Measuring Economic Well-being in the UK: Past Experiences and Future Challenges

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The UK Office for National Statistics (ONS) launched its Measuring National Well-being programme in 2010, with the aim to "develop and publish an accepted and trusted set of National Statistics which help people understand and monitor well-being". As part of that programme, ONS has developed a new structured framework for considering economic well-being in the UK. The framework is derived from the recommendations of Stiglitz et al. (2009) and embraces objective and subjective measures; current and future measures; and measures of activity at the whole economy and household sector level, as well as considering the distribution of individual households.

This framework has underpinned the creation of a new Quarterly Economic Well-being bulletin (QEWB). The QEWB is published alongside the UK's Quarterly National Accounts and ensures the material well-being of households is put into sharper focus than previously. In doing so, it addresses a number of the recommendations of the Commission on the Measurement of Economic Performance and Social Progress. For instance, we have shifted focus from production to income by giving prominence to real net national disposable income per head. This adjusts net GDP by including a measure of the balance of international investment income, recognising that not all income generated by production in the UK will be payable to UK residents, and that UK residents may earn income on investments overseas. Additionally, there is also a focus on the distribution of household income and wealth.

The first main section of this paper introduces ONS's economic well-being framework, presenting the range of indicators that are currently used to measure economic well-being in the UK and how they fit together. The following two sections provide an analysis of the main indicators from the framework for both the UK and a range of other countries, highlighting the value of this approach in monitoring changes in the material well-being of households over time. The next section discusses some of the challenges in communicating economic well-being, and the steps ONS have taken to maximise the impact of these statistics. The final section of the paper highlights some ongoing developments by ONS which will allow both the improvement of existing indicators and the introduction of new indicators of economic well-being within the framework. These include the introduction of more timely distributional measures through 'nowcasting', the development of a 'cash RHDI' measure, and the integration of data for microstatistics in this area to allow the potential for indicators based on the joint distribution of income, consumption and wealth.

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1. Introduction

Gross Domestic Product (GDP) is the most widely used measure of the size and health of a country's economy. GDP measures the value of the final output that the economy produces (equivalently, it measures the income that is earned from that production or the amount that is spent on the final goods and services produced). GDP, supported by other information, is rightly at the centre of discussions around monetary and fiscal policy, as well as on understanding more broadly the health of the economy.

However, economists have also long been aware of the limitations of using GDP as a proxy for material living standards. Simon Kuznets, one of the architects of the System of National Accounts, cautioned that GDP does not give a complete picture of the national economy and it should not be equated with the welfare of a nation (Kuznets, 1934). Similarly, the System of National Accounts explicitly recognises the limitations of GDP as a measure of well-being: "Movements of GDP cannot be expected to be good indicators of changes in total welfare unless all the other factors influencing welfare happen to remain constant, which history shows is never the case" (UN, 1993).

There are a number of reasons why GDP is, at best, limited as a measure of welfare. First, increased expenditure on goods and services does not necessarily always lead to a proportionate increase in welfare (OECD, 2013). Additionally, GDP does not reflect social, natural and human capital from which the economy draws benefits, meaning that a focus on GDP may encourage activities that may actually negatively affect well-being in the long term (Constanza et. al., 2009). GDP also does not reflect the value of services which households produce themselves as unpaid forms of work, which were estimated as being equivalent to 56.1% of GDP in the UK in 2014 (ONS, 2016a).

To understand economic well-being, a broader set of indicators are therefore needed. In 2010, the UK Office for National Statistics (ONS) launched its Measuring National Well-being programme, with the aim to "develop and publish an accepted and trusted set of National Statistics which help people understand and monitor well-being". As part of that programme, ONS has developed a new structured framework for considering economic well-being in the UK.

The ONS economic well-being framework is based on the recommendations of the Commission on the Measurement of Economic Performance and Social Progress (Stiglitz, Sen & Fitoussi, 2009) and goes beyond aggregate measures, such as GDP, providing a more comprehensive picture of the economy and how it impacts on the well-being of households and individuals. (ONS, 2014). The next section introduces the overall framework, including the 10 headline indicators which are the primary focus of reporting.

2. UK's Economic Well-being framework

The UK's economic well-being framework is based around three dimensions. First, it contains a mixture of objective measures and subjective measures, with the latter reflecting individual's views both on their own personal financial circumstances as well as on the broader economic situation.

Within the objective economic well-being indicators, there is a distinction between current measures of economic well-being and those which consider the stocks of resources that can help maintain material living standards in the future.

The third distinction is between measures which relate to the whole economy, those which focus in on the household sector as a whole, and those which additionally consider how resources are distributed across households and individuals.

Figure 1 presents the framework for measuring economic well-being currently used within the UK.

Figure 1: UK Economic Well-being framework

In reporting on economic well-being, there is a balance to be struck between reporting all possible dimensions and keeping the main set of indicators to a manageable number for ease of comprehension.

For this reason, 10 indicators within the framework have been chosen as headline measures for reporting. Together they give a more rounded and comprehensive basis for assessing changes in economic well-being than any one single indicator. The headline indicators were selected based on a number of criteria, including coverage of the framework, their timeliness (the amount of time between the end of the reporting period and the availability of the estimate) and their frequency (where possible we have considered quarterly data sources).

Despite the limitations of GDP on its own as a measure of welfare, **GDP per head** (Real Gross Domestic Product per capita) is included within the headline indicator set, with the per capita measure used in order to account for population growth.

The first recommendation from Stiglitz et al. (2009) was to look at income rather than production when evaluating material well-being. For that reason, the second headline measure used by ONS is **National income per head** (Net National Disposable Income (NNDI) per head). Not all income generated by production (GDP) in the UK will be payable to UK residents. Some of the capital employed will be owned by non-residents and they will be entitled to the return on that investment. Conversely, the UK's residents receive income from production activities taking place elsewhere, based on their investments overseas. Adjusting for these flows gives a measure better focused on income rather than production (Gross National Disposable Income – GNDI). This measure can be further adjusted by turning it from a 'gross' measure to a 'net' measure by adjusting for capital depreciation - that is to say the day-to-day wear and tear on vehicles, machinery, buildings and other fixed capital used in the productive process. GDP (and GNDI) treats such consumption of capital as no different from any other form of consumption. But most people would not regard depreciation as adding to their material well-being. Both these adjustments result in national income per head arguably being a better measure of material living standards than GDP per head.

The second recommendation from the Stiglitz Commission was to consider the household perspective, and therefore the next adjustment made is to take the part of these aggregates that can be allocated to the household sector – household income and expenditure. **Household Income per head** (Real Household Gross Disposable Income (RHDI) per capita) is the income that is available to individuals. More specifically, disposable income is the amount of money households have to spend on consumption, or to save and invest, after taxes, National Insurance, pension contributions and interest have been paid

Ultimately, a household satisfies its wants through the consumption of goods and services over time. Because of this, consumption is arguably a more important determinant of economic well-being than income alone. This view is supported in a number of studies (e.g. Lewis, Snape & Tonkin, 2014) which find stronger relationships between consumption and subjective well-being than between income and such measures. For that reason, **Household Spending per head** (Real household final consumption expenditure (HHFCE) per capita) is included among the headline indicators, reflecting the amount that the individuals spend on goods and services.

Income gives us only a partial picture of the economic resources available to support consumption. It is therefore important to also consider wealth. Compared with income, wealth (a stock measure) is more stable over time, reflecting accumulated saving and investments (although it can decline dramatically in the case of crashes in investment or housing markets). Wealth allows individuals to smooth consumption over time and offers protection against unexpected changes to income. There are two wealth indicators among the headline measures. **Whole Economy Net Wealth** (Net financial and physical assets) represents the market value of financial and non-financial assets in the UK as a whole and provides an indication of the sustainability of current levels of production and corresponding income flows. **Household Net Wealth** (Net household and NPISH financial and physical assets) considers the sustainability of current flows of income and expenditure for households.

While average measures of household resources per head are helpful, they give no indication of how available resources are distributed across people and households. With this in mind the UK framework also considers the distribution of income and wealth. **Median equivalised disposable income** represents the middle of the income distribution and is a good indication of the standard of living of the "typical" household in terms of income, so is used in the headline measures. Additionally, further distributional indicators are reported as part of the broader framework, including median household wealth and measures of inequality including the S80:S20 ratio and the Gini coefficient.

As well as these measures of income, consumption and wealth, ONS also considers broader economic indicators which may affect people's wellbeing. The **unemployment rate** (Unemployment rate, all aged 16 and over) provides important information on the availability of jobs, as well as giving an indication of both the broader state of the economy. Unemployment has been shown to have a detrimental impact on health and personal well-being (OECD, 2015). **Inflation** (Consumer Prices Index) is also included among the headline indicators for its potential to impact on household income and net wealth.

Last but not least is consumers' **perceived personal financial situation** (Financial situation of households over the last 12 months from the Eurobarometer). It is important to consider individuals' perceptions of their income, as well as the reality. It is their own perceptions of income that shapes how well off they consider themselves to be and therefore, at least to a certain extent, shapes their behaviour.

3. Economic well-being in the UK

3.1 GDP and GDP per head

Figure 2: Three measures of economic well-being (GDP per head, national income per head, and household income per head) compared with GDP, UK, Q1 2008 to Q3 2016, UK
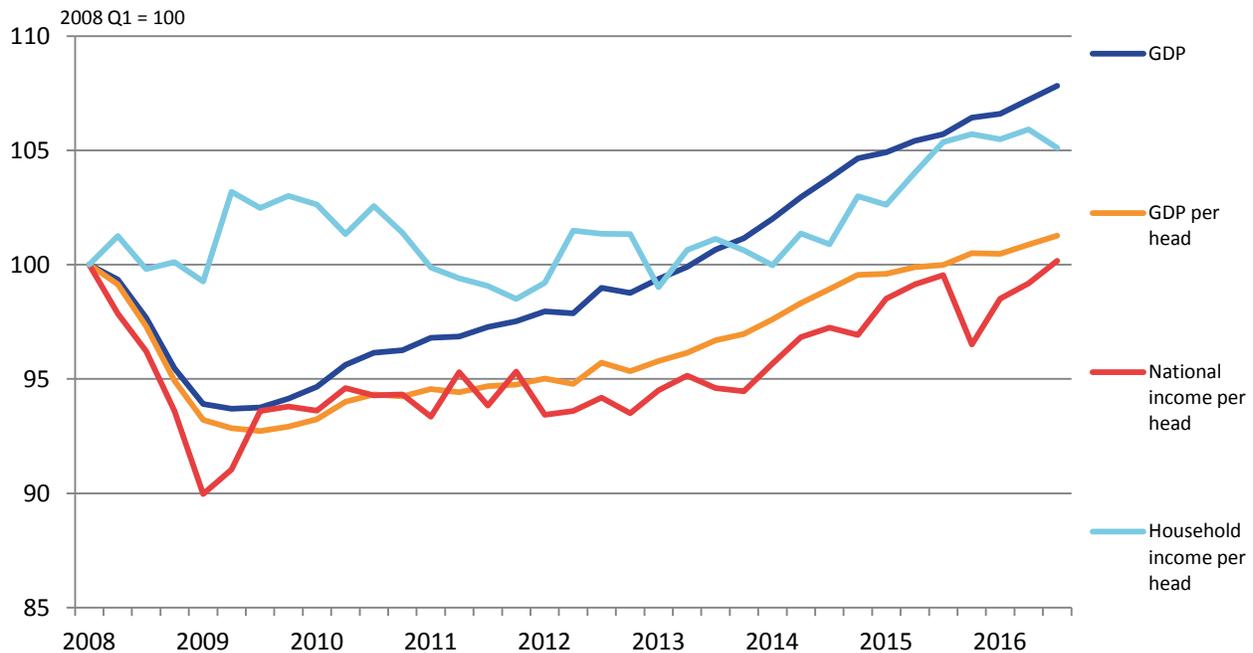
Source: Office for National Statistics

Figure 2 presents three measures of economic well-being[2] – GDP per head, national income per head, and household income per head – and GDP, between Q1 2008 and Q3 2016. It clearly demonstrates the impact of the financial crisis, and subsequent economic downturn on economic growth in the UK with GDP contracting by 6.3% between 2008 Q1 and 2009 Q2. While this would appear to have negative consequences for economic well-being, once population growth over this period is taken into account, the story worsens - GDP per head contracted by 7.2% over the same period. Further, while over the course of the recovery GDP grew by an average of 0.5% per quarter, GDP per head growth was slower at 0.3%. As a result, while GDP reached its pre-economic downturn level in the third quarter of 2013, GDP per head didn't reach this yardstick for a further two years. Already, this highlights how a narrow focus an aggregate measure of the economy can provide a distorted view of material wellbeing. In the UK's case, taking account of population growth during a period of declining or weak economic growth suggests a worsening of economic well-being.
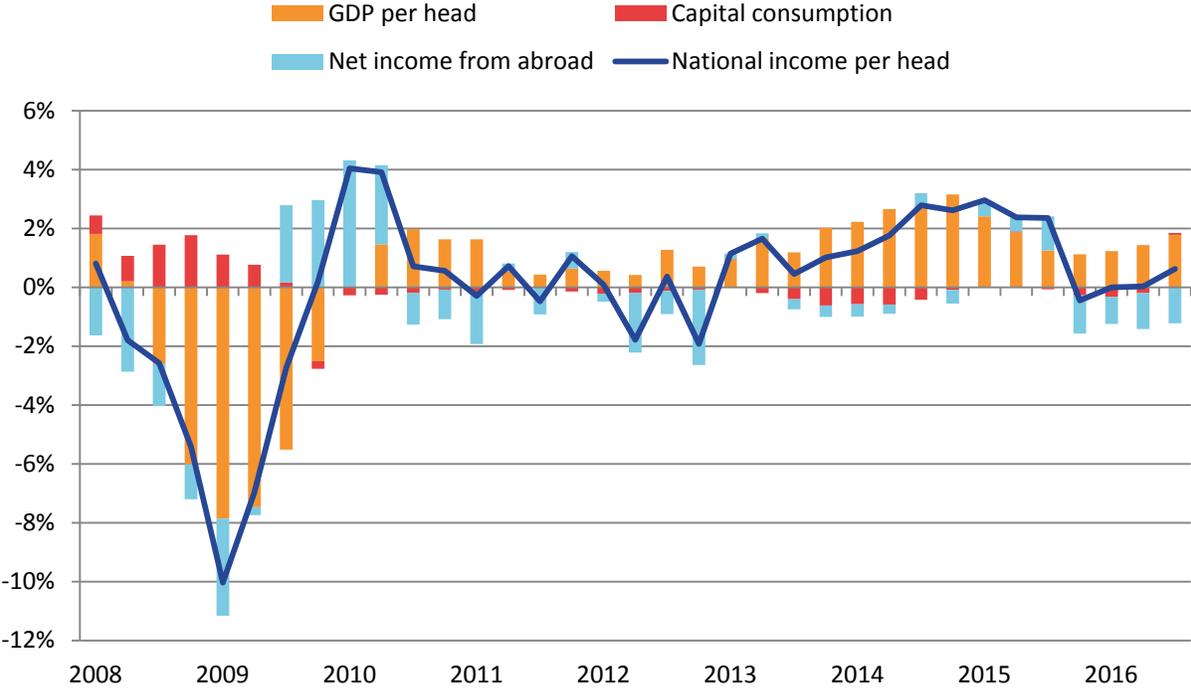
3.2 National income per head

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[2] National income refers to net national disposable income, and household income refers to real household disposable income (excluding NPISH).

GDP and GDP per head are measures of production within an economy. As noted earlier in the paper, Stiglitz et al. (2009) argues that focusing less on production, and more on income, provides a better view of well-being. After all, it is the income which is available to spend or save which ultimately determines standards of living. Figure 2 highlights two income-based measures of economic well-being– national income per head, and household income per head. As mentioned in the previous section, net national income per head differs from GDP per head mainly due to adjustments for capital depreciation – such as the day-to-day wear and tear on vehicles and machinery – and the flows of income with the rest of the world - such as inward-income earned by domestic investors on assets overseas, and outward-income foreign investors earn on domestic-based assets.

Figure 2 shows that the growth profiles of GDP per head and national income per head where roughly similar until late 2011, after which they diverged. In 2011 Q4, GDP per head and national income per head were 5.2% and 4.7% below their 2008 Q1 levels respectively. However, following sharp contractions in national income in early 2012, and again in late 2015, national income per head was 0.2% above its pre-economic downturn level in Quarter 3 2016. GDP per head, on the other hand, reached its pre-economic downturn peak in 2015 Q4, and was 1.5% above its pre-economic downturn level in Quarter 3 2016.

Figure 3: Contributions to growth of national income per head per head, UK, Q1 2008 to Q3 2016

Source: Office for National Statistics

Figure 3 explores the relative weakness in national income per head compared with GDP per head more closely. The differences between GDP per head and national income per head stem largely from UK's net income from abroad deteriorating. Previous analysis by ONS (Hamroush et al., 2016) attributes a

decline in the balance of income flows with the rest of the world over recent years to falling earnings for UK residents from direct investment abroad and an increase in foreign earnings on direct investment in the UK.
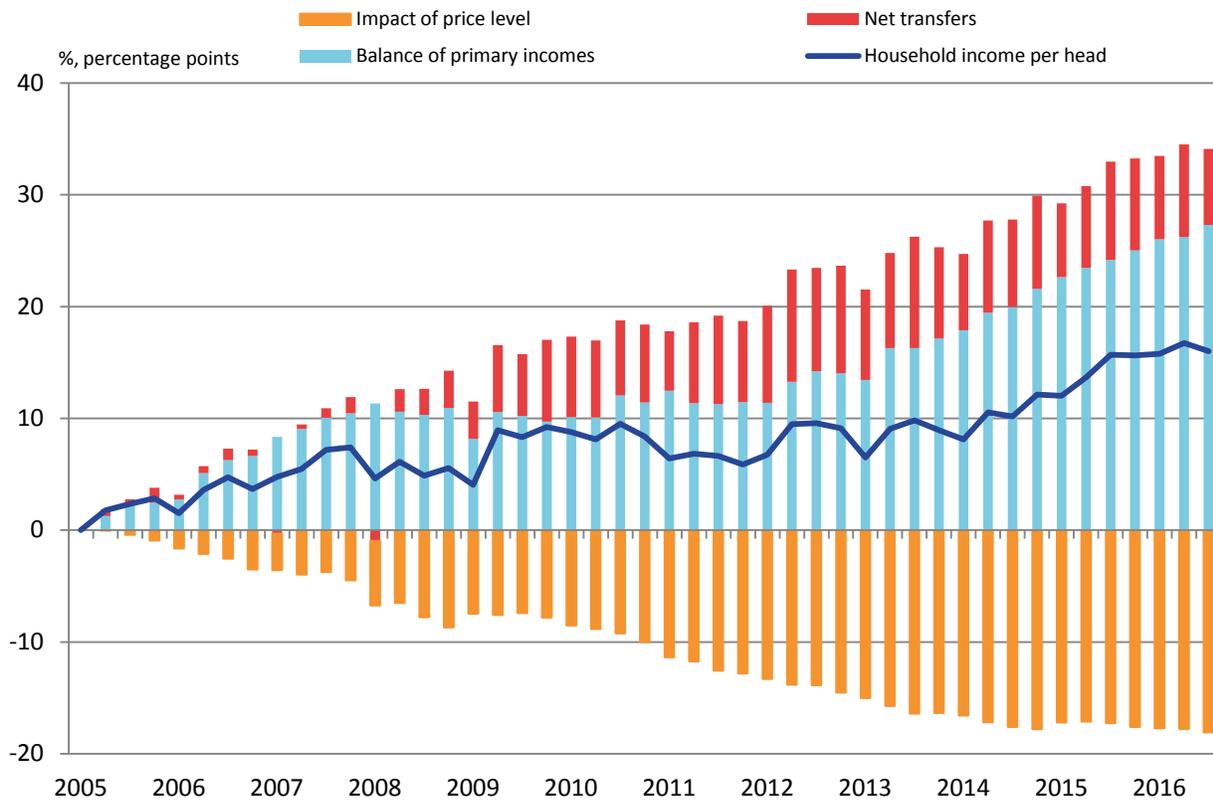
3.3 Household income per head

In a sense, national income is a measure of *potential* material well-being. Strong growth in national income does not necessarily translate to households. For instance, profits earned by corporations may be retained, or the income generated by government may be used for infrastructure projects, or to pay down debts. This emphasizes the need to consider the household income, alongside whole economy measures such as GDP and national income, when assessing changes in economic well-being.

Figure 2 highlights that the growth profile of household income was remarkably different to both GDP per head and national income per head between 2008 and 2016. In the immediate aftermath of the economic downturn – 2008 and early 2009 – household income per head grew by average of 0.6% per quarter compared with average declines of 1.5% and 1.8% in GDP per head and national income per head respectively. However, between 2008 and mid-2014 this these trends were reversed – household income per head contracted by an average of 0.1% per quarter compared with positive growth of 0.3% in both GDP per head and national income per head. More recently, household income per head has improved – growing by an average of 0.4% per quarter between mid-2014 and mid-2016 - in-line with both national income per head and GDP per head (0.4% and 0.3%) respectively. Looking at this in more detail, Figure 4 examines the cumulative contributions to changes in household income per head relative to its 2005 Q1 levels. It demonstrates clear differences in household income per head before and after UK's economic downturn during 2008 and 2009. In the 12 quarters from 2005 Q1 leading up to 2008 Q1, household income per head grew by 7.4%. However, it took a further 31 quarters - until 2015 Q3 – for this level of growth to be replicated.

Changes in household income per head over the three periods described above can largely be explained by three main factors: changes in the general price level, contributions from primary income and contributions from net transfers. Households earn primary income by either working, or holding assets, while net transfers are the balance of income received from government in the form of benefit payments minus taxes paid on income from employment. As highlighted in Figure 4, the majority of growth in household income per head before 2008 is largely accounted for by growth in primary income, although increases in the general price level held it back. Following this, during the economic downturn, income from employment contracted by 0.1% while income from net transfers grew 37.9%. This is clearly demonstrated in Figure 3 – net transfers contributed 0.9 percentage points towards 7.2% growth in household income per head between 2005 Q1 and 2007 Q3. However, by 2010 Q2 growth in net transfers contributed 6.9 percentage points towards 8.1% growth in household income per head since 2005 Q1.

Figure 4: Contributions to cumulative growth in household income per head relative to 2005 Q1 levels, Q1 2005 to Q3 2016.

Source: Office for National Statistics

During the 5 years following the economic downturn, growth in household income per head stagnated, increasing by an average of 0.1% per quarter. During this period, contributions from net transfers were muted, while growth in primary income was largely offset by an increase in the general price level. More recently, stronger growth in household income per head between mid-2014 and mid-2016 (0.4% on average per quarter) has largely coincided with a period of weak inflation, combined with growth in primary income.

3.4 Summary of economic well-being in the UK

In summary, this section presents three of UK's economic well-being indicators – GDP per head, national income per head, and household income per head. It clearly demonstrates how these indicators can be more informative than GDP when assessing changes in economic well-being. For instance, the UK's population continued to grow during its recent economic downturn, meaning that the per-person share of GDP fell more sharply than the aggregate measure. Further, focusing on production can be misguided due to economies which have become increasingly globalised. This has led to more cross-border flows of income as, for example, international investors recoup returns on domestic-based production. Considering national income within UK's economic well-being framework highlights the deterioration in

UK's balance of foreign income flows, and how this has translated to less money available to residents when compared to GDP-based measures.

Finally, this section highlights that while whole economy measures are useful to gain an insight into *potential* resources available to influence living standards, the household experience can differ significantly. During a period when both GDP per head and national income per head was contracting household incomes were supported through the redistributive influence of the taxes and benefits system. Then, following a return to growth in national income per head and GDP per head, growth in household income per head slowed, suggesting that economic gains weren't necessarily passed on to individuals.

4. International comparisons of economic well-being

4.1 National income per head

Figure 5: National income per head as a proportion of GDP per head, selected countries, 2007 to circa 2015*, Chained volume measure
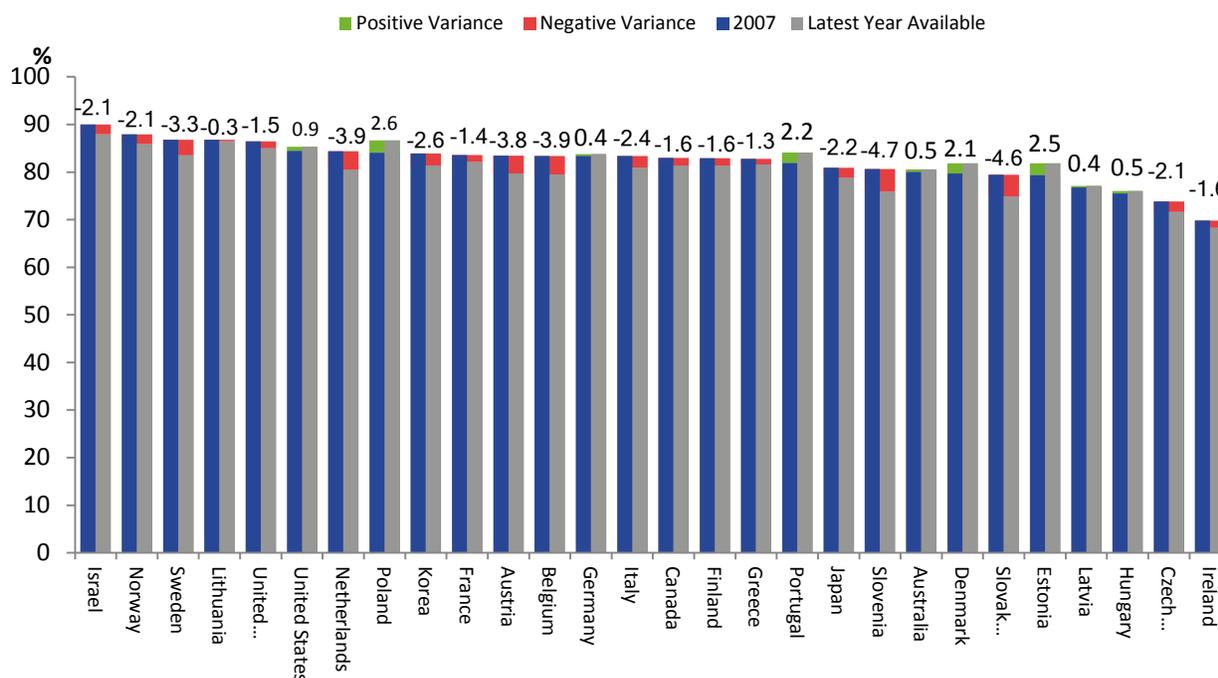
Notes: Numbers above bar represent the percentage point change since 2007. *Latest available year is 2015 except Israel (2013), United States (2013), and Canada, Australia, Ireland, and Japan (2014). Source: OECD.stat

Figure 5 compares changes in national income per head as a proportion of GDP per head in a range of countries. It shows that Ireland had the lowest proportion of national income per head to GDP per head in both 2007 and 2014 – 70% and 68% respectively. This highlights the extent to which the Irish economy is characterized by foreign direct investment, and associated profit flows leaving its boundaries. As emphasised in Figure 6 below, while GDP per head grew in Ireland by 2.3% between 2007 and 2015, much of the income earned from production was not available to Ireland's residents with national income per head contracting by an average of 0.7% per year over the same period. Israel, on the other hand, had the largest proportion of national income per head to GDP per head, closely followed by Norway – 88% and 86% respectively.

Figure 5 also highlights the extent to which national income per head as a proportion of GDP per head has changed since 2007. It shows that the largest increases were in Poland, Estonia, and Portugal– 2.6, 2.5 and 2.2 percentage points respectively. In particular, the changes in national income per head as a proportion of GDP per head in Portugal were particularly interesting. Portuguese GDP per head contracted by an average of 0.1% per year between 2007 and 2014. However, the balance of net foreign income improved - despite being negative throughout this period - resulting in growth of national

income per head of 0.2% per year. This means that Portugal was the only country in this data set in which economic well-being, assessed in terms of national income, improved despite its economy contracting.

Slovenia and the Slovak Republic had the largest declines in national income per head as a proportion of GDP per head between 2007 and 2015 – 4.7 and 4.6 percentage points respectively. As highlighted in Figure 6 below, both these countries are characterised by having large falls in net income from abroad. The Slovak Republic maintained positive growth in national income per head – average annual GDP per head growth of 3.1% managed to offset a decline in the balance of foreign income. Slovenia, on the other hand, experienced weaker GDP per growth over the period – 0.4% per year on average – which, coupled with a fall in its net income from abroad, resulted in negative growth in national income per head over the period.

Figure 6: Contributions to growth in net national disposable income per head, selected countries, 2007 to circa 2015*
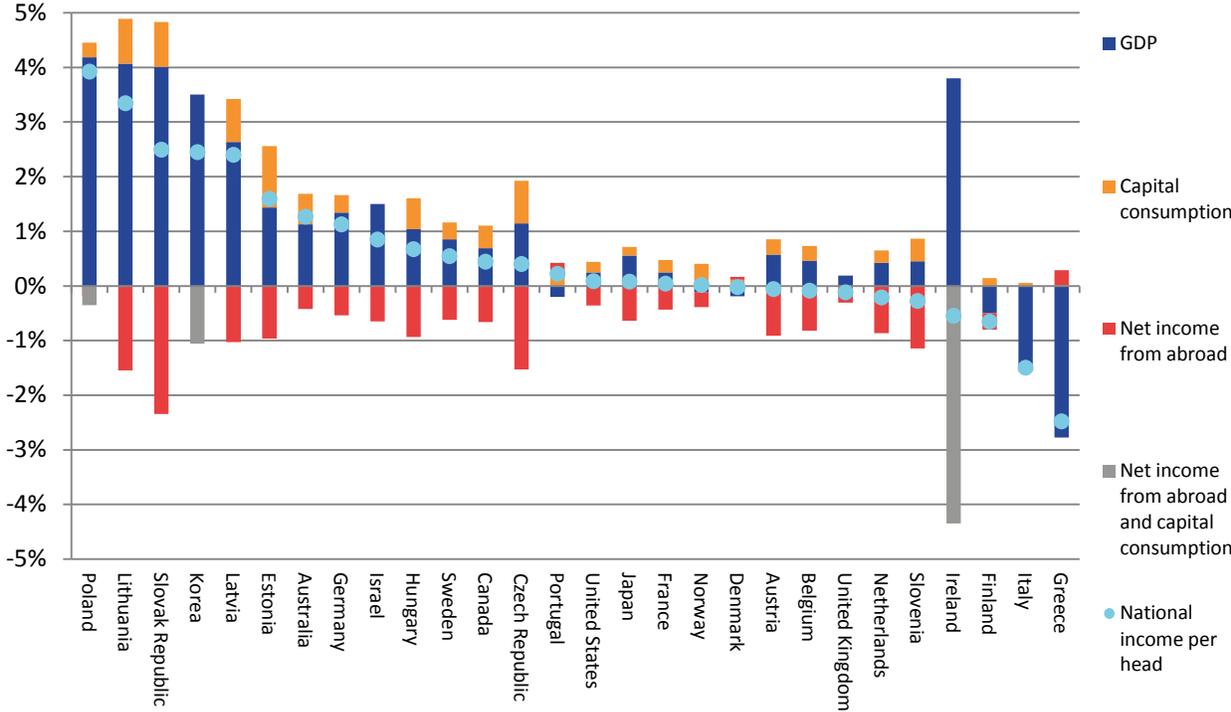

Notes: Numbers represent the change from 2007 to latest available year. *Latest available year is 2015 except Israel (2013), United States (2013), Canada, Australia, Norway, Japan (2014). Net income from abroad and capital consumption components are not available separately Ireland, Poland and Korea. Source: OECD.stat

Figure 6 highlights some of the main contributory factors for the changes in national income as proportion of GDP per head. In most countries, negative contributions from net income from abroad played a key role in dampening growth in national income per head since 2007. Aside from the examples discussed already, Figure 6 shows that national income per head fell in the UK, Austria, Belgium, Netherlands, Finland, Italy and Greece between 2007 and 2015. Greece had the largest fall in national

income per head – 2.5% fall between 2007 and 2015, mainly driven by a fall in domestic production although there was small growth in foreign income per head.

4.2 Household income per head

Figure 7: Changes in household income per head (including NPISH) per head and GDP per head, selected countries, Q1 2007 to Q3 2016
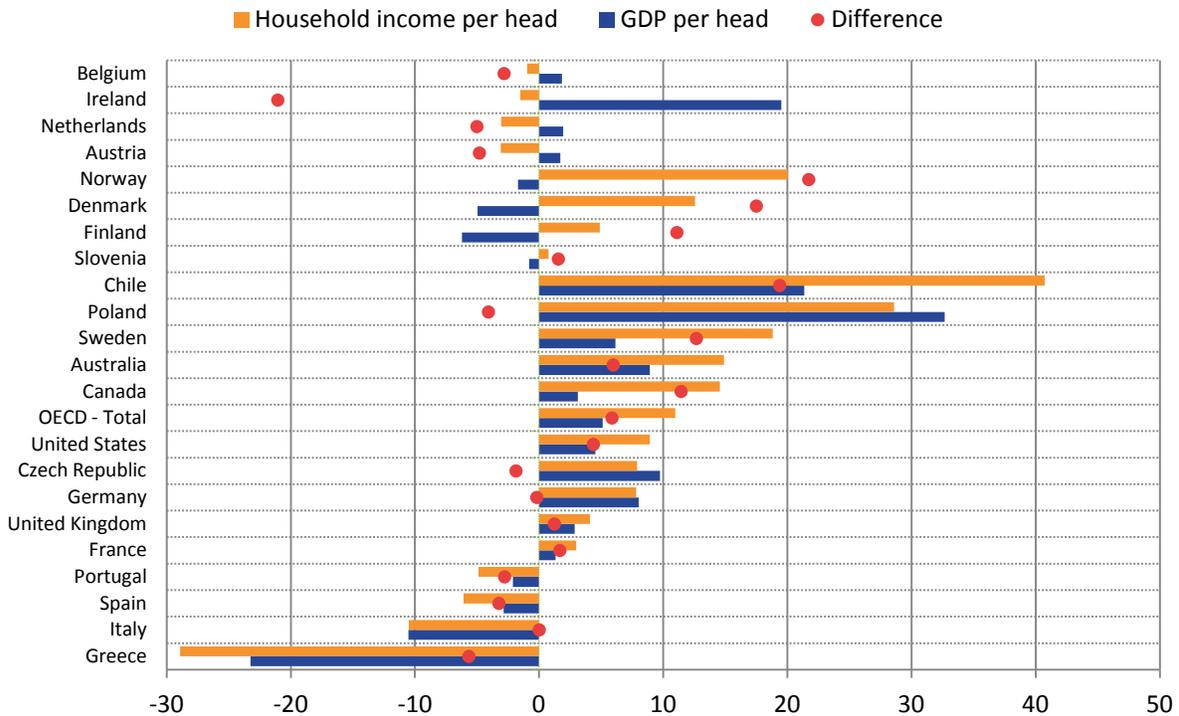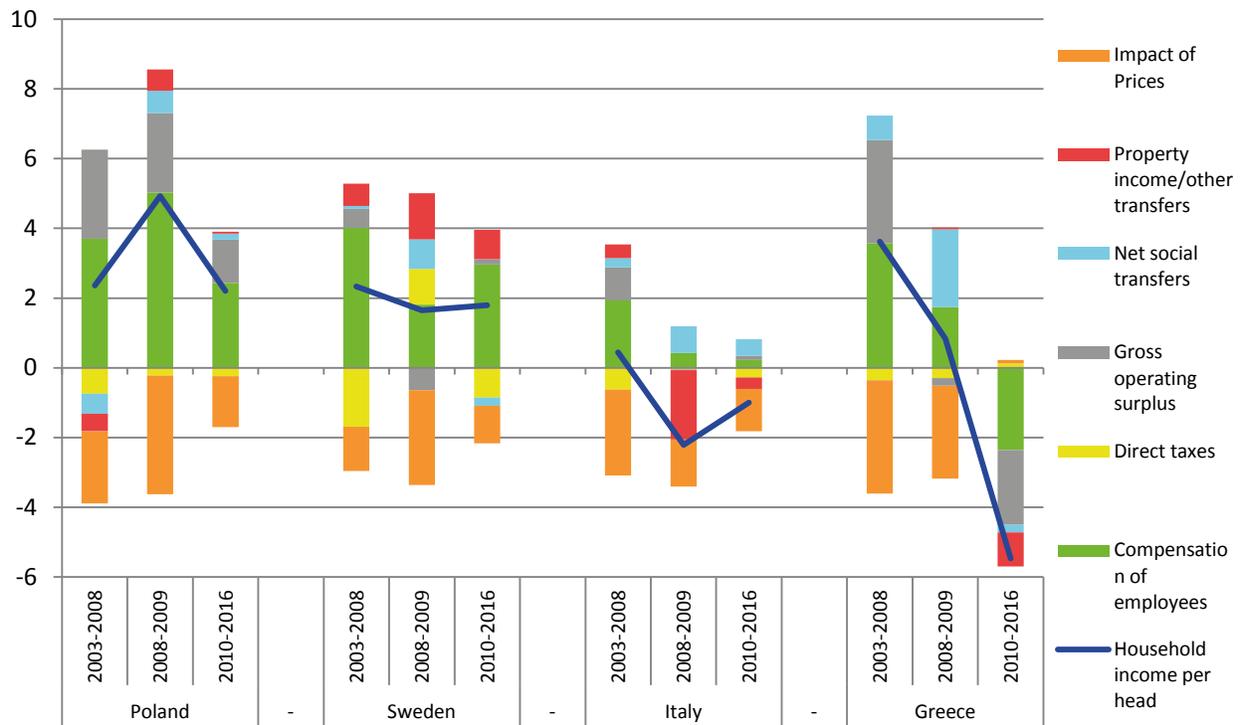

Source: OECD.stat

As highlighted earlier in the paper, there were significant differences in the evolution of household income per head, and GDP per head and national income per head in the UK since 2008. These differences were partly explained by the increase in government support during the economic downturn, which then waned during the economic recovery. Figure 7 shows that differing growth rates of GDP per head and household income per head[3] was a feature for many other countries between Q1 2007 to Q3 2016. Overall, across the OECD in total, household income per head grew by 11% over the time period, compared with 5.1% growth in GDP per head.

Notably, some countries experienced contractions in GDP per head but growth in household income per head. In particular, household income per head in Norway increased by 20% between Q1 2007 to Q2 2016, compared with GDP per head which declined by 1.7%. On the other hand, Figure 5 above highlighted that national income per head as a proportion of GDP per head was especially low in Ireland,

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[3] International comparisons for household income are based on real household disposable income including the NPISH sector.

implying that available income is lower once cross-border flows are accounted for. Figure 7 shows this appears to have translated to the household sector - household income per head fell by 1.5%, while GDP per head increased by 19.5%. This means that average quarterly GDP per head growth and household income per head growth in Ireland was 0.4 percentage points above and 0.3 percentage points below the OECD average respectively between Q1 2007 to Q2 2016.

Figure 8: Contributions to growth in household income per head in selected countries, 2003 – 2016

Source: OECD.stat

Figure 8 explores contributions towards growth in household income per head for 4 European countries – two which had particularly strong growth in household income per head since Q1 2007 (Poland and Sweden), and two which had the weakest growth of the countries considered in Figure 7 (Italy and Greece). It shows that for all four countries, the average annual contribution to growth from net social transfers was greatest during the years of the economic downturn (2008-2009). However, during the recovery, contributions from net social transfers declined substantially for all countries. Setting the high growth countries apart from low growth countries during this period were differences in the contribution from compensation of employees. Average contributions from compensation of employees towards growth were 3 percentage points and 2.4 percentage points respectively in Sweden and Poland, but only 0.2 percentage points and -2.4 percentage points respectively in Italy and Greece.

These findings are corroborated by recent OECD analysis (Ribarsky et al, 2016), finding that household income per head was supported during the early stages of the economic downturn by so-called automatic stabilisers such as welfare payments. This meant that average household income remained

stable or increased in most OECD countries. However, after 2009, and for most countries the beginning of the economic recovery, the impact of net transfers began to decline, partially as a result of governments reducing spending amidst increasing debt-to-GDP ratios. During this period, average household incomes tended to be more reliant on income associated with economic growth, such as earnings. As a result of these different effects, the data suggests that there is a stronger relationship between growth in GDP per head and average household income after 2009 than before across OECD countries.

4.3 Income inequality

The analysis presented so far has been entirely based on aggregate measures of production and income, albeit on a per person basis. However, when measuring economic well-being, there is a strong argument for considering distributions alongside average measures. As noted in Stiglitz et al (2009) and OECD (2011) increases over the last couple of decades in average household income have also coincided with widening inequalities in many countries, meaning that the benefits have not been felt fully by all.

Figure 9: Changes in household income per head, and median income, selected countries, 2007 to 2013
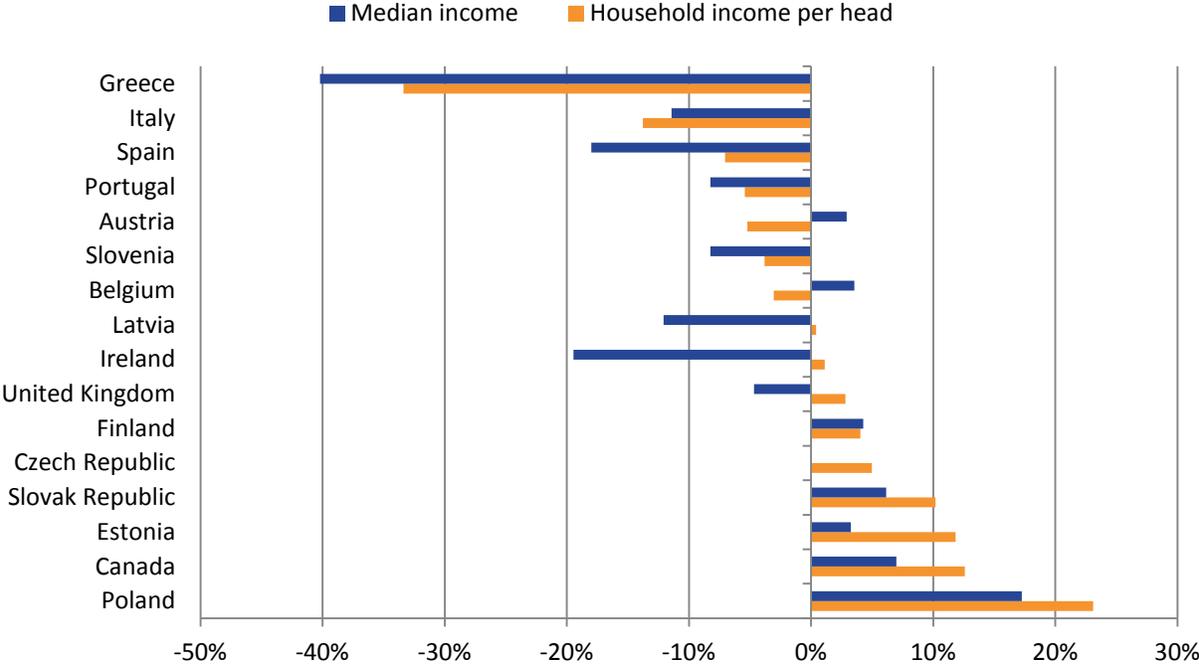
Source: OECD.stat

Figure 9 compares changes in median income, and household income per head for a range of countries between 2007 and 2013.[4] It highlights that, within many countries, growth in household income per

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[4] To improve comparability with median income, data on household income per head is annual, and therefore not directly comparable with the growth rates presented in Figure 7. Furthermore, the definitions used for macro and micro economic measures of income differ, meaning the two are not directly comparable (OECD, 2013).

head has differed to growth in median income, potentially suggesting changes in inequality. Ireland, again, stands out as the country which has largest difference between average and median incomes. While household income per head increased modestly – 1.1% - median incomes contracted by 19.5% between 2007 and 2013. This suggests that any gains in income were likely to have been concentrated further up the income distribution, with incomes in the lower parts of the distribution falling.

Out of the countries considered in Figure 9, Greece had both the largest fall in household income per head and median income between 2007 and 2013. Further, the decline in median income - 40.2% - was proportionately larger than the decline in average household income - -33.4% - implying again, that the fall in income was possibly concentrated more among poorer households. This finding was not only evident in Greece – Slovenia, Portugal, and Spain also experienced declines in median income that were larger than the falls in household income per head. Perhaps more positively, median income grew during a period of falling household income per head in two countries: Austria, and Belgium.

Figure 10 looks at income inequality more detail, by comparing the Gini coefficients for equivalised original (or market) income disposable income EU countries where microdata was available.

Figure 10: Gini coefficient of equivalised original (market) and disposable income, and change between the two, selected countries, 2013
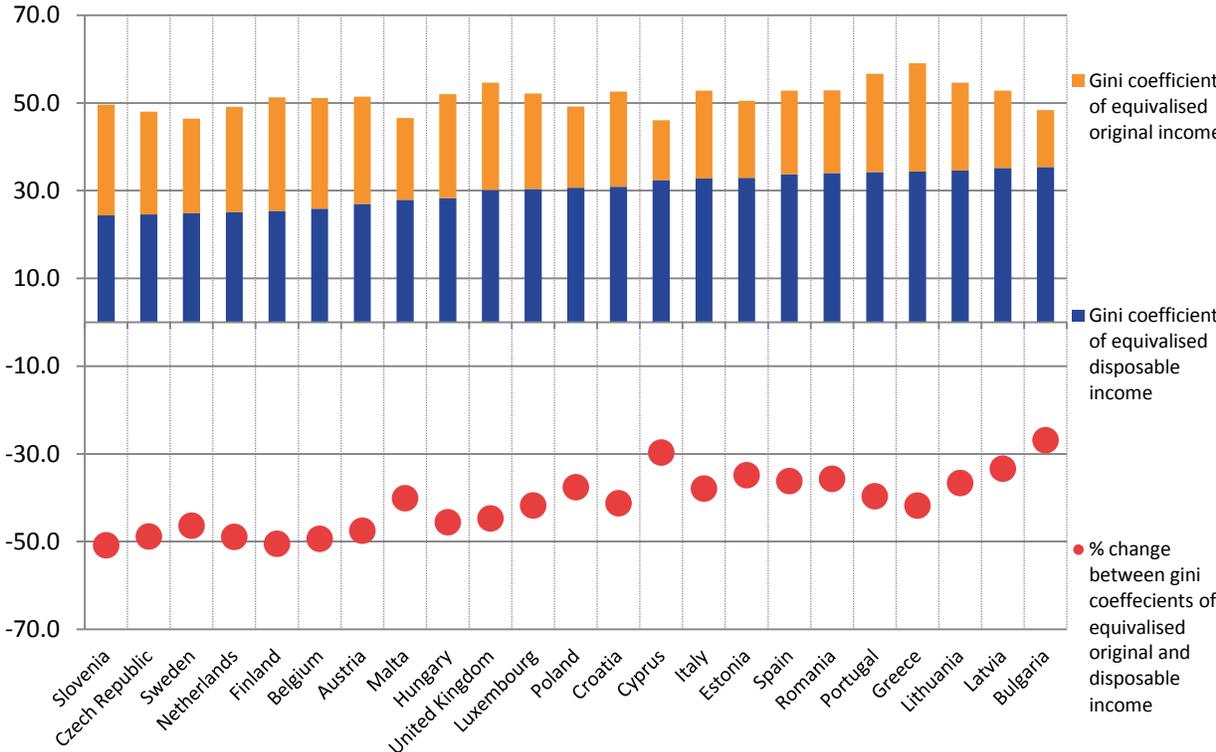
Source: EU Statistics on Income & Living Conditions: Eurostat, UDB 2013 - version 2 of August 2015

The Gini coefficient is one of the most widely used measures to compare income inequality. It can vary between 0 and 100 (or 0 and 1) and the lower the value, the more equally household income is distributed. The markers in Figure 10 represent the changes between the two Gini coefficients; the lower the value, the more effective a country's tax and benefits system at redistributing income and reducing inequality. As can be seen, the effectiveness of taxes and benefits in reducing inequality varies considerably, meaning that those countries with the lowest inequality of original income are not necessarily those with the lowest levels of inequality of disposable income.

The data indicate that, before any taxes and benefits, the UK had one of the highest levels of income inequality in the EU. However, the UK's tax and benefits system appears to be more redistributive than that of many other countries with relatively high inequality of original income, bringing the UK close to the overall EU average for disposable income inequality.

Across the EU countries included in the analysis, the countries with the lowest levels of income inequality in 2013, based on the Gini coefficient for disposable income, included Slovenia (24.4%) and the Czech Republic (24.6%). The highest levels of income inequality were observed in Bulgaria (35.4%), Latvia (35.2%) and Lithuania (34.6%).

5. Communicating economic well-being statistics in the UK

In order to ensure that statistics on the material well-being of households are put into sharper focus, a new quarterly statistical bulletin was launched by ONS in December 2014. This has now been published for 10 quarters, with the most recent release (covering up to Q4 2016) being published on 31st March 2017 (ONS, 2017a).

ONS's quarterly economic well-being bulletin is published on the same day as the regular Quarterly National Accounts and Balance of Payments publications. The significant advantage of this simultaneous publication is that provides users with timely figures that explicitly consider the household perspective alongside the main macroeconomic indicators, reducing the temptation for users to infer judgement about welfare from other, less appropriate measures. There is a disadvantage though in that, with large volumes of important data released on the same day, there is a limit to which economic stories get picked up from the data by media outlets. This may result in, for example, interesting new trade data overshadowing the release of information on economic well-being.

The introduction of the release was well-received in the UK, with commentators welcoming the introduction of a publication which aims to provide a more rounded and comprehensive basis for assessing changes in material living standards (Figure 11).

Figure 11: Examples of news coverage of introduction of ONS economic well-being bulletin

The primary focus of the bulletin is the 10 headline indicators of economic well-being, with data on additional supporting indicators provided for further context. Additionally, each edition of the bulletin contains a 'a "Spotlight" section, which will investigate particular issues relating to economic well-being in more detail. For example, the most recent edition contained a section focussing on international comparisons of economic well-being.

A conscious decision was taken not to develop an overall composite index of economic well-being. While composite/index measures are appealing due to their apparent ability to summarise a complex concept within a single figure (or set of figures), producing such a summary measure would (by definition) reduce the amount of useful information compared to that which would be available to users by looking at each dimension individually. Indeed, one of the major disadvantages is that, once they contain multiple sub-components, composite indices can quickly become very opaque and difficult for users to interpret. In particular, the absence of meaningful units makes it very difficult to understand the scale and policy relevance of any change.

A related disadvantage is that one cannot understand the reasons behind a change without decomposing the index into its separate sub-indicators. Without the sub-indicators alongside it, there is a danger of overly simplistic interpretations being reached. A further drawback relates to the level of judgement which is typically required in producing such a composite measure. In particular, quite often there are limited objective criteria for the selection and weighting of sub-indices, and variations in decisions made can have substantial impacts on the resulting index and how it behaves.

For these reasons, the decision was taken to present each of the 10 headline measures separately, using a 'dashboard' type approach. This approach highlights that the concept of economic well-being is a multidimensional one that cannot be fully captured by a single indicator, but is also accessible to users. It also makes it easier for both policy makers and the general public to interpret any changes over time. To communicate these indicators concisely and accessibly, an infographic, sharable in PNG format, was developed between the analysts responsible for the bulletin and ONS's design team (Figure 12).

Figure 12 Example of economic well-being infographic
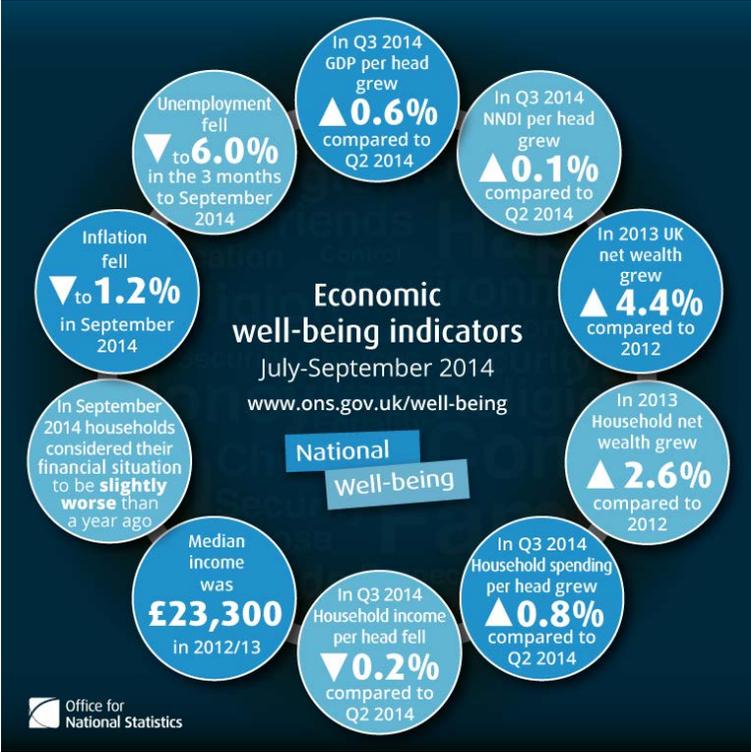
This infographic gained a lot of traction with users, particularly on social media where it was shared widely. However, ONS are currently working on developing a replacement. The PNG image, while useful as a sharable headline view, does not meet current ONS digital standards, and is not accessible or machine-readable. Another limitation of the infographic is that it is only able to present change from one data point to the next, so did not give any indication of longer term context. The replacement will be an interactive electronic dashboard, due to be launched with the Q1 2017 bulletin (to be published June 2017). While the details of the dashboard are still under development, the expectation that the user will be able to more easily view recent changes in context, as well as having the ability to find out more information on individual indicators. The new dashboard will also be optimised for use on desktops/laptops, tablets and mobiles.

6. Ongoing developments to measuring economic well-being within ONS

As highlighted above, the existing UK headline indicators have been selected partly as they provide broad coverage of the economic well-being framework. However, they have also been selected on more pragmatic grounds, taking into account factors such as data availability, frequency and timeliness.

Across ONS, a range of developments are underway which will allow both the improvement of existing indicators and the introduction of new indicators of economic well-being within the framework. This final section of the paper provides a snapshot of these developments.

6.1 Improving the timeliness of ONS income distribution analysis

Unlike macro-economic indicators, which are typically available within a few months, statistics on the distribution of income in the UK and other countries are typically produced to a much longer timetable, reflecting the complexity involved in collecting, processing and analysing household financial survey data. For example, ONS's Effects of Taxes and Benefits on Household Income publication has historically been released in June, approximately 15 months after the end of the income reference period. Although recent process improvements by ONS have reduced this time lag to just over 9 months, this is still significantly slower than for macro measures.

In order to meet the considerable user demand for more timely data on household incomes, ONS have developed new Experimental Statistics, produced using so-called "nowcasting" techniques (Stoyanova & Tonkin, 2016). Following this approach, the most up to date survey data on income are first adjusted to reflect how changes in the macro-economic conditions have affected households at different points of the income distribution. Using a micro-simulation model, the rules of the current tax and benefit system are then applied to the household/individual level data to calculate disposable incomes for those households. Finally, adjustments are made to take into account changes in labour market participation and the socio-demographic characteristics of the population.

6.2 Measuring disparities within a National Accounts framework

ONS is participating in the OECD Expert Group on Disparities in National Accounts. The aim of the group is to devise an internationally comparable methodology to produce distributional measures of household income, consumption and savings that are consistent with national accounts concepts and totals, using existing micro data sources. ONS produced their first set of Experimental Statistics in 2015 (Tonkin & Wildman, 2016), contributing to an exercise involving 11 other OECD countries (Zwijnenburg, Bournot & Giovannelli, 2017). ONS are currently reviewing the methodology from this first exercise and identifying potential improvements, with the intention to publish new figures later in 2017.

6.3 Alternative measures of Real Household Disposable Income (RHDI)

The measure of real households and NPISH disposable income published within the Quarterly Sector Accounts contains transactions which, despite being required for compiling a sequence of internationally comparable National Accounts, are not directly observed by households. For example,

imputed rental represents the value of housing services that owner-occupiers derive from their homes. This is the amount that they would have to pay in rental to achieve the same consumption of housing services. Whilst this concept is important when measuring economic output, it is not expenditure (and income) directly observed by homeowners. As a result, the national accounts measure of RHDI can differ from the perceived experience of households.

ONS are therefore developing an experimental measure of "cash RHDI" (ONS, 2017b). This measure removes imputed rentals and other imputed transactions resulting in a measure of RHDI that is a closer representation of disposable income as measured by microstatistics, following guidance within OECD (2013) and UNECE (2011).

6.4 Joint analysis of income, consumption and wealth

Stiglitz et al. (2009) highlighted the importance of considering income and consumption jointly with wealth. However, the complexity of collecting accurate income, consumption or wealth data, particularly through surveys, mean that micro data sources generally contain data on at most two of these dimensions. One option for facilitating joint analysis, which ONS has been taking forward, is the creation of synthetic datasets containing all the variables of interest through statistical matching techniques. Work to date has looked at the statistical matching of data from EU-SILC (income) with Household Budget Survey (consumption) data (Webber & Tonkin, 2013; Serafino & Tonkin, 2017) and with wealth data from ONS's Wealth and Assets Survey (Tonkin, Serafino & Davies, 2016).

As a longer-term development, as part of its Data Collection Transformation Programme (DCTP), ONS is moving towards an integrated Household Finance Survey, underpinned by administrative data. This process has started in 2017 through harmonising the sampling, collection and processing of the Living Costs and Food Survey (LCF) and Survey on Living Conditions (SLC) - exploiting existing commonalities and overlap between the sources. Harmonising the surveys will allow the resulting datasets to be combined to produce precise, coherent income, consumption and social exclusion statistics.

6.5 Developing measures of price change by different household groups

The Prices division at ONS are working on two projects that focus on developing measures of price change by different household groups. The first, producing estimates of CPIH consistent inflation for different household groups, is based on previous ONS research (Flower & Wales, 2014). The project aims to produce a methodology note and first quarterly article towards the end of Q3 2017. The second, termed the "Household Cost Indices" (HCIs), is a new measure that will produce indices for different household groups that reflect changing costs as experienced by households. The timeline for the development of the HCIs is outlined in Annex A of 'Developing an Index of Household Payments, summary of responses.' (ONS, 2016b). As part of the workplan, ONS will investigate the production of comparable measures of income and price change. By the end of Quarter 4 2017, ONS is aiming to produce the first experimental Household Cost Indices (HCIs) as part of a wider analysis of household income and costs.

6.6 Developing estimates of human, natural and social capital

The UK, along with several international bodies and in line with recommendations in the Stiglitz Report, considers sustainability through the "capitals approach". The capitals approach states that economic, natural, human and social capitals are all resources that matter for the present and future well-being of individuals. The approach aims to monitor whether these capital assets are sustained over time for future generations.

Human capital is a measure of the "knowledge, skills, competencies and attributes embodied in individuals that facilitate the creation of personal, social and economic well-being" (OECD, 2001). In 2016, ONS published experimental estimates of human capital for 2015, including the first regional estimates for the UK, which were produced following a consultation with users (ONS, 2016c). ONS also contributed to the recent international guidelines on measuring human capital (UNECE, 2016)

Natural Capital is comprised by all the ecosystem services which natural assets provide. Natural assets include soil, air, water and all living things. In partnership with the UK Department for Environment, Food and Rural Affairs (Defra), ONS are working to produce natural capital accounts, with the aim to incorporate them into the UK Environmental Accounts by 2020. As part of this process, the latest set of monetary accounts were published in December 2016 (ONS, 2016d).

Social capital represents social connections and all the benefits they generate. In November 2014, following a public consultation, ONS published a set of social capital indicators, with analysis of these indicators published first published a few months later (ONS, 2015). ONS will continue to develop and refine its measures on social capital based on feedback from users.

6.7 Developing measures of household production

In 2016, ONS published the first full Household Satellite Account (HHSA) for the UK since 2002 (Webber et al., 2016). The HHSA measures and values home production in the UK, including adult and child care, household housing services, nutrition, private transport, clothing and laundry and volunteering. Measures of the value of home production, although not captured within National Accounts, are important to gain a deeper understanding of the substitution of activities between the household and the market.

ONS are continuing to develop the HHSA. The Independent Review of Economic Statistics (IRES; Bean, 2016) highlighted the UK Household Satellite Account as a valuable economic tool for measuring the modern economy and recommended the investigation of services which may have been carried out by the market but are now being produced by households themselves, possibly via the internet or through the sharing economy.

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