Figure 4: Comparison of AROP threshold with NA Adjusted GHDI per capita, EU15 Member States (continued)**

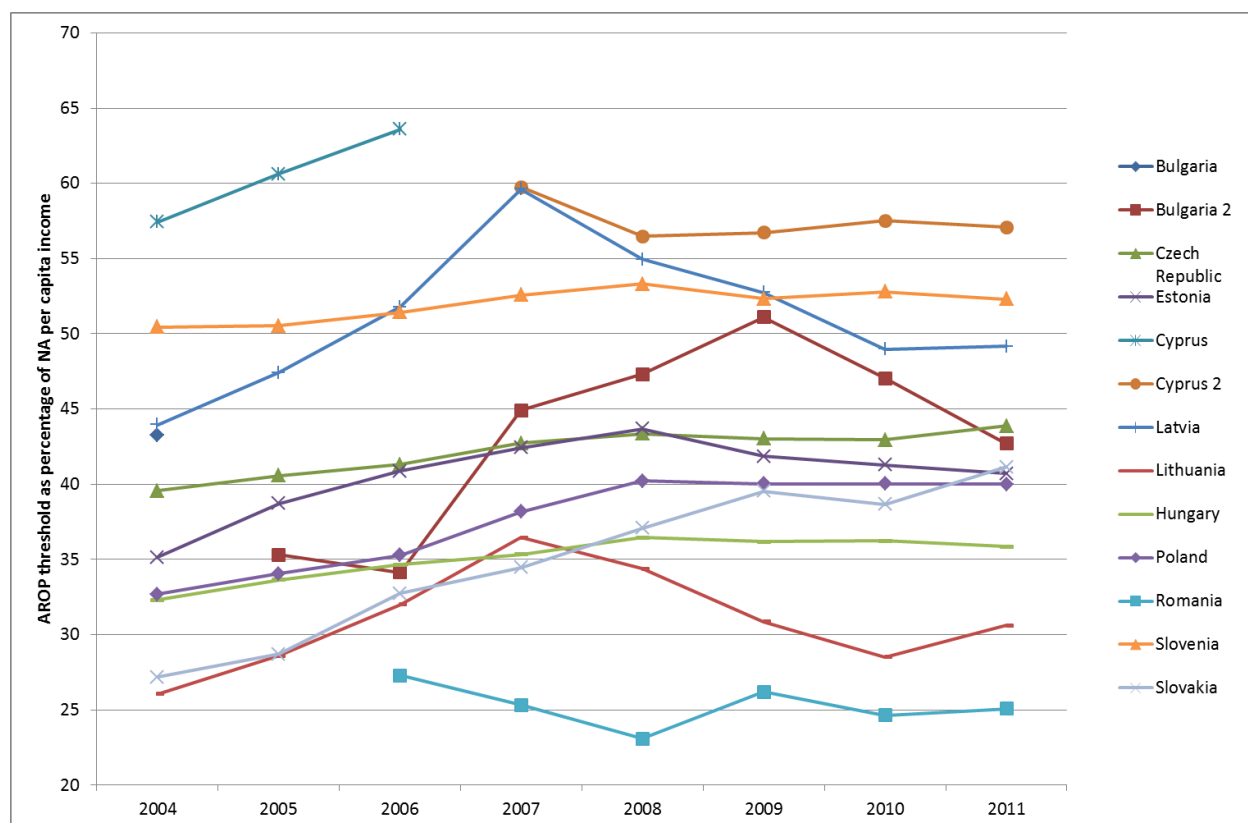


*Sources:* AROP threshold from Eurostat website, Statistics/Employment and social protection indicators/Social inclusion, variable code tessi014; NA adjusted GHDI from Statistics/National accounts/Annual sector accounts, nasa\_nf\_tr, variable tee00113.

*Note:* Break in EU-SILC series for France in 2007 (see France and France 2) and for Austria in 2011 (see Austria and Austria 2).

*Reading Note:* in 2004 the AROP threshold in France was 43.9 per cent of the NA adjusted GHDI per capita.

**Figure 5: Comparison of AROP threshold with NA Adjusted GHDI per capita, New Member States**



*Sources:* AROP threshold from Eurostat website, Statistics/Employment and social protection indicators/Social inclusion, variable code tessi014; NA adjusted GHDI from Statistics/National accounts/Annual sector accounts, nasa\_nf\_tr, variable tee00113.

*Note:* No NA data available for Malta. Break in EU-SILC series for Cyprus in 2007 (see Cyprus and Cyprus 2) and for Bulgaria in 2005 (see Bulgaria and Bulgaria 2).

*Reading Note:* in 2004 the AROP threshold in Cyprus was 57.4 per cent of the NA adjusted GHDI per capita.

### **Mean and median**

The first difference is that between the mean and the median. As is shown for 2010 in Figure 6, the mean everywhere exceeds the median. There is quite a wide range: from 1.06 for Sweden to 1.24 for Portugal. This implies that moving to use a percentage of the mean as the basis for the poverty threshold, in place of the median, would raise the threshold in Portugal, relative to that for Sweden, by 17 per cent. For the EU as a whole, the ratio is 1.1572, so that using the mean rather than the median would raise the figure of 45.3 per cent in the previous section, for the ratio of the AROP threshold to national income per capita, to 52.4 per cent. In other words, the “shortfall” is reduced from 14.7 per cent to 7.6 per cent.

This is a material contribution to understanding the difference, and reflects the extent of income inequality. In considering the differences across countries, there is in fact an evident correlation with overall inequality, as illustrated in Figure 7, which plots the Gini coefficient against the mean/median ratio. But the fit is not perfect, and there

is considerable variation among countries with similar values of the Gini coefficient. For example, four countries have values for the Gini close to 33.0, but the mean/median ratio varies from 1.14 in Romania to 1.20 in the UK. How much do these differences matter? As a guide, we may note that the poverty rate for EU15 as a whole and for the New Member States (12) varies with the threshold,  $\pi$ , approximately according to  $\pi^\theta$ , where  $\theta$  for EU15 in 2011 was 2.65 and for New Member States 2.42.<sup>14</sup> Suppose that, as in Atkinson et al (2010), we take 2 percentage points as the criterion for a salient difference in the AROP poverty rate, such as moving from 17 per cent (a rounded value of the EU27 rate in 2010) to 19 per cent. Taking an average value for  $\theta$  of 2.5, we can see that a 4.55 percentage point change in the threshold would generate such a change, and hence a 2 percentage point change in the poverty rate.<sup>15</sup> Rounding this percentage point change, we may take a difference of 0.05 in the mean/median ratio as salient. On this basis, the difference shown in Figure 6 between Sweden and Hungary is a salient one, as is the difference between Hungary and Bulgaria, and between Bulgaria and Portugal. In terms of cross-country comparisons, the mean/median difference matters.

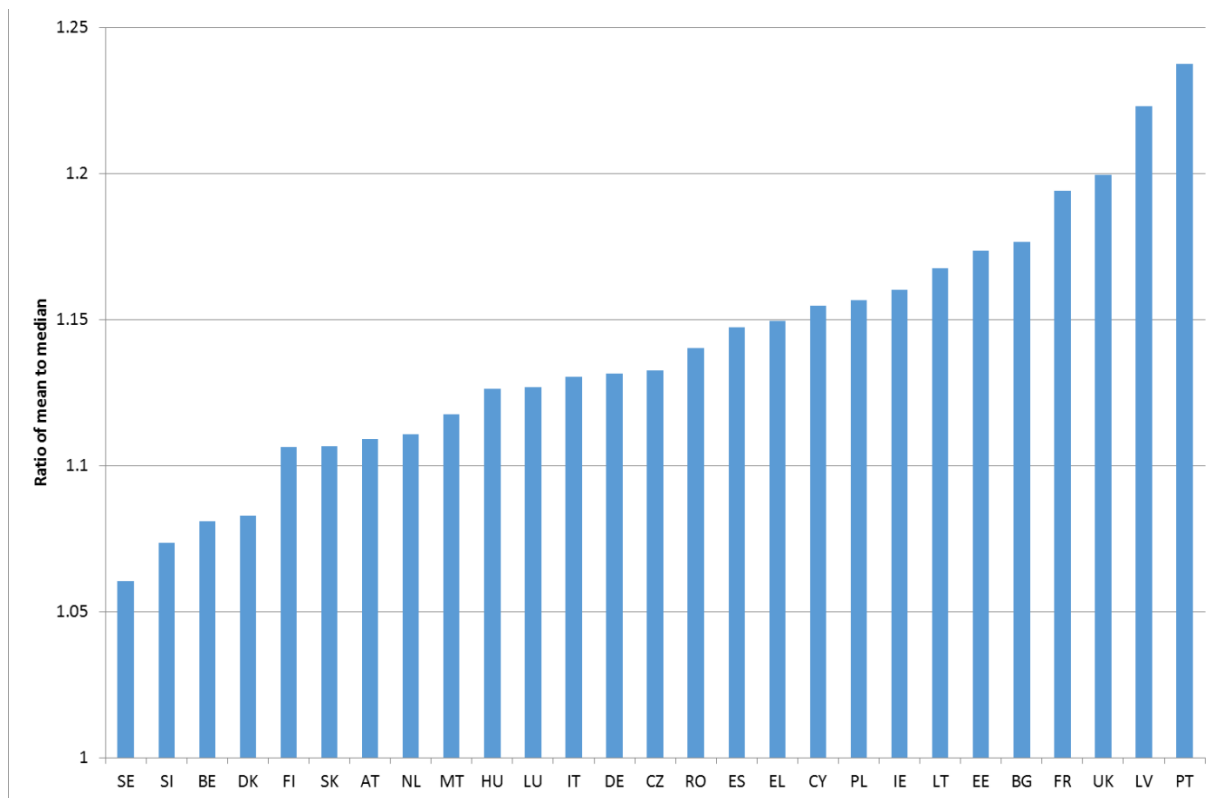
The mean/median ratios differ across countries, but do they also vary over the period considered? In fact, relatively few countries are materially affected. In only one of the EU15 (France) is the increase in the mean/median ratio equal to 0.05 or more, and this is due to a break in the series. Among the New Member States (12) only Cyprus showed a salient increase in the mean/median ratio. In this case, if the poverty threshold had moved in line with the mean rather than with the median, the change in the poverty rate would have been more positive (i.e. if the poverty rate had risen, the increase would have been larger, and if it had fallen, the fall would have been smaller or turned into a rise). In the opposite direction, Greece, Lithuania and Portugal showed falls in the mean/median ratio of more than 0.05, with the reverse conclusions.

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<sup>14</sup> These values are obtained by fitting a linear regression of the logarithm of the poverty rate against the logarithm of the threshold from 40 to 70 per cent of the median.

<sup>15</sup> The ratio of the poverty thresholds is given by  $\exp\{\log_e(19/17)/\theta\}$ .

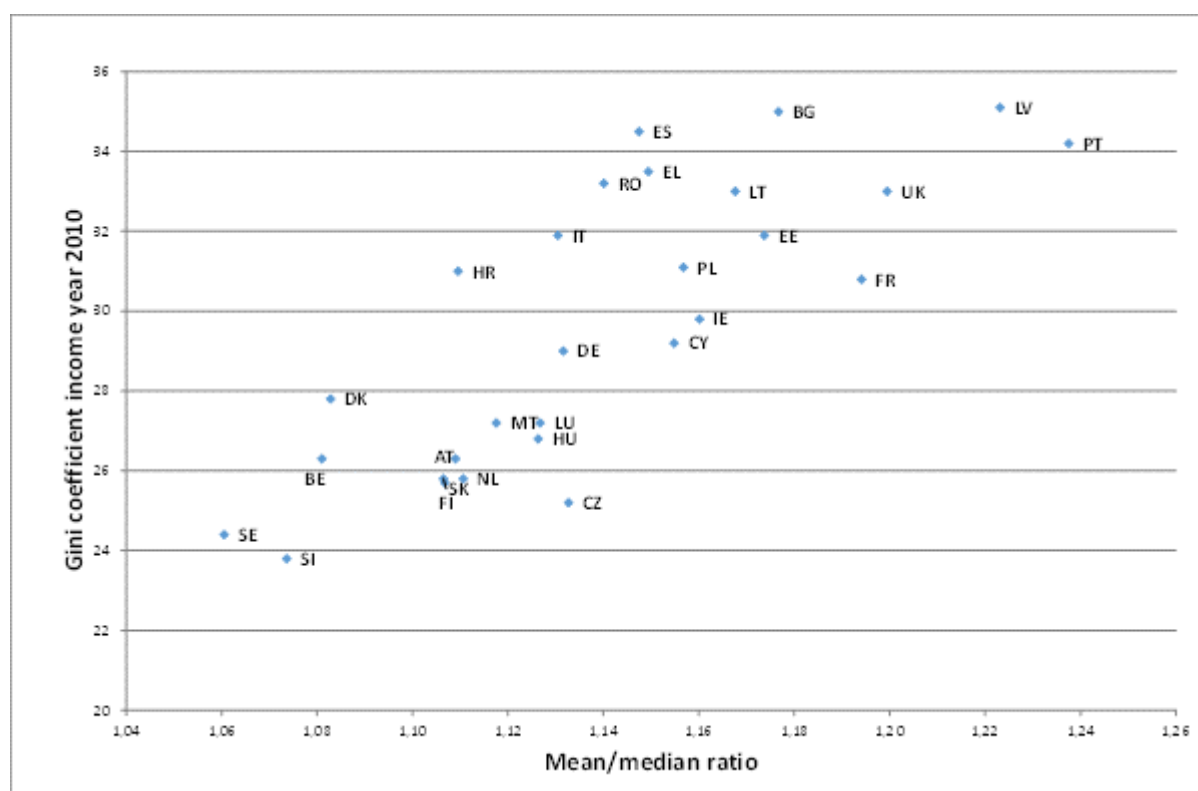
**Figure 6: Ratio of mean to median equivalised income 2010**



*Sources:* EU-SILC users' database (UDB) of March 2014.

*Reading note:* in Sweden, the ratio of the mean equivalised income to the median equivalised income is 1.06.

**Figure 7: Relation between mean/median equivalised income ratio and Gini coefficient 2010**



Sources: EU-SILC users' database (UDB) of March 2014.

Reading note: in SE, the mean/median ratio is 1.06 and the Gini coefficient attains 24.4%.

### ***Equivalisation***

In calculating per capita income, everyone counts as 1, but when an equivalence scale is employed, the needs of those sharing a household are reduced to take account of economies of scale, so that the equivalent income is higher.<sup>16</sup> As a result the mean per capita income is only a fraction of the equivalised income, as shown in Figure 8 for the income year 2010. For example, in Belgium in income year 2010 the mean per capita income in PPS was €13,424, whereas the equivalised figure was €19,629. The mean per capita figure was 0.68 of the equivalised figure. Across all countries, the country unweighted average across EU27 in 2010 is 0.67.

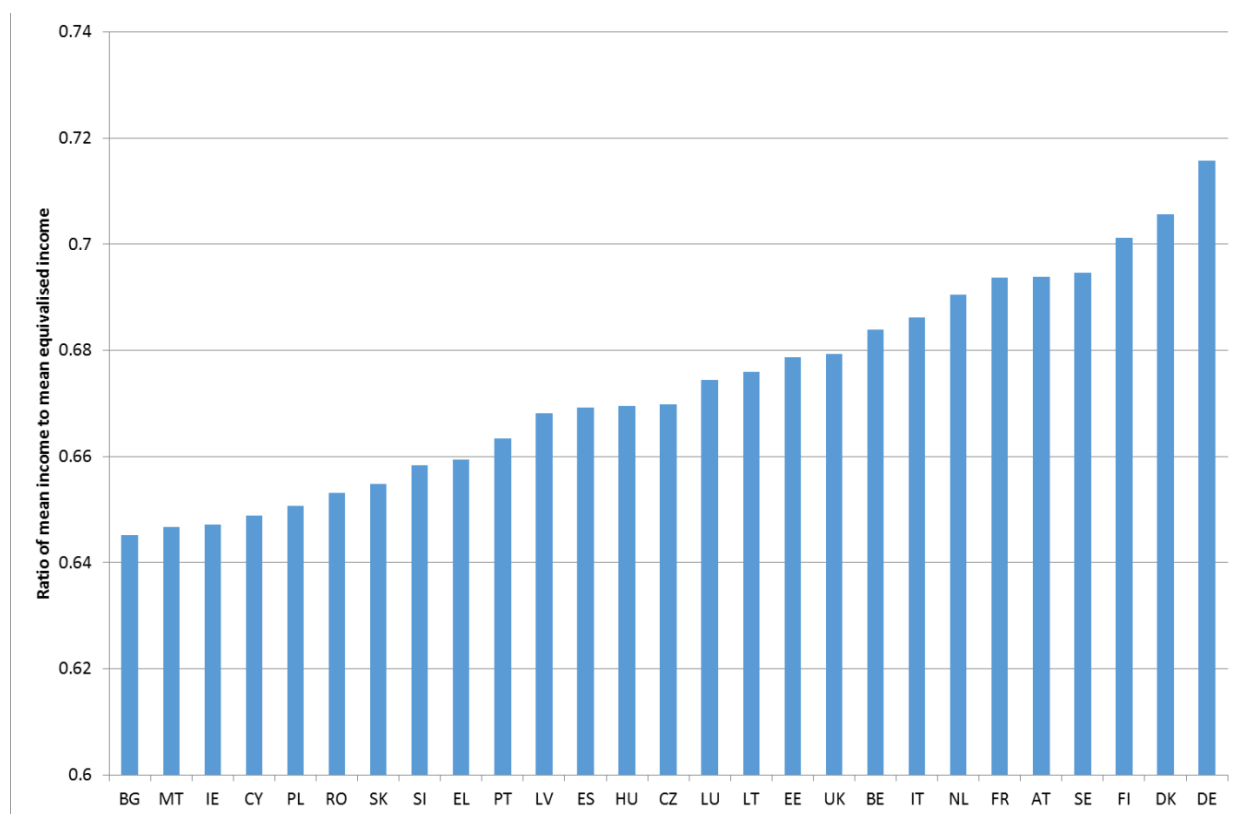
The ratios seem quite stable across time, but they vary across countries. As is to be expected, they vary according to the average household size. Figure 9 shows that there is a strong negative correlation. The countries with small household size include Denmark and Germany, and those with a large household size include Bulgaria, Poland, Romania and Slovakia. The difference from one end of the line to the other is of the order of a tenth, so the cross-country differences are salient according to the criterion described above.

<sup>16</sup>

The equivalence scale used at EU level is the so-called "OECD-modified scale", which assigns a value of 1 to the first household member, of 0.5 to each additional adult and of 0.3 to each child. Children are persons below the age of 14.



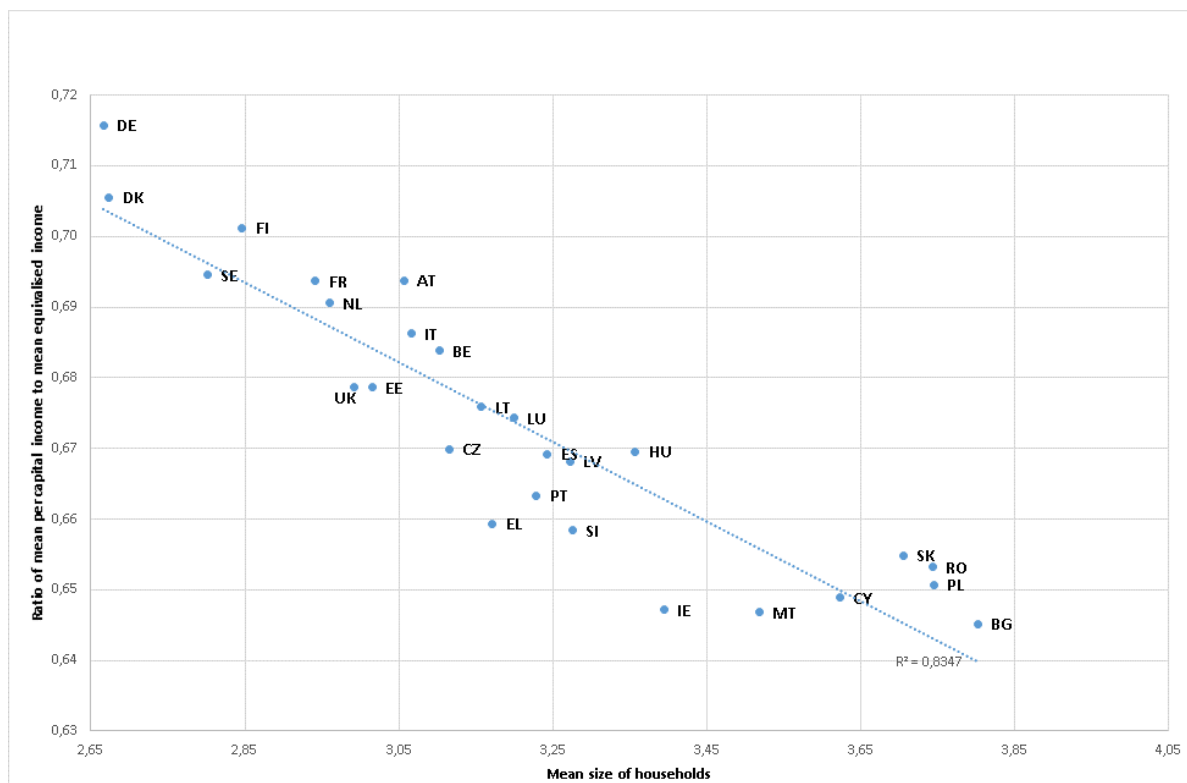
**Figure 8: Ratio of mean per capita to mean equivalised income 2010**



*Sources:* EU-SILC users' database (UDB) of March 2014.

*Reading note:* The ratio of the mean income per capita to mean equivalised income in Bulgaria is 0.645.

**Figure 9: Ratio (mean per capita income to mean equivalised income) versus mean size of households 2010**



Sources: EU-SILC users' database (UDB) of March 2014.

Reading note: In Bulgaria, the ratio of the mean income per capita to mean equivalised income is 0.645 and the average household size is 3.8.

## Conclusion

In this section we have identified the major issues that arise in relating the relative social indicators of poverty and inequality to the overall level of income. Using EU-SILC data, we have examined two of these elements: the choice of the median and equivalisation. Each of these affects the comparison across countries, but the variation across time does not seem of particular concern.

Of the two elements, that of equivalisation is stronger: the average adjustment factor was 0.67, compared with 1.17 for the mean/median difference. This means that, rather than closing the gap between the AROP and national accounts, there is a larger discrepancy to explain when we compare mean unequivalised income per capita in EU-SILC with the national accounts. To narrow the gap, we have to consider the other elements, which means confronting the EU-SILC data with the national accounts.

### 3. The bridge to national accounts

As a result of the recent important work by the Eurostat and OECD Joint Expert Group, and the report by Mattonetti (2013) for Eurostat,<sup>17</sup> we now have a much clearer picture of the relation between the national accounts (NA) and the EU-SILC data, and of the main elements that contribute to the observed difference. In this paper, we draw heavily on this work. Our focus is however different. Here we focus on the direct implications for the measurement of income poverty as in the EU social indicators. This means that in considering the sources of the difference we need to ask, in concrete terms, how, if at all, should the information collected in the national accounts and that collected through EU-SILC be modified?

In what follows, we consider the most important elements accounting for the difference between EU-SILC and the national accounts. Table 1 lists the composition of the national accounts income variables.

**Table 1: Definition of Gross Disposable Household Income**

D1	Compensation of employees
+ B2g + B3g	Gross operating surplus/mixed income
+ D4	Property income net of property income paid
+ D7	Other current transfers received, net of transfers paid
+ D62	Social benefits, other than social transfers in kind, net of those paid
- D61	Social contributions paid net of those received
- D5	Current taxes on income and wealth
= B6g	Gross disposable household income
+ D63	Social transfers in kind
+ B7g	Adjusted gross disposable income

The first important distinction is that between Adjusted GHDI, denoted B7g, and Unadjusted GHDI, denoted B6g. The difference is that Adjusted GHDI includes social transfers in kind (STiK). In the construction of the EU “at-risk-of-poverty” (AROP) social indicator, STiK have not been included and the new NA-based indicator adopted by the SPC Indicators Sub-Group in 2014 takes GHDI before adjustment. Given the substantial magnitude of STiK, the use of Unadjusted GHDI, as is adopted from this juncture, makes a material difference.

<sup>17</sup>

The report is available at:

[http://search.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=STD/CSTAT/WP/NA\(2013\)9/RD&docLanguage=En](http://search.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=STD/CSTAT/WP/NA(2013)9/RD&docLanguage=En).

The comparison is further discussed in section 2 of the Eurostat report

[http://epp.eurostat.ec.europa.eu/cache/ITY\\_OFFPUB/KS-RA-13-023/EN/KS-RA-13-023-EN.PDF](http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-RA-13-023/EN/KS-RA-13-023-EN.PDF)

### ***Non-Profit Institutions Serving Households (NPISH)***

A second definitional issue is that some countries combine the household sector S14 with the NPISH sector, S15 (Non-Profit Institutions Serving Households), which includes bodies such as charities, churches, learned societies, trade unions, political parties and sports clubs. From the Eurostat-OECD report (Mattonetti (2013)), it appears that five of the EU27 countries covered in that report have a combined sector account (Austria, Denmark, Germany, Ireland and the UK). The failure to make the separation raises particular problems for the *Unadjusted* GHDI, as may be seen from the case of France, where there are separate accounts for S14 Households and S15 NPISH. In terms of gross income before adjustment, the NPISH sector is some 3 per cent of the household sector: €45.5 billion in 2013, compared with €1,326.3 billion. However, most of the gross income is used to make Social Transfers in Kind to the household sector. This means that moving from GHDI to Adjusted GHDI adds to household income and subtracts from NPISH, leaving the latter with only €2.1 billion. So in terms of Adjusted GHDI, the inclusion of NPISH would make little difference, but the unadjusted figure would be some 3 per cent higher.

Given its importance for the unadjusted GHDI figure, we recommend that all Member States be requested to provide data excluding the NPISH sector.

*Recommendation 1:* Given the use of the unadjusted GHDI for the new indicator, it is important that Member States provide national accounts data for the household sector S14 excluding the NPISH.

This should be feasible, since twenty countries from the EU27 have provided statistics for the S14 sector for unadjusted GHDI, and their data are used in the construction of Figures 10 and 11, which show the ratio of the EU-SILC mean income per capita to NA Unadjusted GHDI per capita for EU15 and the New Member States (12). Both are measured in euros. The missing countries are Austria, Denmark, Germany, Ireland, Luxembourg, Malta and the UK. There are therefore only nine of the EU15.

Since we have now allowed for three definitional differences (mean/median, equivalisation and exclusion of NPISH), there is a straight comparison. The benchmark is 100 per cent. There is a distinct pattern in Figures 10 and 11. If we distinguish those countries where the EU-SILC income is above 75 per cent of the NA figure, and those where it is below two-thirds, then in EU15 the former group consists of three register countries (Netherlands, Sweden and Finland), where most income components are obtained from administrative registers. For these countries, the ratio is above 85 per cent in 2011. France, where there is a break in the series, following the adoption of a register basis, causing a jump in 2007, is now close at 83 per cent. Then at two-thirds or lower are the Southern European countries: Spain, Portugal and Greece. Belgium and Italy come in-between.

Among the New Member States, shown in Figure 11, the ratio in 2011 is above 75 per cent in Cyprus and Slovenia (a register country). The ratio is below two-thirds in Poland, Slovakia, Hungary, Latvia, Lithuania and Romania.

There remain therefore marked differences between countries, and we explore these further below. At the same time, the ratios remain relatively stable over time, particularly if we consider the later part of the period (from 2008 to 2011). Exceptions are Greece in Figure 10 and Bulgaria and Lithuania in Figure 11, but apart from these the EU mean income data have a broadly stable relation with the national accounts mean income. To the extent that the difference can be treated as a (country-specific) fixed effect, this is re-assuring. It does however mean – paradoxically – that if improvements are made in EU-SILC (or in the national accounts) then that we can no longer treat them as differing consistently by a constant proportion. This is illustrated by the case of France, where the move to a register basis has been associated with a rise of some 10 percentage points.

We now consider some of the elements that can explain the observed difference.

**(i) *Non-private households***

The EU-SILC data cover only private households. The data therefore exclude those people living in non-private dwellings (e.g. prisons, boarding schools, retirement homes, hospitals and nursing homes, religious institutions, hotels, etc.). The Eurostat-OECD Expert Group carried out an extensive exercise to estimate the share of non-private households in the NA totals (see Figure 4 and Annex 6 in Mattonetti, 2013). Here however our concern is a different one. The EU-SILC-based indicators are expressed as percentage of the EU-SILC population, and the same is true of the per capita comparisons with the national accounts. The problem only arises to the extent that (1) statements are made about aggregate numbers (as in the Europe 2020 target<sup>18</sup>) or (2) the non-private household population differs with regard to the indicator in question. In this latter respect, the Expert Group exercise makes a contribution in that they take account of the different demographic composition of the non-private households and make assumptions about different categories of income. Even if they assume that within age groups the income in many categories is the same as in EU-SILC, it would be interesting to take their analysis further and examine the impact on the AROP and other indicators.

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<sup>18</sup> In 2010, EU Heads of State and Government adopted the “Europe 2020 Strategy” on smart, sustainable and inclusive growth, with its five “headline targets” to be achieved by 2020 (European Council, 2010). These headline quantitative objectives include a specific and time bound social inclusion target for the EU as a whole: “*promoting social inclusion, in particular through the reduction of poverty, by aiming to lift at least 20 million people out of the risk of poverty and social exclusion in the EU*”. The Europe 2020 social inclusion target is measured using three indicators: a) the EU “at-risk-of-poverty” indicator; b) an indicator of “severe material deprivation” (people lacking at least four out of nine items covering some key aspects of living conditions); and c) a measure of “very low household work intensity” also referred to as “(quasi-)joblessness”. The Europe 2020 target is based on the 2008 survey year (most recent data available in 2010), which relates to incomes in the year 2007 for all countries except for the UK and Ireland. For a detailed discussion of the target, see Frazer *et al*, 2014.

*Recommendation 2:* The effect on EU-SILC-based social indicators of the non-coverage of non-private households should be examined, using NA data and other relevant sources (registers, specific surveys).

**(ii) Coverage by income category**

From the work of the Expert Group and Mattonetti (2013), we can compare the coverage rate for different income components by country for the year 2008. The pattern follows that found in earlier comparisons of survey data and national accounts (such as Atkinson, Rainwater and Smeeding, 1995, Table 3.7). Wages and salaries have the highest coverage rate, followed by social benefits in cash and taxes. The lowest coverage rates are for self-employment income and for property income. The 2008 findings are summarised below, where the interval shows the range excluding the bottom four and the top four countries:

**Coverage rate (EU-SILC over NA) per cent**

Wages and salaries	85.9 to 103.5
Social benefits in cash	72.6 to 92.6
Taxes and social contributions	63.8 to 90.2
Operating surplus and mixed income	53.5 to 108.3
Property income received	8.0 to 51.7
Property income paid	15.1 to 55.4

*Sources:* Mattonetti, 2013, Table 3.

These figures are worrying. At the same time, the coverage rate depends on the choice of baseline and we have here a particular focus: the implications for the social indicators. The baseline taken in the exercise is a “reduced scope” national accounts definition (Mattonetti, Table 2), which omits for example the Financial Intermediation Services Indirectly Measured (FISIM) element of property income and the property income attributed to insurance policy holders. Nevertheless, there are a number of questions concerning the appropriateness of the baseline from the standpoint of the indicators.

For example, the present social indicators are defined on income excluding imputed rent on owner-occupied houses. This is a substantial item in the national accounts. The Expert Group reported that, in the countries analysed, the share of income from owner-occupied dwellings ranged from 6% of total adjusted disposable income to 13 per cent. If the baseline were to exclude this item, it seems likely that the comparison of “operating surplus and mixed income” would be more favourable. A second example is provided by property income paid. If mortgage interest is regarded as an outgoing (part of housing costs), rather than as a subtraction from income, then incomplete coverage of property income paid is not important (business loans appear under self-employment income).

*Recommendation 3:* The EU-SILC coverage of income by components exercise should be re-done, with a baseline appropriate for the calculation of the social indicators.

From such an examination of the coverage, it should be possible to identify those components where there is a significant difference between the EU-SILC variable and the desired coverage. In such cases, there are two possible routes forward. The first is to consider whether there are potential improvements in future EU-SILC practice. One obvious question, suggested by the earlier findings, is whether there is greater scope for the use of register data. The second approach, which can be applied retrospectively, is to examine the sensitivity of conclusions to data deficiencies. Here an obvious question to ask is how far the AROP and other indicators are affected by proportionate adjustments to different income categories. If, for example, operating surplus/mixed income were to be scaled up by x per cent, how much would the poverty rate be changed?

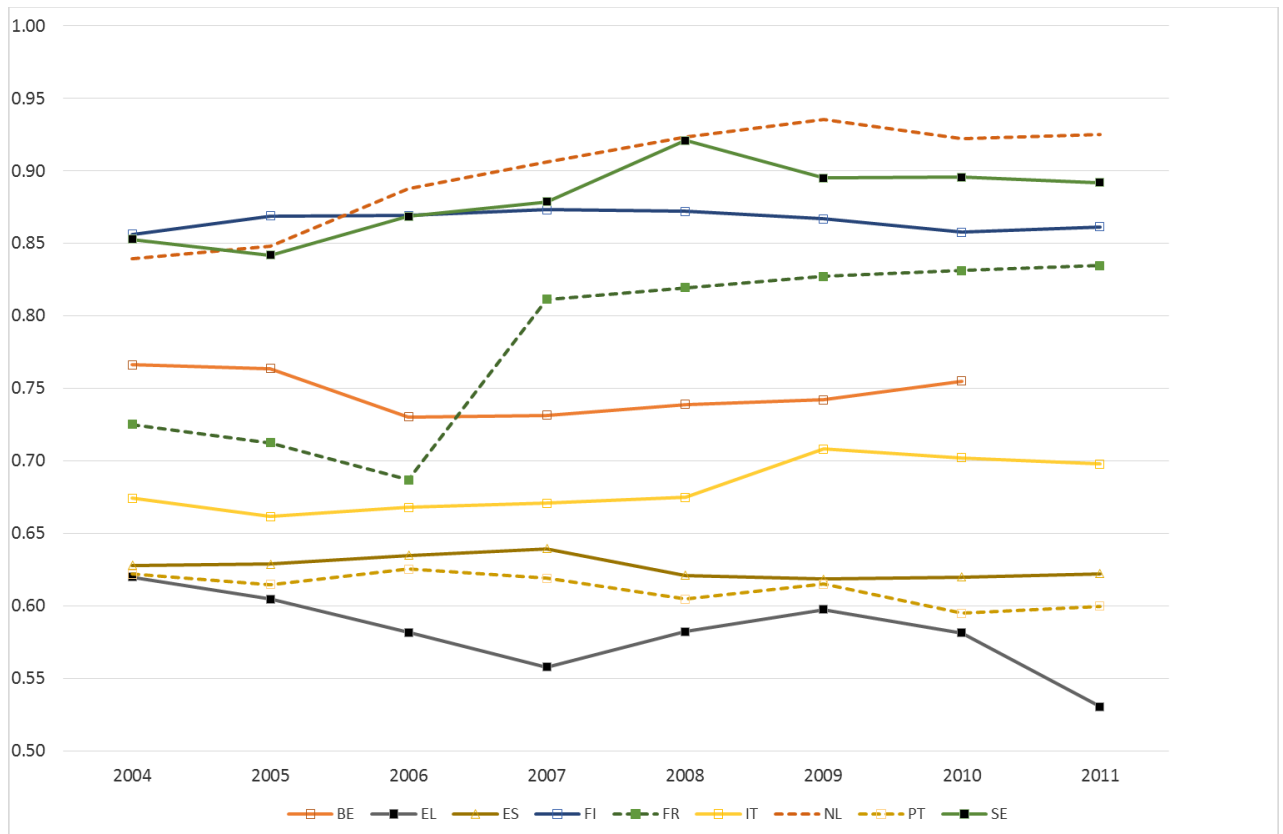
*Recommendation 4:* Following the coverage exercise, consideration should be given to the future development of EU-SILC to improve income coverage, and an analysis should be made of the sensitivity of past results to income under-recording.

### ***Conclusions***

This section has sought to compare the EU-SILC data and the national accounts. Such a confrontation might well have led to very negative conclusions. In terms of the level of income, there are indeed worrying features. Even allowing for differences in definition, it seems likely that the EU-SILC data yield income estimates that fall short of the national accounts totals. We have proposed ways in which this could be further explored and possible corrective measures. But the good news is that – speaking broadly, and with certain notable exceptions – these differences appear relatively stable over time. The trends in the two sources seem in general coherent.

If for the majority of countries there is broad stability in the ratio of the two series, then this means that when using the At-Risk-of-Poverty social indicator we can be reassured that the threshold is in these cases not moving out of line with the picture painted by the national accounts. Such a conclusion is also relevant to the GHDI indicator of income levels recently adopted by the Social Protection Committee, to which we turn in the next section.

**Figure 10: Ratio between SILC and NA Unadjusted GHDI per capita, EU15**



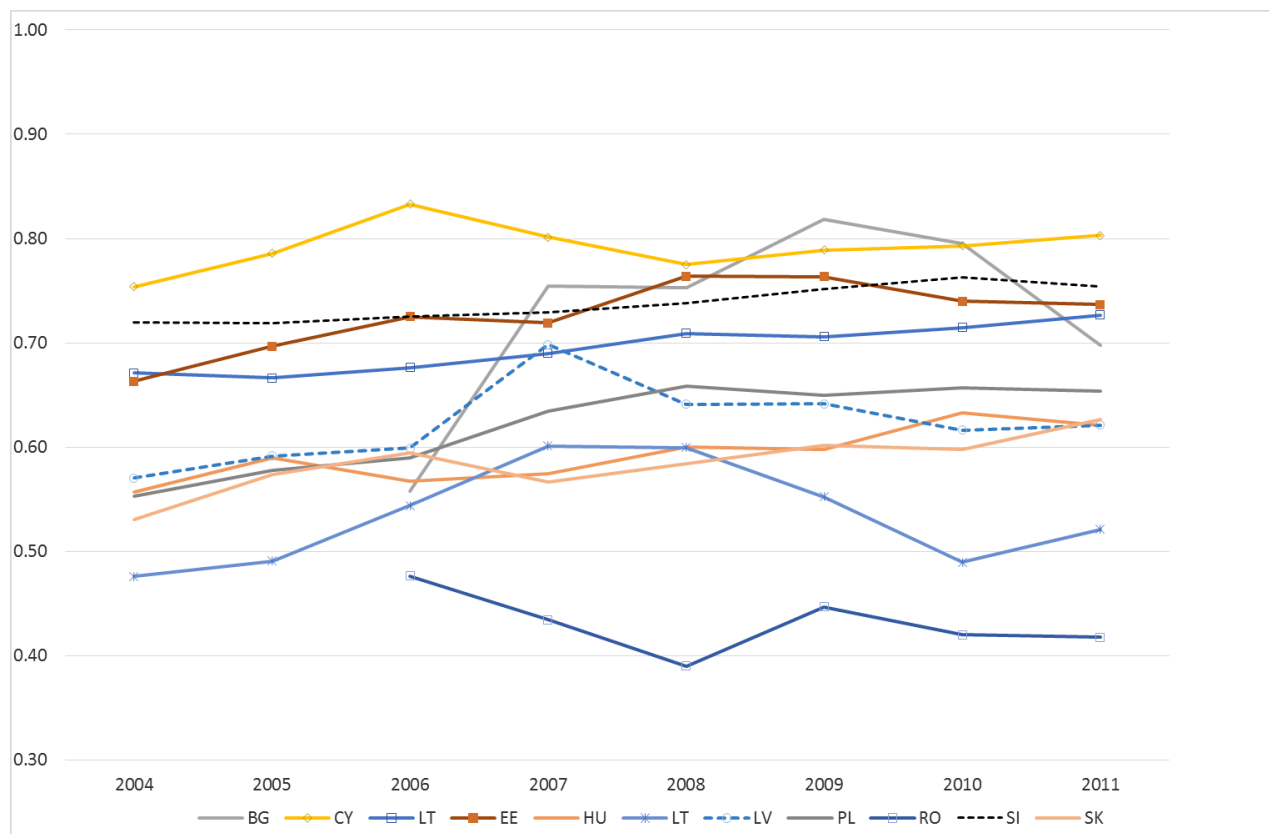
*Sources:* UDB and NA unadjusted GHDI from Statistics/National accounts/Annual sector accounts, nasa\_nf\_tr.

*Note:* Break in EU-SILC series in FR (2007). No EU-SILC data for BE in 2011.

*Reading note:* For Greece, the ratio of EU-SILC mean per capita income to the NA unadjusted GHDI per capita for the household sector S14 is 0.62 in 2004.



**Figure 11: Ratio between SILC and NA Unadjusted GHDI per capita, New Member States**



Sources: UDB and NA unadjusted GHDI from Statistics/National accounts/Annual sector accounts, nasa\_nf\_tr.

Note: no data available for Malta. Break in EU-SILC series in CY (2007) and in BG (2005).

Reading note: For Lithuania, the ratio of EU-SILC mean per capita income to the NA unadjusted GHDI per capita for the household sector S14 is 0.48 in 2004.

#### 4. Changes in real incomes

To this juncture, we have been comparing the EU-SILC and national accounts; we now consider what they show separately about the changes in the level of living. Have the changes in income poverty with which we began been accompanied by rising or falling real levels of income? It is for this reason that the SPC Indicators Sub-Group has adopted a new indicator based on national accounts data on (unadjusted) GHDI per capita: the growth rate in real gross household disposable income.

Crucial to such measures of the growth of real income is the choice of price index. Here it is important to note that only national information is required. In particular, there is no need to have recourse to Purchasing Power Standards or to exchange rates, as is explained in Annex 3. *The Eurostat-OECD Methodological Manual on Purchasing Power Parities* observes “that many international comparisons require neither PPPs nor exchange rates. For example, to compare real growth rates of GDP between countries, each country's own published growth rate can be used” (2012,

page 16). These are of course influenced by exchange rate movements, but only insofar as they feed into domestic prices. For this reason, we start from the amounts in national currency, and deflate by a national price index to obtain the rate of growth in real terms. To underline the fact that the results do not allow a comparison of the levels of income across countries, the series is expressed for each country as an index with 2005 = 100.

The next question is “which price index?” The SPC Indicators Sub-Group proposes using the deflator of household final consumption expenditure. This is the natural measure from the national accounts (see, for example, Milusheva and Gal, 2012): “Final consumption aggregates” (Eurostat variable *nama\_fcs\_p*). It does however differ from the standard EU-SILC practice, which uses the Harmonised Index of Consumer Prices (HICP: series *prc\_hicp\_aind*), as in the At-Risk-Of-Poverty rate anchored at a point in time. The HICP is the index targeted by the European Central Bank, and is more familiar to users. In our judgment, consistency with the anchored AROP rate suggests use of the HICP index. The choice is however an important one. Figure A in Annex 2 compares the two indices over the period 2005 to 2011. In the EU27, the national accounts index rose by 8.9 per cent, whereas the HICP increased by 15.4 per cent. This is a large difference: more than 1 per cent per year. The difference arises mainly outside the euro area: for the euro area (18) the difference was only 1.8 per cent over the period as a whole. In 13 out of the 27 countries, the difference was “small” (less than 0.25 per cent per year). On the other hand, in the second half of the period, from 2008 to 2011, the proportion with small differences fell to a third and there were six countries with large differences (more than 1 per cent per year). The reasons for these differences warrant further examination.

*Recommendation 5:* a) The HICP should be used, rather than the household final consumption expenditure deflator, for the calculation of the EU real GHDI indicator, on the grounds that it is the deflator used for the calculation of the EU indicator of “At-risk-of-poverty rate anchored at a fixed moment in time”; but (b) there should be further investigation of the implications for the real income indicator of the differences in the changes in price level over time indicated by the HICP and by the final consumption expenditure deflator.

Figures 12 and 13 show the NA-based indicator over the period 2005 to 2012 derived from Unadjusted GHDI per capita expressed in national currency (*nasa\_nf\_trt*) and deflated by the HICP. It should be noted that these figures include NPISH. Data on GHDI are not available for Malta and data for Luxembourg only start in 2006. As is to be expected, the two sub-periods are quite different. All the EU15 saw positive growth in real income between 2005 and 2008, even if in Denmark, Germany, and the UK it was less than 2 per cent over the three year period, and in Italy real income fell. In the middle came, in increasing order, the Netherlands, Portugal, France, Spain, Austria, Luxembourg, Belgium and Ireland. In all of these countries, the rate of growth was less than 2 per cent per year. 2 per cent per annum was only achieved in Finland, Sweden and Greece. The experience of the New Member States from 2005 to 2008 was quite diverse, with the increase in real income per capita ranging from minus 4.2

in Hungary to more than 20 per cent in Bulgaria, Estonia, Lithuania, Latvia and Romania.

It is interesting to compare the growth over this relatively “normal” period of real GHDI per capita and real GDP per capita, as in Figure 14. The countries split more or less equally between those where GHDI grows more slowly and where it grows faster in both the EU15 and the New Member States. The 25 countries (Luxembourg and Malta are missing) are distributed more or less evenly above and below the 45° line in Figure 14.

In the post-crisis period from 2008 to 2011, there are the expected large losers, in increasing order (Figures 12 and 13): Italy, Spain, Ireland, and Greece, to which, when 2012 is taken into account, we have to add the Netherlands and Portugal. Countries that stand out at the top, with more than a 3 per cent increase are Germany, Finland, Denmark, and Sweden. In the middle with no change (France) or moderate reductions are the UK, Luxembourg, Austria and Portugal. Among the New Member States, the large losers were Lithuania, Romania and Latvia, and, if we add 2012, Cyprus and Hungary. Positive growth of real GHDI per capita (more than 2 per cent) was recorded in Bulgaria, Slovakia and Poland.

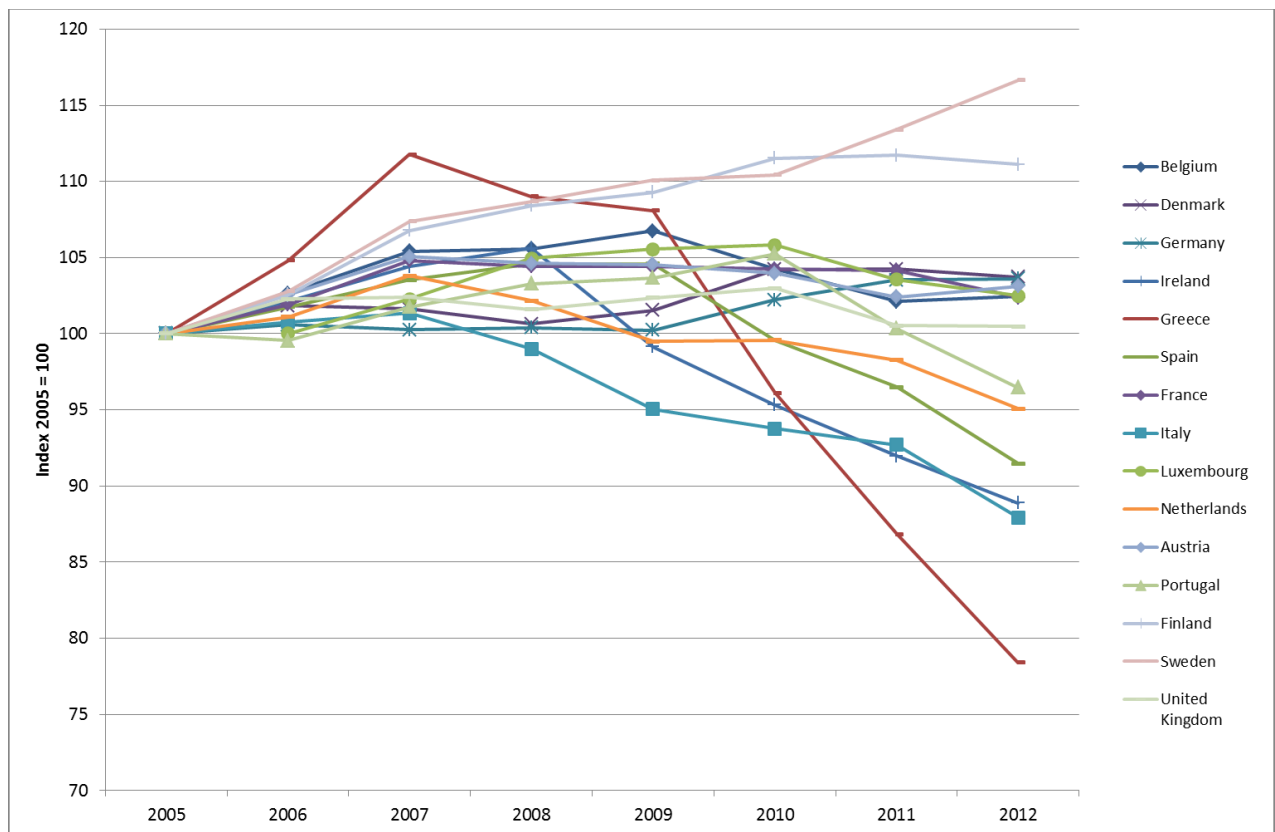
These changes provide the background against which to assess the movements in the AROP indicator in Section 1.<sup>19</sup> In the New Member States, from 2005 to 2008, an overall reduction in the AROP rate was achieved at a time when real incomes were rising, often by substantial amounts. Where the AROP rate increased by 3 percentage points, as in Bulgaria and Latvia, this has to be seen in the context of 20 and 38 per cent increases, respectively, in the level of real income. In the EU15 in this period, the rise in the AROP rate in Germany happened when real incomes were stagnating. When we turn to the period 2008 to 2011, we see that the positive growth rate of per capita real incomes in Germany did not translate into a reduction in the AROP rate. The rises in the AROP rate in Greece and Spain, where real incomes fell greatly, highlight the severity of the problems faced. In Latvia, in contrast, there was a large fall in real income but the AROP rate fell.

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For a more detailed discussion of the changes in real GHDI from the national accounts in Germany, Greece, Spain and Portugal, see European Commission (2014, pages 28-29). It is not clear what price deflator was employed.

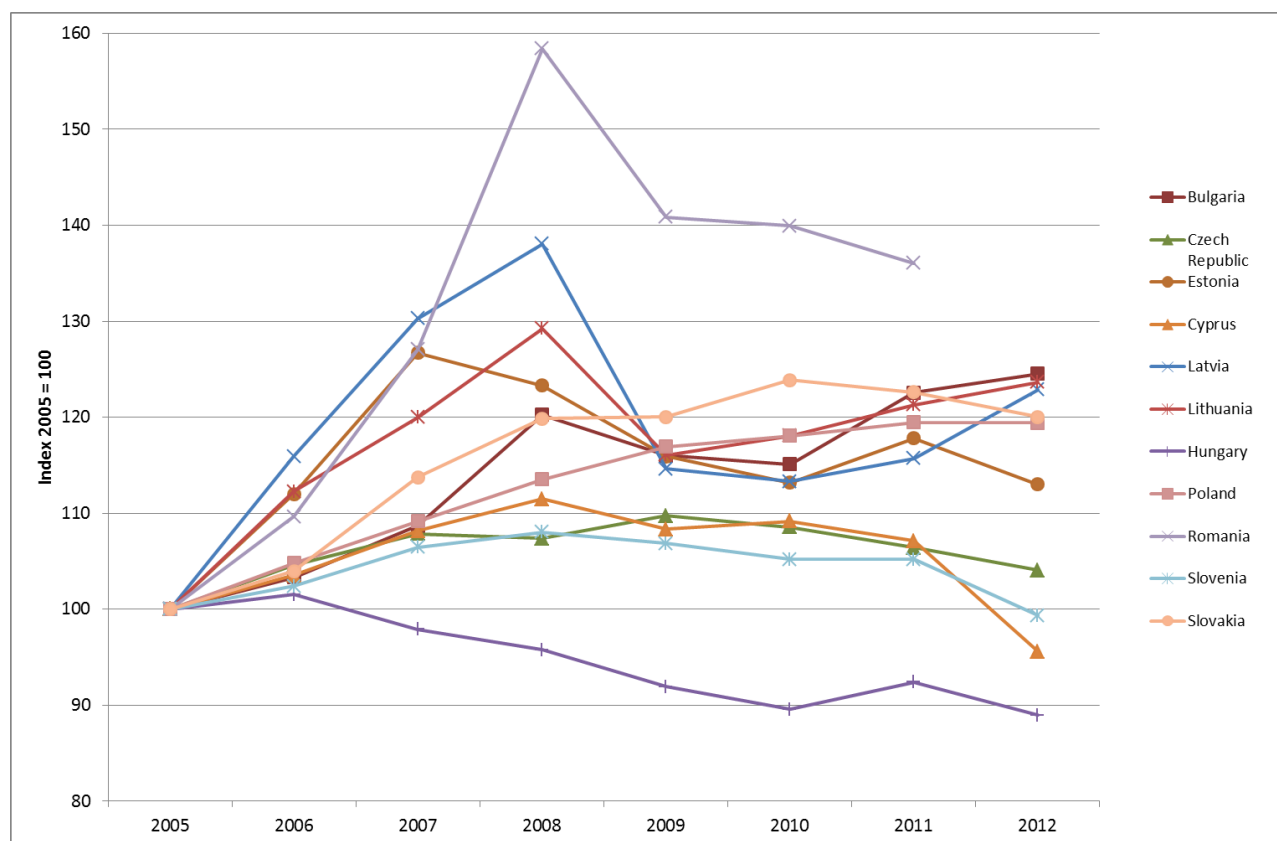
**Figure 12: Real unadjusted GHDI per capita (index 2005=100), EU15**



*Sources:* NA unadjusted GHDI from Eurostat website, Statistics/National accounts/Annual sector accounts, nasa\_nf\_tr; HICP from Harmonised Indices of Consumer Prices (series prc\_hicp\_aind).

*Reading note:* In 2012, the real unadjusted GHDI per capita in Greece was 78.4 per cent of its value in 2005.

**Figure 13: Real unadjusted GHDI per capita (index 2005=100), New Member States**

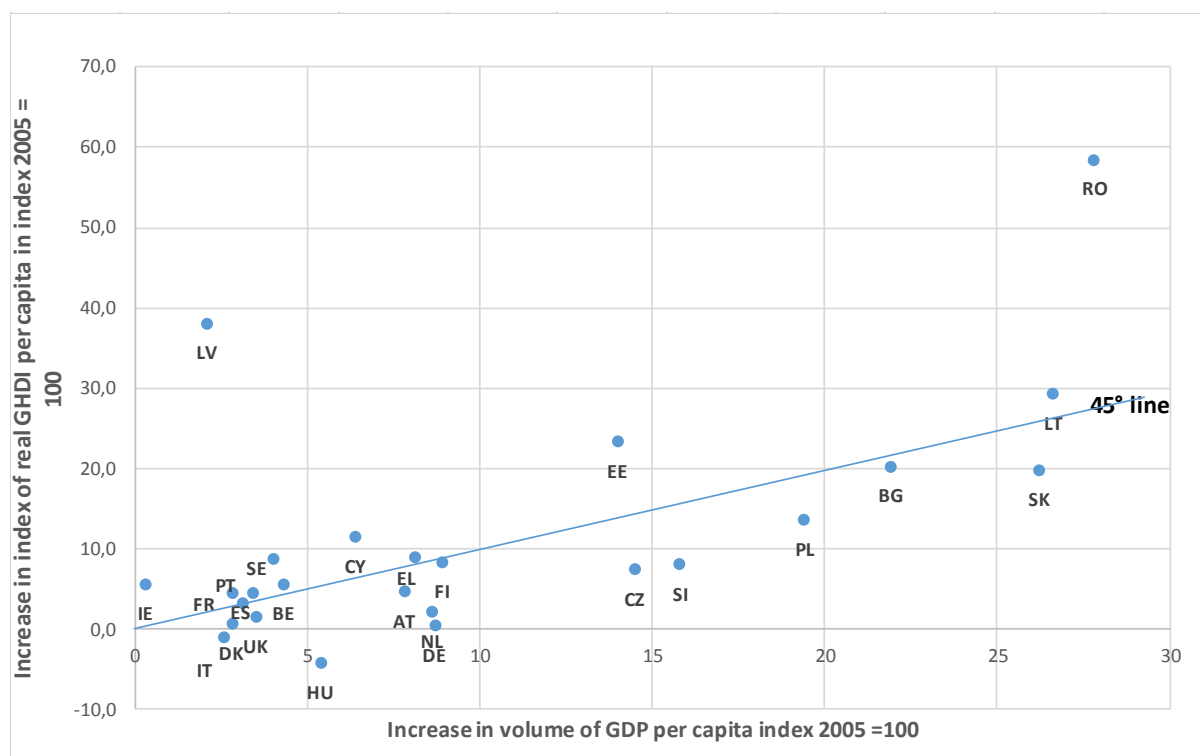


*Sources:* NA unadjusted GHDI from Eurostat website, Statistics/National accounts/Annual sector accounts, nasa\_nf\_tr; HICP from Harmonised Indices of Consumer Prices (series prc\_hicp\_aind).

*Note:* No data for Malta.

*Reading note:* In 2012 the real unadjusted GHDI per capita in Hungary was 88.9 per cent of its value in 2005.

**Figure 14: Increase 2005 to 2008 in real GHDI per capita plotted against increase in volume of GDP per capita**



Sources: see Figures 12 and 13; GDP per capita from Eurostat website/Economy and Finance/National accounts/Annual national accounts/Auxiliary indicators (Variable nama\_aux\_gph).

Notes: No data for Malta and Luxembourg.

Reading note: Hungary had an increase of 5.4 per cent in the volume of GDP per capita between 2005 and 2008, and a reduction of 4.2 per cent in real GHDI income per capita.

## 5. An EU-SILC based real income indicator?

The Social Protection Committee has for good reasons begun with an indicator of real income based on the national accounts. The national accounts cannot however provide the distributional information in which the Committee is principally interested. The final question that we consider therefore is whether a social indicator of real incomes could be introduced incorporating two distributional elements: the median in place of the mean, and equivalised income in place of per capita income? Such a measure has indeed already been displayed in the *Employment and social developments in Europe 2013* report of the Directorate-General for Employment, Social Affairs and Inclusion (European Commission, 2014, page 389).

In order to throw light on this question, we present evidence in two steps – in effect reversing the order of the earlier analysis. First we contrast the levels of change in real mean per capita income derived from the EU-SILC with those that we have just been examining using national accounts data. Figures 15 and 16 are parallel to Figures 12 and 13, but are based on the EU-SILC data. It may be noted that the 2011 figure for Greece was 78.4 per cent of the 2005 index in Figure 12, using the national accounts

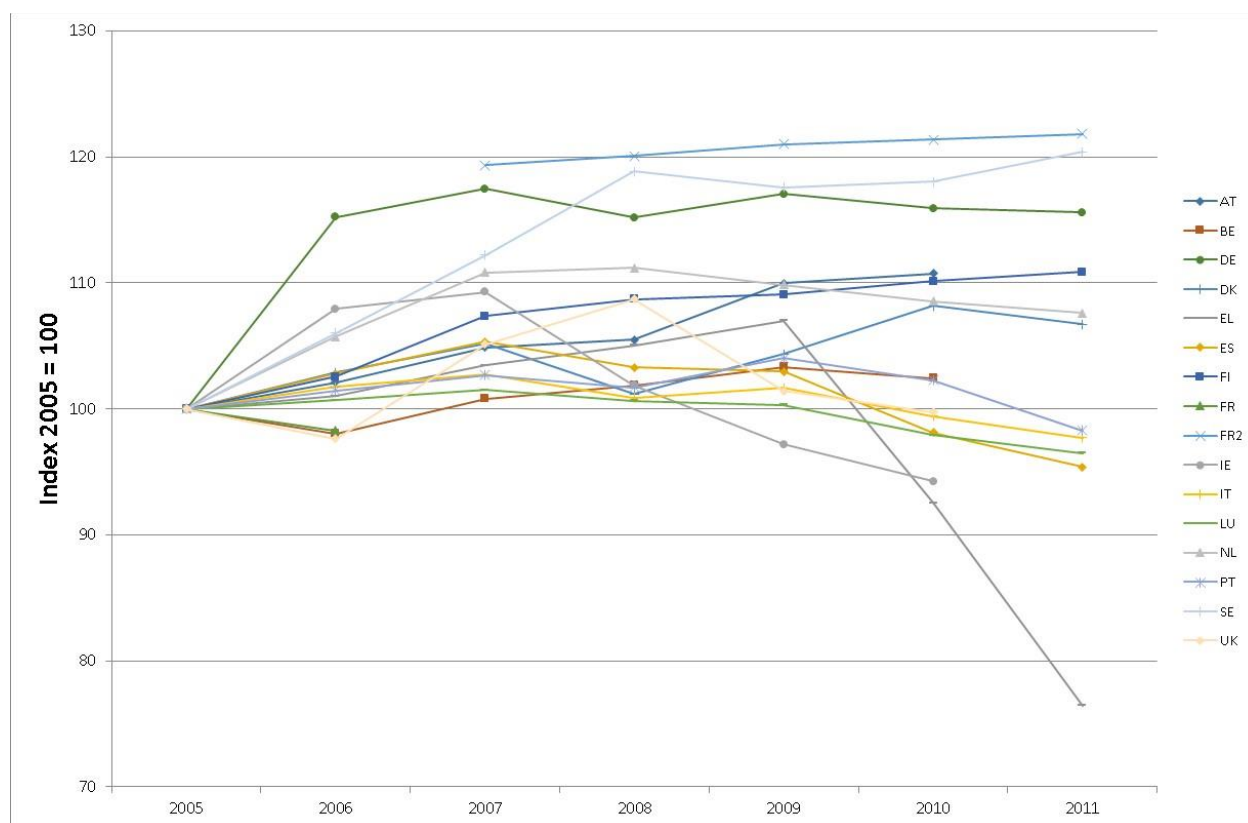
data, and is 76.4 per cent in Figure 15. For Luxembourg and the Netherlands, on the other hand, there appear to be discrepancies.

The second step is to replace mean per capita income with median equivalised income, as used in the AROP statistics. The results are shown in Figures 17 and 18. For Luxembourg and Spain, there was no apparent growth in real median equivalised income in the pre-crisis period, but in Sweden, Finland, France, Germany, the Netherlands and the UK there was strong growth. This was followed by either levelling-off or decline, and seven of the fifteen countries in 2011 were below the 2005 level. For the New Member States, shown in Figure 18, there was rapid growth in many cases up to 2008; there was a fall in the Baltic states after 2008, but in all cases the 2011 value was ahead of that in 2005 (only just in the case of Hungary). For six of the eleven countries shown in Figure 18, the increase in real median equivalised income was in excess of 20 per cent (between 2005 and 2011).

In the final graph, Figure 19, we compare the EU-SILC-based (solid lines) and the National-accounts-based (dashed lines) real mean per capita income. These national series differ in source but show similar trends in many countries. Yet, in seven countries, the trends and/or levels diverge a lot. This is particularly the case in DE, BG and SK as well as – though to a lesser extent – CZ, NL, LU and SE. These differences certainly warrant further investigation.

*Recommendation 6:* The possibility of developing an EU-SILC-based indicator of the growth of median real household equivalised disposable income should be investigated at the EU level.

**Figure 15: Real mean income per capita in EU-SILC Index 2005-100, EU15**



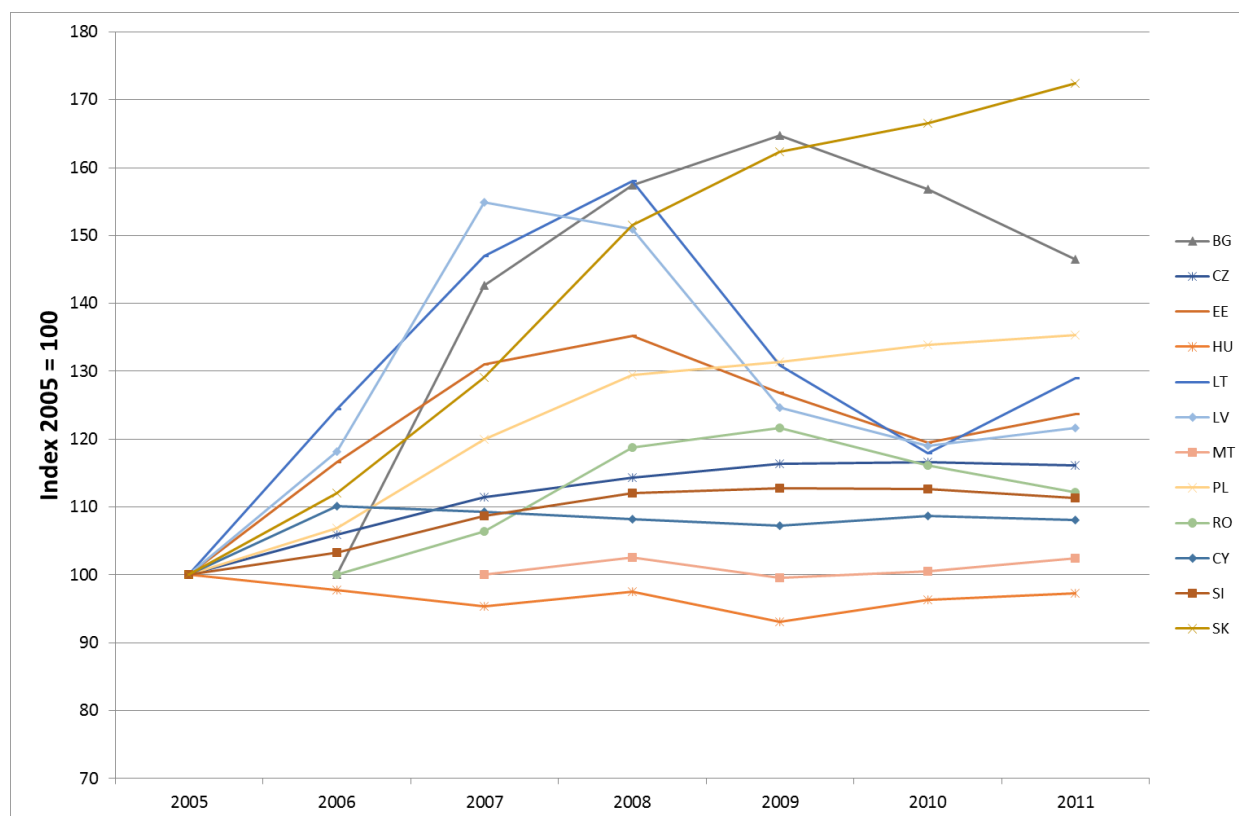
*Sources:* Mean income per capita from EU-SILC (UDB of March 2014); HICP from Harmonised Indices of Consumer Prices (series `prc_hicp_aind`).

*Note:* break in EU-SILC series in FR (2007) and in AT (2011). No EU-SILC data for IE, BE and the UK in 2011.

*Reading note:* In 2011, the real mean per capita income in Greece was 76.4 per cent of its value in 2005.



**Figure 16: Real mean per capita income EU-SILC Index 2005=100, New Member States**

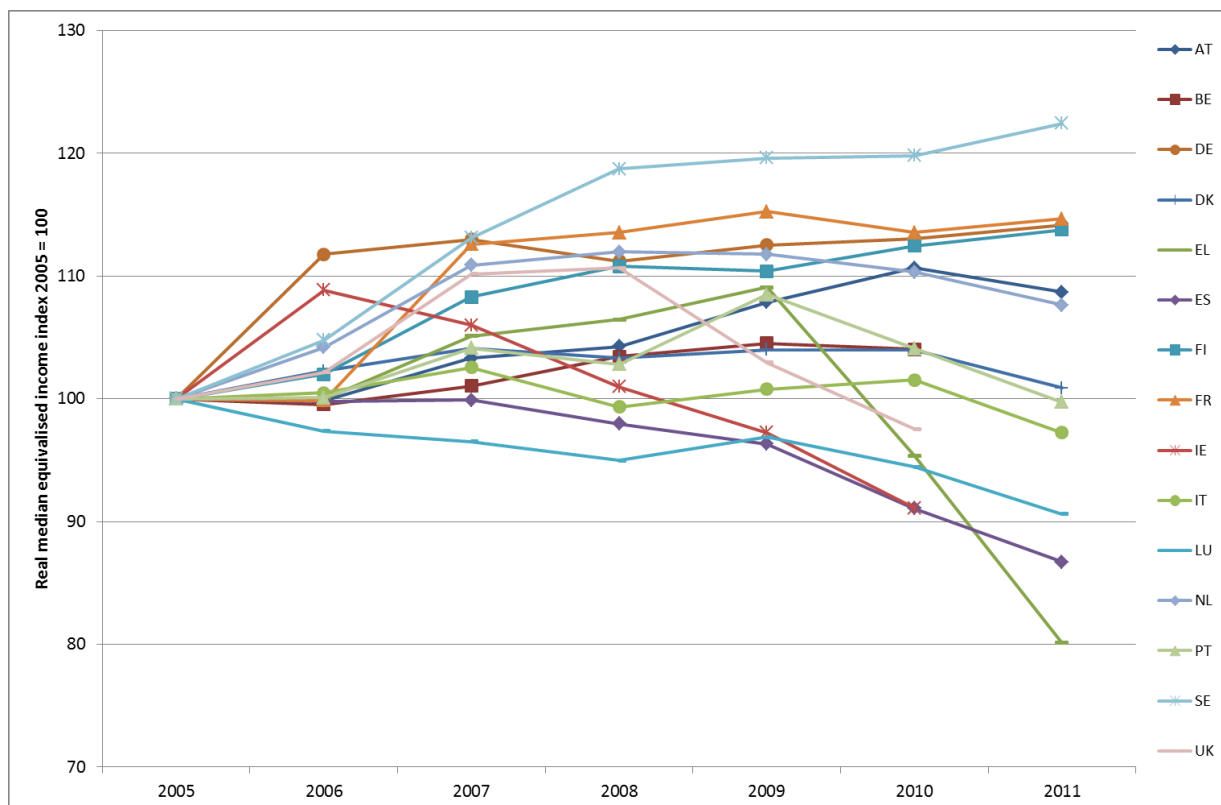


*Sources:* Mean income per capita from EU-SILC (UDB of March 2014); HICP from Harmonised Indices of Consumer Prices (series `prc_hicp_aind`).

*Note:* Break in EU-SILC series in CY (2007). Base year (2006=100) in BG and RO.

*Reading note:* In 2011, real mean income per capita in Malta was 102.4 per cent of that in 2007.

**Figure 17: Real median equivalised income from EU SILC for EU15 index 2005=100**

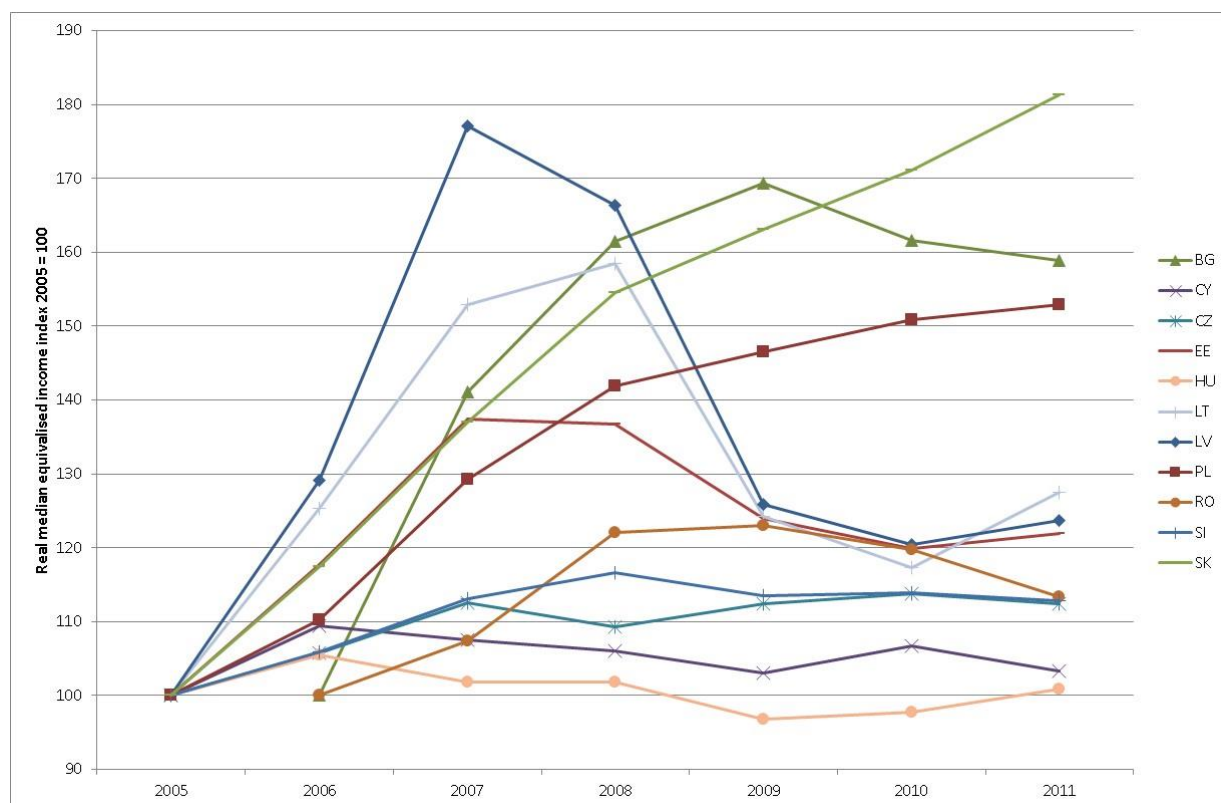


*Sources:* Median equivalised income from EU-SILC (UDB of March 2014); HICP from Harmonised Indices of Consumer Prices (series `prc_hicp_aind`).

*Note:* break in EU-SILC series in FR (2007) and AT (2011). No EU-SILC data for IE, the UK and BE in 2011.

*Reading note:* In 2011, real median equivalised income in Greece was 80.1 per cent of that in 2005.

**Figure 18: Real median equivalised income from EU SILC for NMS Index  
2005=100**



*Sources:* Median equivalised income from UDB; HICP from Harmonised Indices of Consumer Prices (series `prc_hicp_aind`).

*Note:* break in EU-SILC series in CY (2007).

*Reading note:* In 2011, real median equivalised income in Hungary was 100.8 per cent of that in 2005.

**Figure 19: Real mean income per capita (EU-SILC, solid line) and unadjusted GHDI (NA, dashed line), 2005-2012**

**(a) 70-120 scale**



**(b) 70-190 scale**



*Sources:* Mean income per capita from EU-SILC (UDB of March 2014); HICP from Harmonised Indices of Consumer Prices (series `prc_hicp_aind`). NA unadjusted GHDI per capita from Eurostat website, Statistics/National accounts/Annual sector accounts, `nasa_nf_tr`; HICP from Harmonised Indices of Consumer Prices (series `prc_hicp_aind`). Base year = 2005, except in CY and FR (2007=100) and RO, BG and LU (2006=100), because of missing NA data (LU) or missing EU-SILC data (RO, BG) in 2005 or break in EU-SILC series (CY, FR) in 2007. Data not presented for AT in 2011 due to a break in the EU-SILC series in 2011. No EU-SILC data for IE and BE in 2011.

*Reading note:* In 2011, the real mean per capita income (EU-SILC) in Greece was 76.4 per cent of its value in 2005 and the real unadjusted GHDI per capita was 86.8 per cent of its value in 2005.

## 6. Conclusions

Before coming to the substantive conclusions, we should begin with the unsung hero of our story: the EU-SILC dataset. Without the investment in EU-SILC, and its predecessor the European Community Household Panel (ECHP), it would not have been possible for the EU to embark on the construction of social indicators, and the whole development of the social dimension of Europe would have been much poorer. The EU-SILC data have played a key role in policy formation. At the same time, the instrument has evident limitations. As its warm supporters, we have been concerned that too much weight might be placed on what can be achieved using EU-SILC data. It is therefore important that it be subjected to stringent tests. One such test has been the subject of this paper: a confrontation between the EU-SILC data and the national accounts.

Such a confrontation between two different data sources might well have led to very negative conclusions. In terms of the level of income, there are indeed worrying features. But the good news is that – speaking broadly, and with certain noted exceptions – these differences appear relatively stable over time. The trends in the two sources seem in general consistent. To a reassuringly high degree, the two sources tell a coherent story.

But the reassurance does not carry over to the comparisons across countries. We have seen in Section 2 that the at-risk-of-poverty (AROP) threshold varies across countries in relation to national accounts measures of household income per capita. These can in part be explained by differences in income inequality and in household size, but closer examination of the reasons why the EU-SILC data yield income estimates that fall short of the national accounts totals, as called for in Section 3, is likely to reveal differences across Member States. We have identified, for example, the differences between countries that employ register information and those that rely more heavily on household surveys.

This calls into question the comparison of income poverty across Member States and the aggregation of the findings, as in the Europe 2020 objective. In our view, policy-makers have been well-advised to concentrate on the analysis of trends over time within Member States. We believe that the EU-SILC data, viewed in close conjunction with the national accounts, can provide a sound, indeed invaluable, basis for monitoring trends over time. Here our substantive findings have not been encouraging. We see no grounds for disagreeing with the conclusion of the Social Protection Committee in its 2013 annual report, the “EU is not making any progress towards achieving the [Europe 2020 social inclusion] target but is drifting away from the target trajectory” (2014, page 19).

### ***Summary of Technical Recommendations***

Recommendation 1: Given the use of the unadjusted GHDHI for the new indicator, it is important that Member States provide national accounts data for the household sector S14 excluding the NPISH.

Recommendation 2: The Eurostat-OECD Expert Group's work should be developed to examine the effect on social indicators of the non-coverage of non-private households.

Recommendation 3: The coverage of income by components exercise should be re-done, with a baseline appropriate for the calculation of the social indicators.

Recommendation 4: Following the coverage exercise, consideration should be given to the future development of EU-SILC to improve income coverage, and an analysis should be made of the sensitivity of past results to income under-recording.

Recommendation 5: a) The HICP should be used, rather than the household final consumption expenditure deflator, for the calculation of the real GHDHI indicator, on the grounds that it is the deflator used for the calculation of the EU indicator of "At-risk-of-poverty rate anchored at a fixed moment in time"; but (b) there should be further investigation of the implications for the real income indicator of the differences in the changes in price level over time indicated by the HICP and by the final consumption expenditure deflator.

Recommendation 6: There should be further investigation of an EU-SILC-based indicator of the growth of median real household equivalised disposable income.

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## Annex 1: EU countries' official abbreviations and list of acronyms

### *EU countries' abbreviations*

EU countries prior to 2004, 2007 and 2013 Enlargements (EU-15)		EU countries that joined in 2004, 2007 or 2013
<b>BE</b>	Belgium	<b>2004 Enlargement</b>
<b>DK</b>	Denmark	<b>CZ</b> Czech Republic
<b>DE</b>	Germany	<b>EE</b> Estonia
<b>IE</b>	Ireland	<b>CY</b> Cyprus
<b>EL</b>	Greece	<b>LV</b> Latvia
<b>ES</b>	Spain	<b>LT</b> Lithuania
<b>FR</b>	France	<b>HU</b> Hungary
<b>IT</b>	Italy	<b>MT</b> Malta
<b>LU</b>	Luxembourg	<b>PL</b> Poland
<b>NL</b>	The Netherlands	<b>SI</b> Slovenia
<b>AT</b>	Austria	<b>SK</b> Slovakia
<b>PT</b>	Portugal	
<b>FI</b>	Finland	<b>2007 Enlargement</b>
<b>SE</b>	Sweden	<b>BG</b> Bulgaria
<b>UK</b>	United Kingdom	<b>RO</b> Romania
		<b>2013 Enlargement</b>
		<b>HR</b> Croatia

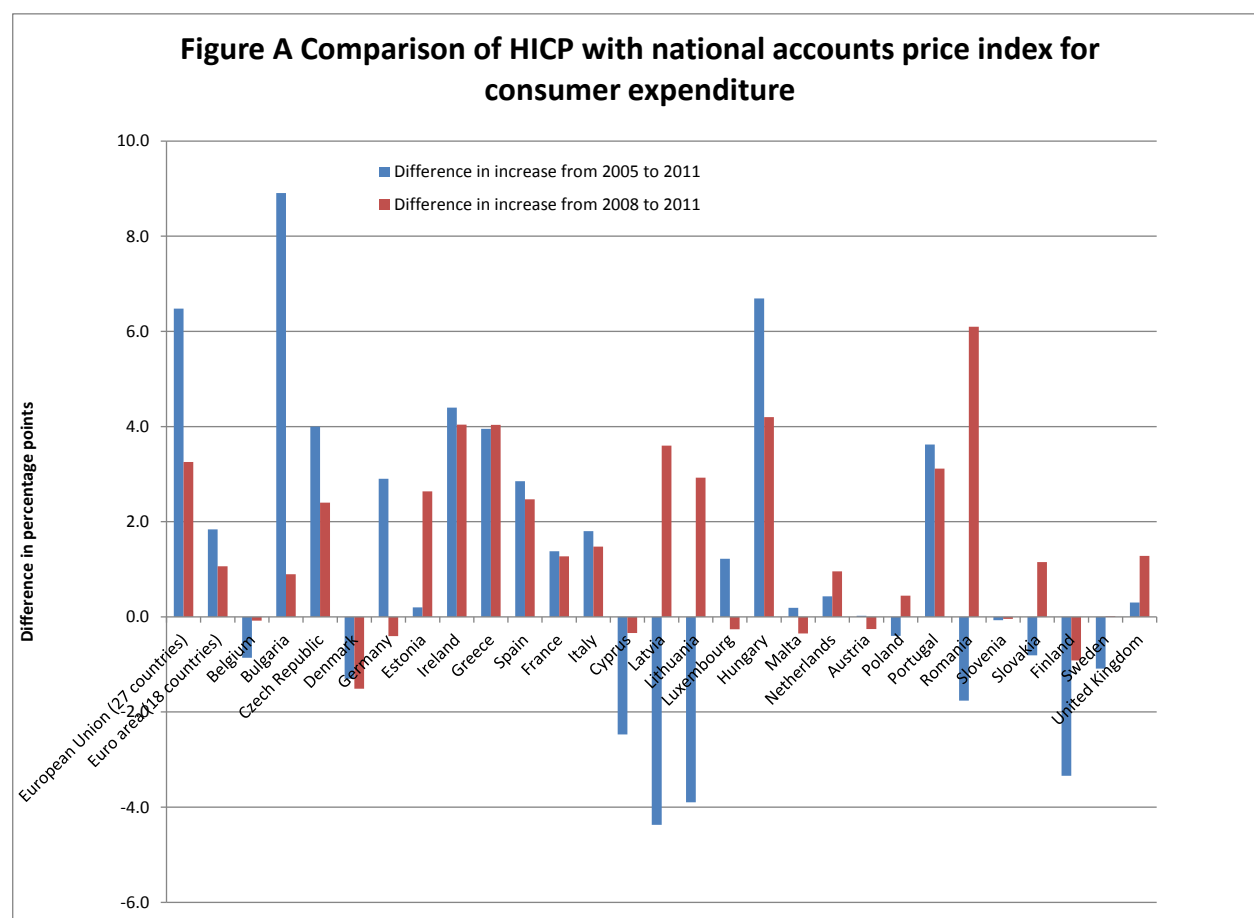
In EU averages, countries are weighted by their population sizes.

In 2014, the euro area included 18 countries: BE, DE, IE, EL, EE, ES, FR, IT, CY, LU, LV, MT, NL, AT, PT, SI, SK and FI. (LT joined in 2015.)

### *List of Acronyms*

AROP	At-risk-of-poverty
ESA	European System of Accounts
EU-SILC	European Union Statistics on Income and Living Conditions
FISIM	Financial Intermediation Services Indirectly Measured
GDP	Gross Domestic Product
GHDI	Gross household disposable income
HICP	Harmonised Index of Consumer Prices
NA	National Accounts
NMS	New Member States
NPISH	Non-Profit Institutions serving Households
OECD	Organisation for Economic Cooperation and Development
PPS	Purchasing Power Standards
SPC	Social Protection Committee
STiK	Social transfers in kind

## Annex 2: Comparison of HICP with national accounts price index for consumer expenditure



*Sources:* Eurostat website Economy and Finance/National accounts/Annual national accounts/Final consumption aggregates – price indices (series nama\_fcs\_p); and Harmonised Indices of Consumer Prices (series prc\_hicp\_aind).

*Reading note:* For EU27, the HICP index increased between 2005 and 2011 by 6.5 percentage points more than the NA index.

### **Annex 3 Use of Purchasing Power Standards (PPS) and comparisons over time**

In this Annex we explain the relationship between the real income calculations in the text and the PPS calculations used to make comparisons across countries at a point in time.

#### *Comparisons across EU countries at a base year*

For country *i* we have income per capita measured in national currencies at a base year. The first step is to convert the non-euro currencies to euros, using the Euro/Ecu exchange rate (source: Eurostat website, *ert\_bil\_eur\_a*). However, the exchange rate is not in itself sufficient to reflect consumer price differences, just as having a common exchange rate does not mean that consumer price differences are eliminated. The role of the Purchasing Power Standard (PPS) is to adjust for differences in purchasing power. The PPS “are euros that have the same purchasing power over the whole of the European Union. Their purchasing power is a weighted average of the purchasing power of the national currencies of EU Member States [EU28]” (Eurostat-OECD, 2012, page 19). These adjustments are based on price surveys carried out as part of a multilateral exercise. In 2011, the PPS for France was 1.12286 and that for Slovenia was 0.831464 (Sources: Eurostat website, *prc\_ppp\_ind*). (The value is normalised so that a weighted average is equal to 1 for EU28.) By applying the PPS to the euro values for income, we obtain a measure of real income for different countries at a point in time. This means that the real income in 2010 is obtained in the case of France by dividing by 1.12286 and in Slovenia by dividing by 0.831464. Real incomes in Slovenia are, with the PPPs adjustment, 35 per cent higher compared with France than on a simple euro comparison.

#### *Comparisons over time*

Suppose now that a new PPS exercise is conducted for a later year. It might be expected that the resulting comparisons across countries would be consistent with those obtained from national data on the growth of real incomes (the data used in section 4 of the paper). If the national data show, for example, real incomes in Slovenia rising by *x* per cent more than the national data show to be the case for France, then the difference in real income measured by PPS should be narrowed to this extent. However, there is no guarantee that this is the case. The measures of real income in a future year obtained for different countries by deflating by national price indices are not necessarily coherent with the cross-country comparison obtained in a new PPS exercise in that future year. This has been clearly recognized by international trade scholars. As was observed by Deaton and Aten, there is a “long literature on why spatial and temporal price indexes cannot be consistent with one another” (2014, page 10). The essential reason is that the PPS are multi-lateral, in that the calculated price change in one country is influenced by what happens to prices in the other countries (in addition to any effect of increased import prices on the national consumer price index). Suppose for example that the national price index for France shows no change over the period, but that prices in initially cheaper countries increase. Until the re-normalization, this will raise the PPPs for these latter countries,

and hence the overall average. The renormalization to set the EU27 figure at 1 therefore lowers the PPS for France, creating the impression of a decrease in the price level.

### *Conclusion*

While a single point in time comparison can be made using the PPS figures, these should not be employed for time series. By the same token, the end result of adjustments over time by national consumer price indices cannot be used as a substitute for the multi-lateral comparison exercise. To avoid any such cross-country comparison of levels, the series for changes in real incomes over time should be presented as index numbers with 100 at a base year.