Chapter 7

Indicators of inclusive growth to complement GDP growth[1]

1. Introduction

The 'Beyond GDP' debate has drawn attention to the need to complement GDP measures with indicators that encompass environmental and social aspects of progress. Indeed, there is growing debate around the limitations of GDP as a measure of key societal goals, and as a result alternative or additional measurement concepts are being tested and increasingly used for policy making at regional, national and international level. One key aspect is the need to complement GDP growth with measures which highlight the inclusive nature of that growth. This reflects the fact that maximising economic growth is not an end in itself, and that while growth is a key component of well-being via ensuring improvements in living standards, the benefits of that growth need to be widely and fairly distributed across society.

Equity considerations are fundamental in that the growth process cannot enjoy sustained democratic support if its fruits are reaped only by a privileged few. In this respect successive revisions of the EU Treaties have led to the objectives of the EU becoming more explicitly focused on integrating economic development with the pursuit of social and environmental quality and sustainability. The crisis has provided a new impetus to pursuing this wider vision of growth, with the adoption of the new European strategy for growth, 'Europe 2020', in 2010. This strategy is about delivering growth that is: smart, through more effective investment in education, research and innovation; sustainable, thanks to a decisive move towards a low carbon economy; and inclusive, with a strong emphasis on job creation and poverty reduction. The strategy is focused on five ambitious goals in the areas of employment, innovation, education, poverty reduction and climate/energy.

Inclusive growth is a top priority aiming at 'a high-employment economy delivering economic, social and territorial cohesion' in which 'benefits of growth and jobs are widely shared'. In this context, the Europe 2020 strategy includes a headline target on reducing poverty or social exclusion ([2]), which was introduced to complement economic growth in this manner. Inclusive growth is also reflected in the recent European Commission Communication on the Social Investment Package (SIP) ([3]), which underlines the necessity to reinforce policies that invest in human capital from a long-term perspective ([4]).

Despite these aspirations, there is widespread concern that the benefits of economic growth are not being shared fairly, and that the current crisis has made matters worse. The OECD report on income inequality, Divided We Stand (2011), has highlighted that the gap between rich and poor in OECD countries had widened continuously over the three decades to 2008, reaching an all-time high. A more recent OECD report (OECD (2013)) shows that the global economic crisis has squeezed incomes from work and capital in most countries and that in general, but particularly in some of the countries where the crisis hit harder, poorer households either lost more income from the recession or benefited less from recovery.

To better detect these phenomena, additional indicators could be considered, allowing for a better measurement of progress of societies and helping address the limitations and possible distortions arising from the use of traditional measures alone. However, on the social side, there is still a need to clarify which indicators best highlight the social realities behind the macro-economic averages and aggregates that typically dominate policy making discussions. There is a need to better measure not only how progress affects society on average, but also how the benefits are distributed across society. In this respect, a key recommendation of the important Stiglitz-Sen-Fitoussi Report (2009) was that governments cannot expect to measure progress using only a single indicator, and that a 'dashboard' was needed, containing a mixture of critical individual and aggregate indicators.

More recently, various international organisations have voiced their preferences regarding appropriate indicators for the measurement of progress, in particular with a view to the upcoming

([1]) By Paul Minty and Bartek Lessaer.

([2]) To lift at least 20 million people out of the risk of poverty or social exclusion by 2020.

([3]) See http://ec.europa.eu/social/main.jsp?catId=1044&langId=en

([4]) The SIP package highlights how those countries that moved towards a growth model including a social investment approach within their social policies early and consistently, have more inclusive growth than the others.

Post-2015 Development Agenda. The United Nations Open Working Group on Sustainable Development Goals has highlighted a need for disaggregated data regarding reaching vulnerable populations and addressing inequalities. The United Nations Sustainable Development Solutions Network has proposed to reduce by half the share of households with incomes less than half of the national median income. The World Bank evokes the concept of 'shared prosperity', and favours tracking income growth among a nation's bottom 40% of the income distribution. The International Labour Organisation (ILO) accentuates the creation of decent jobs and inclusive growth. The OECD is committed to addressing the widening gap between the rich and poor, the soaring youth unemployment and the lack of access to services in their new initiative for inclusive growth. It seeks to combine strong economic growth with improvements in living standards and outcomes that matter for people's quality of life (e.g. good health, jobs and skills, a clean environment and community support). The London School of Economics Growth Commission (2013) favours the use of median household income alongside GDP to track the distributional effects of growth.

This chapter focuses on one specific aspect of this debate, namely how to assess inclusive growth/shared prosperity in the beyond GDP context, and in particular the possibility to integrate distributional measures in the monitoring of growth i.e. to go beyond the functioning of the economic system as a whole and consider the diverse experiences and living conditions of individuals and households. It mainly reflects on the use of income-based measures of inclusive growth and/or shared prosperity, and analyses how taking account of the distributional aspects of income can modify growth outcomes. It also analyses how distributional measures relate to assessments of well-being, and how they inform the wider sustainability agenda.

The chapter therefore explores the relevance and feasibility of measures that could be helpful to complement our understanding of economic growth and to better measure societal progress, broadly reflecting the recommendations of the Stiglitz *et al.* (2013) report and the current debate among the major international organisations on this issue.

The analysis in the chapter makes use of a wide range of data sources, principally National Accounts, EU Statistics on Income and Living Conditions (EU-SILC), the ECB Household Finance and Consumption Survey (HFCS), the Eurofound European Quality of Life Survey, and Eurostat indicators of quality of life and sustainable development. The chapter also makes use of relevant literature and studies, especially those by the OECD, the EU Joint Research Centre (JRC), and the European Foundation for the Improvement of Living and Working Conditions (Eurofound).

2. Why is it necessary to complement GDP and to examine inclusive growth?

'*Some dismiss inequality and focus instead on overall growth—arguing, in effect, that a rising tide lifts all boats. But assume we have a thousand boats representing all the households in the United States, with boat length proportional to family income. In the late 1970s, the average boat was a 12 foot canoe and the biggest yacht was 250 feet long. Thirty years later, the average boat is a slightly roomier 15 footer, while the biggest yacht, at over 1100 feet, would dwarf the Titanic! When a handful of yachts become ocean liners while the rest remain lowly canoes, something is seriously amiss.*' (Berg and Ostry, 'Warning! Inequalities May Be Hazardous to Your Growth', IMF Direct (April 8, 2011))

This section explores why there is a need to complement GDP as the main measure of societal progress and, in particular, to capture distributional issues.

2.1. Limitations of GDP for measuring societal progress

Gross Domestic Product (GDP) is the best known measure of economic activity. Developed in the 1930s, it has become a standard benchmark used by policy-makers throughout the world and is widely used in public debates. GDP measures the monetary value of all final goods and services produced for the market, and within a country's borders. It aggregates the value added of all money-based economic activities, and is based on a clear methodology that allows comparisons to be made over time and between countries and regions.

As highlighted in the 2009 Communication 'GDP and beyond: Measuring progress in a changing world' (European Commission (2009)), GDP has also come to be regarded as a proxy indicator for overall societal development and progress in general. In practice, however, it cannot be relied upon to inform policy debates on all issues due to its design and coverage. GDP does not measure economic activities that do not generate monetary income, nor does it put a price on unmeasured externalities, such as the costs of pollution, or the benefits of societal cohesion, even though the goals of environmental and societal sustainability, to which they relate, are seen as of central concern in the Union. Most fundamentally of all, GDP per capita, and its growth over the years, does not tell how the fruits of a higher level of production are shared within a society.

Concerns over the limitations of this measure are not just limited to technicians, with citizens also expressing doubts about the use of GDP growth alone to evaluate the progress of society. A 2008 Eurobarometer poll showed that more than two thirds of EU citizens felt that social, environmental and economic indicators should also be used to evaluate progress, confirming the findings from an international poll in 2007 which had produced similar results ([5]).

Studies have also revealed that citizens can feel distanced from statistical information. A survey from 2009 demonstrated that only 46% of Europeans 'tend to trust' official statistics, such as those concerning unemployment, inflation or economic growth ([6]). A part of this may be due to how such statistics are used to assess societal progress. For example, even when GDP is reported as growing, disposable incomes and public services may be perceived as shrinking, which may actually be the case if it is accompanied by rising inflation, tax increases, growing unemployment, redundancies in public sector jobs, or cutbacks in public services. In a recent paper Atkinson (2013) highlights the limited impact of GDP statistics on the public in the UK and the disconnection between

([5]) Special Eurobarometer 295 / March 2008; a similar poll conducted in 10 countries on the five continents shows an even higher level of support for going beyond GDP, with three quarters agreeing.

([6]) Special Eurobarometer 323 / August-September 2009 on 'Europeans' knowledge of economic indicators'. Question QC6.

the statistical evidence and their perceptions of developments:

'*In the autumn of 2012, statistics showing that GDP in the United Kingdom grew by 1 per cent in the third quarter of 2012 were widely reported in the media and heralded by the government as a sign of the success of its economic policies. But this announcement probably meant little to the UK average citizen, who could see no connection between a statistic produced by the Office for National Statistics and their own economic circumstances.*'

Moreover, as societies become more diverse, indicators based on averages or 'the typical consumer' do not provide sufficient information for the needs of citizens and policy-makers. In this respect, complementing GDP with additional concise metrics that reflect wider public concerns would demonstrate a stronger link between EU policy and the preoccupations of EU citizens.

The need to complement GDP with indicators on social aspects of progress is emphasised in the Stiglitz-Sen-Fitoussi report (2009), which highlights that trends in material living standards and economic well-being are better monitored through measures of household income and consumption than just market production (GDP). In this respect, both income and wealth are fundamental determinants of an individual's well-being. Moreover, to enable a real debate to take place on equity and fairness, the distribution of income, wealth, education, health and environmental quality must be known, as well as evidence on who is gaining and losing from economic growth.

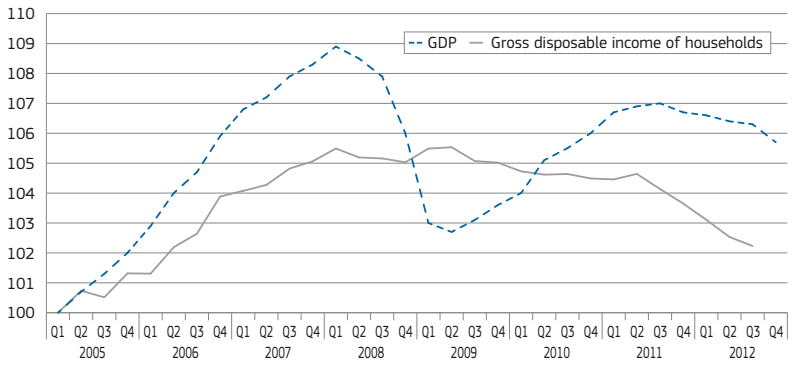
In his recent paper, Atkinson (2013) goes as far as to propose that, rather than starting with Gross Domestic Product (GDP) and the instruments of economic policy, and then considering the social consequences, the policy-making process could be turned on its head ([7]). The starting point should be the living standards and well-being of individuals and their families. He highlights that the fundamental concern of the policy-maker should be with the interests of individual citizens, and that social welfare should be defined in these terms, not in terms of macro-economic aggregates such as growth, inflation or employment, which should be monitored but only used in light of their meaning for individuals and families.

Arguing that '*At present, neither EU nor national government policies are tailored to the person in the street, and this is one major reason why people are indeed out on the streets in protest*', Atkinson calls for the rapid adoption of a new perspective for the measurement of changes in economic performance based on the impact on household living standards and on an explicit consideration of distributional consequences. Concretely, he suggests use of 'household spendable income' as an appropriate measure of household disposable income, adjusted for household size, as the headline indicator of progress.

To illustrate the importance of promoting the use of more appropriate data on the household sector, Chart 1 plots the cumulated growth, since the first quarter of 2005, of GDP volumes and of aggregate household gross ([8]) disposable income in real terms. It shows that, in the early stages of the 2008/2009 economic downturn, household income was hardly affected by the crisis, despite the sharp fall in GDP, suggesting that publicly-funded automatic stabilisers and stimulus packages managed to protect household incomes during the early part of the crisis.

However, household income subsequently decreased while GDP resumed growth until both reached the same level of cumulated growth by the second quarter of 2010. GDP then continued to grow through to mid-2011, but household income fell further, and sharply so over late 2011 and into 2012, as GDP again contracted. Hence, the path followed by household gross disposable income was very different from that for GDP. Moreover, in the period before the crisis, household income rose at a rate considerably less than GDP. All this clearly shows that GDP, despite being the most commonly used aggregate derived from National Accounts, does not sufficiently capture changes in the material well-being of households, not least since movements in GDP and in household income (which is what really matters to people) can diverge considerably.

Chart 1: Cumulated real growth of GDP & aggregate Gross Disposable Income for Households in the euro area (2005q1=100)



Source: Eurostat, National Accounts.

Note: Cumulated growth since the first quarter of 2005 of GDP volumes and of aggregate household gross disposable income in real terms (i.e. deflated by price index for final consumption expenditure of households).

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2.2. The need for distributional measures

However, it is not sufficient to only monitor developments in aggregate household income — it is also important to integrate distributional measures. One of the reasons why average per capita measures of income, consumption and wealth often fail to reflect peoples' perceptions of how

([7]) Macro-economic policies, and indeed all policies, are means to an end, not ends in themselves, and the ultimate goal is individual well-being.

([8]) For National Accounts based indicators the terms 'gross' and 'net' do not refer to the pre- and post-tax values. In fact, the difference between the gross and net figures in National Accounts is that the term 'net' refers to the deduction of consumption of fixed capital (a National Accounts term for depreciation of fixed assets). Hence, disposable income reflects the distribution and re-distribution of current transactions, thus corresponding to the after-tax situation, also when using the term gross as in 'Gross household disposable income'.

Table 1: Trends in real household income by income group, mid-1980s to late 2000s – Household incomes increased faster at the top

	Average annual change, in percentages		
	Total population	Bottom decile	Top decile
Austria	1.3	0.6	1.1
Belgium	1.1	1.7	1.2
Canada	1.1	0.9	1.6
Czech Republic	2.7	1.8	3.0
Denmark	1.0	0.7	1.5
Finland	1.7	1.2	2.5
France	1.2	1.6	1.3
Germany	0.9	0.1	1.6
Greece	2.1	3.4	1.8
Hungary	0.6	0.4	0.6
Ireland	3.6	3.9	2.5
Italy	0.8	0.2	1.1
Luxembourg	2.2	1.5	2.9
Netherlands	1.4	0.5	1.6
Portugal	2.0	3.6	1.1
Spain	3.1	3.9	2.5
Sweden	1.8	0.4	2.4
United Kingdom	2.1	0.9	2.5

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Source: OECD Database on Household Income Distribution and Poverty.

their resources and consumption possibilities change over time is simply because the benefits of growth are not equally distributed, with some people becoming worse off even if average incomes have increased.

As examined later in the chapter, inequality can also have a significant impact on social and economic cohesion, which are overarching objectives of the European Union. Moreover, far-reaching reforms, such as those required to combat climate change or to promote new patterns of consumption, can only be achieved if efforts made and benefits received are felt to be equitably shared among countries, regions, and economic and social groups.

Some suggest that social and economic challenges appear to be associated with rising income inequalities, a view which has gained prominence through a widely cited book by Richard Wilkinson and Kate Pickett entitled '*The Spirit Level, Why More Equal Societies Almost Always Do Better*' (2009). This argues that more equal societies perform better in terms of a wide range of social outcomes.

In this context, the Stiglitz-Sen-Fitoussi report (2009) makes the following recommendation *(Recommendation 4)* to give more prominence to addressing inequalities through the monitoring of the distribution of income, consumption and wealth:

'Average income, consumption and wealth are meaningful statistics, but they do not tell the whole story about living standards. For example, a rise in average income could be unequally shared across groups, leaving some households relatively worse-off than others. Thus, average measures of income, consumption and wealth should be accompanied by indicators that reflect their distribution.'

When there are large changes in inequality, GDP or any other aggregate statistic may fail to provide an accurate assessment of the situation in which most people find themselves. In fact, if inequality increases enough relative to the increase in average per capita GDP, most people can be worse off even though average income is increasing.

Table 1 highlights the trend in real household income for different income deciles over the past two decades. It shows that, for many countries, there is indeed a marked variation in income growth across income groups. In general, growth is higher for the top decile than for the bottom one, although there are clear exceptions including Greece, Ireland, Portugal and Spain.

All this confirms that average measures, and especially average measures of GDP growth alone, do not give a reliable picture of social progress.

3. Measures of inclusive growth

This section examines recent trends in GDP growth and the corresponding trends in various measures of inclusive growth, in order to better examine the distribution of the benefits of growth and identify the main winners and losers. The focus is on various indicators of income and wealth distribution, mainly based on National Accounts, EU-SILC and the recent European Central Bank led Household Finance and Consumption Survey, but similar considerations could also apply to measures of consumption.

The section first examines developments in broad indicators of the effect of economic growth on the population overall (e.g. the wage share of GDP growth, aggregate disposable household income and median equivalised disposable income ([9])).

It then considers various distributional aspects in relation to income, such as changes in median disposable income by quintile group and trends in standard indicators of income inequality such as the Gini coefficient and the S80/S20 ratio. It also examines alternative measures of 'distributionally adjusted' income, such as the Sen index.

([9]) Equivalised disposable income corresponds to the income that individuals have available for spending and saving, adjusted for household size and composition.

Box 1: Decomposition of National Accounts data

The European System of Accounts is the main tool behind EU economic statistics as well as many economic indicators (including GDP). As a foundation for coherent policy-making, a data framework is needed that consistently includes environmental and social issues along with economic ones. In its June 2006 conclusions, the European Council called on the EU and its Member States to extend the National Accounts to key aspects of sustainable development. Over time, National Accounts data will therefore be complemented with integrated environmental-economic accounting that provides data that is fully consistent. As methods are agreed and the data becomes available this will be complemented, in the longer term, with additional accounts on social aspects.

At the macro-economic level, National Accounts provide a coherent and harmonised system at international level for analysing the relationship between income, savings and household wealth. However, they lack information on the distribution of these items, which would allow us to better understand the behaviour of households and better describe inequalities. At the micro level, the measures of income distribution, consumption and wealth are provided by data from surveys of households. However, due to definitions and concepts specific to each approach, but also differences in coverage, aggregates estimated from surveys need to be reconciled with the data of National Accounts so as to provide a fully consistent dataset for analysing distributional issues.

In 2011, the OECD and Eurostat launched a joint expert group (referred to as the 'Expert Group on Measuring Disparities in a National Accounts Framework') to study the feasibility of establishing an internationally comparable methodology for generating distributional information consistent with National Accounts ([1]). This included work on enhancing existing indicators in National Accounts, and on the decomposition of National Accounts data, for example by income or household groups consistent with National Accounts totals.

In the first phase the expert group focused on a comparison between micro and macro data sources on household income, consumption and wealth in order to better understand the similarities and divergences between both data sources. In the second phase the group examined the allocation of National Accounts totals to groups of households using a range of micro sources, and the subsequent derivation of experimental disparity measures for income, consumption and savings.

Preliminary results (see Fesseau *et al.* (2012)) of the work undertaken by the experts from the countries which are part of the expert group are as follows:

- Even if micro data sources do not provide similar information for all components of household economic resources as defined in the System of National Accounts, existing micro data covers the majority of the income and consumption aggregates in most countries. National Accounts components for which there is no micro data are mainly related to imputed items (e.g. social transfers in kind, employer's imputed contributions, etc.).
- Despite these shortcomings, the work being undertaken demonstrates the relevance of a reconciliation of micro and macro sources. It provides explanations of divergences and facilitates the understanding of gaps between micro and macro aggregates for users.
- Whilst the study demonstrates that micro and macro measures can be reconciled for most macroeconomic income and consumption components, it does not provide a full integration of both sources. Further work is needed to assess the quality of the distributional information provided by micro sources, and to consider the relevance of imputing distributions for National Accounts components with no adequate micro information.

([1]) There were actually two different, but related, projects within this collaboration, one led by the OECD that was carried out by a network of experts from each country, and the other carried out by Eurostat which used EU-SILC data and had as an output NA household income distributed by household type.

Finally, it makes use of the recently released results from the ECB Household Finance and Consumption Survey in order to examine the wealth situation of households across and within euro area countries, and in particular to examine inequalities in the distribution of wealth, as an indication of the long term outcome of economic development.

Regarding data sources, National Accounts should be the ideal source but, while they provide a coherent and harmonised system at international level for analysing the relationship between income, savings and household wealth, they do not contain information on their distribution, which would allow us to better understand the behaviour of households and better describe inequalities. Work is underway, however, to address this and to make it possible in the future for National Accounts data to be decomposed to cover distributional aspects (see Box 1).

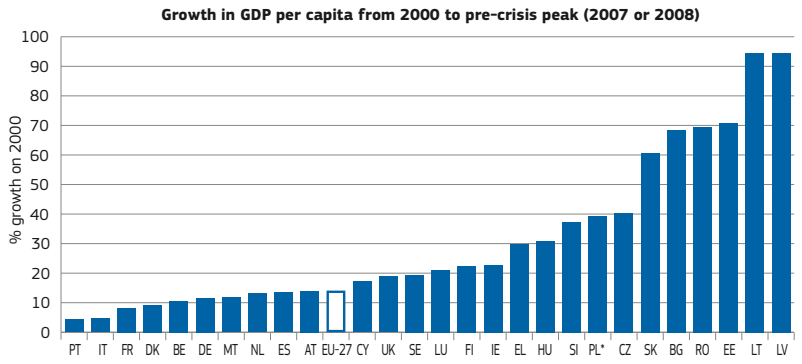
3.1. Developments in broad indicators of the effect of economic growth on the population in general

This section reviews developments in broad indicators of the effect of economic growth on the population overall, covering items such as the wage share of GDP growth and developments in aggregate disposable household income and in median income. It demonstrates why GDP growth is an insufficient indicator of progress and why there is a need to also monitor developments at household or individual level.

3.1.1. GDP per capita

Growth in GDP, and in particular growth in GDP per capita, is often used as a measure of improvements in standards of living in a society, on the rationale that all citizens benefit from their country's increased economic production.

Chart 2: Growth in GDP per capita from 2000 to the pre-crisis peak in 2007 or 2008



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Source: Eurostat, National Accounts.

Note: *Poland kept growing past the 2007–08 peak observed in other countries. In 2012, GDP in Poland reached 1.5 times its 2000 level.

The major advantage of GDP per capita as an indicator of standard of living is that it is measured frequently, widely, and consistently. It is measured in most countries on a quarterly basis, allowing trends to be seen quickly. It is measured widely in that some measure of GDP is available for almost every country in the world, allowing inter-country comparisons. It is measured consistently in that the technical definitions of GDP are relatively consistent among countries.

However, GDP per capita is not a true measure of the standard of living in an economy but a measure of total national economic activity — a separate concept. Similarly, GDP per capita is not a measure of personal income in that real incomes for the majority may decline even if GDP increases.

The argument for using GDP as a standard-of-living proxy is not that it is a good indicator of the absolute level of standard of living, but that living standards tend to move with per capita GDP, so that changes in living standards can be readily detected through changes in GDP. However, even this argument has its limitations. Figures show that, up until the financial and economic crisis, there was a broad improvement across Member States in GDP per capita (Chart 2), particularly among the Central and Eastern European Member States. Taken at face value, this would suggest significant rises in living standards for the population in most Member States, but different intervening factors can result in the actual improvement experienced by households and individuals being rather different to that implied by the growth in GDP per capita alone.

To start with, there are various components included in the measurement of GDP growth which are not directly transferable to immediate income effects for households, such as the capital share of national income and the amount of economic growth channelled into investment. Moreover, GDP includes incomes payable to companies and individuals residing abroad, which will not directly impact on national income within the country itself, while it excludes income received from the rest of the world. In this case data on Gross National Income (GNI) may be more relevant ([10]). In addition, redistribution effects of tax and benefits systems can further cloud the link between economic growth and developments in household and individual income. Ultimately, therefore, GDP growth per capita is not ideally suited to describing developments in the material welfare situation of households within a given country.

([10]) GDP measures the total final market value of all goods and services produced within a country during a given period. GNI is equal to GDP less taxes (less subsidies) on production and imports, compensation of employees and property income payable to the rest of the world plus the corresponding items receivable from the rest of the world (i.e. GDP less incomes payable to non-resident units plus incomes receivable from non-resident units). Thus GNI is the sum of gross incomes receivable by resident institutional units or sectors. In contrast to GDP, GNI is not a concept of value added, but a concept of income.

Atkinson (2013) provides a list of technical reasons why an assessment of economic performance based on a measure of household disposable income can differ from that indicated by GDP per capita, including the fact that there can be changes in the share of household income in total national income, spendable income may have moved differently from total household income, changes in National Accounts procedures may have no counterpart in household surveys, and changes in household composition can affect the equivalised ([11]) income of households. Moreover, if a distributionally-adjusted measure of household income (see Section 3.2.5) is used, then changes in the inequality of income will also be a factor.

3.1.2. Income components of GDP and the labour share

Among the income components of GDP (see Box 2), compensation of employees represented a relatively constant share of around half of GDP for the EU as a whole over the period 2000–2012, with a downward trend of 2 percentage points in total between 2001 and 2007 (Chart 3). Gross operating surplus and gross mixed income combined represented around 39% of GDP, and taxes of production and imports less subsidies accounted for around 12%. However, the shares of these components of GDP vary considerably between EU Member States.

The majority of household income is mainly from work (the so-called market-based income) so it would be appropriate to monitor developments with an appropriate measure of the income derived from economic production which is destined for household use, such as the labour share of GDP. This is a measure of the compensation of employees adjusted for the imputed compensation of the self-employed (i.e. from the 'mixed income' component) for the total economy.

The labour share of income generally declined from 2000 through to 2007, implying a reduced participation in the benefits of growth for workers (Chart 4). Although it subsequently increased in 2008 and 2009 with the onset of the

([11]) Equivalised disposable income corresponds to the income that households have available for spending and saving, adjusted for household size and composition.

Box 2: The income components of GDP

GDP is a central measure of the economic performance of a country which can be calculated using three approaches:

- The output approach, which sums the gross value added of various industries, plus taxes and minus subsidies on products;
- The expenditure approach, which sums the final use of goods and services (final consumption and gross capital formation), plus exports and minus imports of goods and services (external balance);
- The income approach, which sums compensation of employees, net taxes on production and imports, gross operating surplus and mixed income.

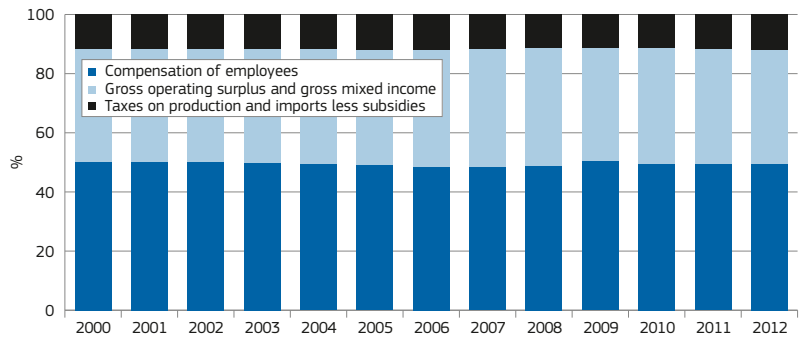
The latter, income approach, measures GDP by adding together incomes that firms pay for the factors of production they hire, i.e. wages for labour, interest for capital, rent for land and profits for entrepreneurship. This shows how GDP is distributed among different participants in the production process. The GDP income components are related to each other according to the following equation:

GDP = *compensation of employees + gross operating surplus + gross mixed income + taxes less subsidies on production and imports*

- **compensation of employees (COE)**: the total remuneration, in cash or in kind, payable by an employer to an employee in return for work done by the latter during the accounting period; the compensation of employees consists of wages and salaries (in cash and in kind) and of employers' social contributions.
- **gross operating surplus (GOS)**: the surplus (often called 'profits') due to owners of incorporated businesses i.e. the surplus (or deficit) on production activities before interest, rents or charges paid or received for the use of assets have been taken into account. It corresponds to the income which units obtain from their own use of production facilities, i.e. the excess amount of money generated by incorporated enterprises' operating activities after paying labour input costs. In other words, it is the capital available to financial and non-financial corporations which allows them to repay their creditors, to pay taxes and eventually to finance their investment.
- **gross mixed income (GMI)**: this is the remuneration for the work carried out by the owner (or by members of his/her family) of an unincorporated enterprise (e.g. small family businesses like farms and retail shops or self-employed taxi drivers, lawyers and health professionals); this is referred to as 'mixed income' since it cannot be distinguished from the entrepreneurial profit of the owner (i.e. it includes both the remuneration of the capital and labour (of the family members and self-employed) used in production).
- **taxes on production and imports less subsidies**: these consist of compulsory (in the case of taxes) unrequited payments to (taxes) or from (subsidies) general government or institutions of the European Union, in respect of the production or import of goods and services, the employment of labour, and the ownership or use of land, buildings or other assets used in production.

crisis, this reflects the sharp decline in economic activity during the same period and the fact that profits are more cyclically sensitive than wage incomes, with many firms posting substantial losses in the depths of the recession. In this respect it can be noted that the labour share declined again in the following two years as some firms laid off workers or reduced wages, and profits recovered. From a longer-term perspective, it is generally agreed that the labour share of income has substantially decreased over recent decades ([12]), indicating a long-term trend of reduced participation of workers in the benefits of growth.

Chart 3 : Share of GDP by income component for the EU-27, 2000–2012



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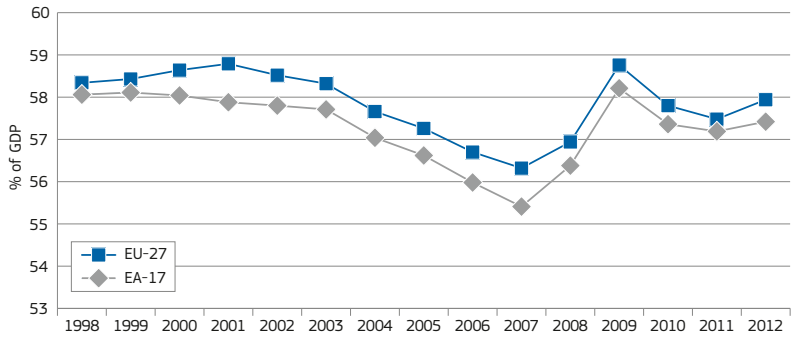
Source: Eurostat, National Accounts.

([12]) See for example, 'Le Capital au XXIème siècle' from Thomas Piketty (available at http://piketty.pse.ens.fr/fr/capital21c).

Chart 4: **Labour share of income (wage share as a percentage of GDP)**



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Source: Commission Services.

3.1.3. Household disposable income

While GDP per capita is mainly an indicator reflecting the level of economic activity, household disposable income is seen as an indicator better adapted to describe the material welfare situation of households. The current European System of Accounts includes indicators that highlight socially relevant issues, such as the aggregate disposable income of households and the 'adjusted' disposable income figure that takes into account differences in social protection regimes between countries. The use of such indicators figure among the recommendations of the Stiglitz-Sen-Fitoussi report:

We conclude that giving more prominence to income measures of households, especially indicators of adjusted disposable income, are simple and useful ways to enhance the relevance of National Accounts statistics to the measurement of material living standards.

Within the system of National Accounts, it is possible to attribute the distribution of the income generated by economic activity to the following: non-financial corporations, financial corporations, general government, non-profit institutions serving households, and households. Hence, income can be computed for private households as well as for the economy as a whole.

Disposable income of households may be defined as the net amount earned, or received as social transfers, during the accounting period but excluding exceptional flows relating to capital transfers or changes in the volume/value of their assets. It is mainly composed of wages received, revenues of the self-employed, income from property and other net income sources such as interest received on deposits *minus* interest paid on loans and dividends.

Some of the income that citizens receive is taken away in the form of taxes, and so is not at their disposal. However, it is used to provide public goods and services, to invest in infrastructure and elsewhere, and to transfer income to other (normally more needy) individuals. A commonly employed measure of household income adds and subtracts these transfer payments with the resulting figure referred to as a measure of aggregate household disposable income.

As shown earlier for the euro area (Chart 1), growth trends in GDP and real aggregate household disposable income can differ considerably (for a more detailed analysis see also ESDE 2012 ([13]) (Chapter 3) on trends in household disposable income and GDP, and the role of welfare systems in stabilising incomes during the crisis). Chart 5 shows that, at EU level, households ([14]) receive around two thirds of the total gross disposable income generated from economic activity, but that the share declined from 66.6% in 2001 to 63.5% in 2007 before adjusting upwards again with the crisis, and stabilising at around 65% in 2011 and 2012.

In other words, the share of the benefits from GDP and its growth which accrues to households can vary over time.

Chart 6 shows the trends in the gross disposable income share for the household sector in the larger EU Member States since 2000. This highlights the extent to which variations in the share can be more marked at individual Member State level. Hence households will be significantly affected not only by the overall growth rate in economic activity (GDP growth) but also by the changes in the share of the income derived from that activity which accrues to them.

However, the above measure of disposable income only captures monetary transfers between households and the government, and neglects the in-kind services that government provides. A measure that corrects for differences in institutional arrangements may be warranted in order to ensure accurate comparisons over time or across countries. Adjusted disposable income is a measure derived from National Accounts that goes some way towards addressing this, at least where 'social transfers in kind' by government are concerned. It improves the comparison of income levels across countries by taking into account the different degrees of involvement of governments in the provision of free services to households.

Gross ([15]) adjusted disposable income is derived from the gross disposable income of an institutional unit or sector by adding the value of the social transfers in kind receivable by that unit or sector, and by subtracting the value of the social transfers in kind payable by that unit or sector. For the household sector, adjusted gross disposable income includes the flows corresponding to the use of individual services which households receive — either free of charge or subsidised — from the government. These services mainly include education, health and social security services, although services such as housing, cultural and recreational services are frequently provided in this way as well.

([13]) Available at http://ec.europa.eu/social/main.jsp?langId=en&catId=113&newsId=1774&furtherNews=yes.

([14]) Actually households plus the non-profit institutions serving households.

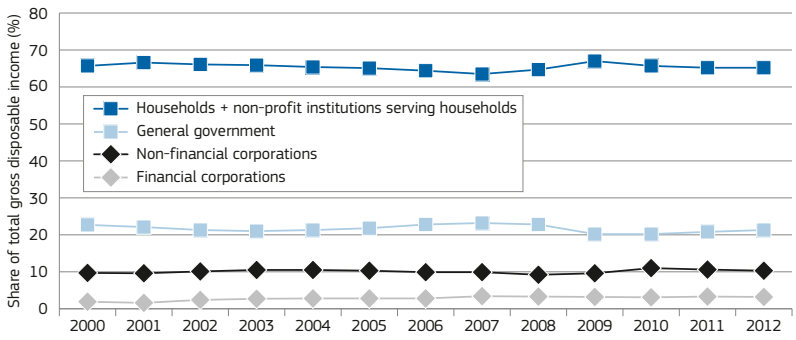
([15]) Recall that in National Accounts 'gross' refers to items calculated before deduction of consumption of fixed capital and 'net' refers to items calculated after this deduction.

Comparison at individual Member State level of the cumulative growth in both real disposable income of households and the adjusted real disposable income figure with that for real GDP once again shows that trends in household income can be rather different from those for GDP (Chart 7). Moreover the changes in GDP and in household disposable income can move in opposite directions and vary in magnitude from year to year.

While the different time series show similar patterns for all three indicators in some Member States (essentially the Baltic States), movements in GDP and household income tend to vary in the majority of cases. In some, such as the Czech Republic, Germany, Poland, Slovenia and Slovakia, real GDP growth has generally outpaced growth in real household disposable income in recent years, even when taking into account the impact of social transfers in kind. In these countries, households have clearly not benefited in full from economic expansion, at least over the period up until the onset of the crisis.

In others, including Denmark, France, Portugal, Romania, Finland and Sweden, household incomes grew at a faster rate than GDP over the period from 2000 to 2011, and in some cases (Denmark, Finland, France, and Sweden) did not appear to be affected by the crisis and continued to rise. In contrast, a clear impact on household incomes can be observed in the Baltic States, Greece, Hungary, Italy, Portugal, Romania and Spain. The divergence in the trends between the unadjusted and adjusted income figures highlights those countries where increased effort has been put into social transfers in kind, most notably in Belgium, Denmark, the UK and above all the Netherlands.

Chart 5: Trends in the shares of income from economic activity by institutional sector, EU-27 from 2000 to 2012



Source: Eurostat, National Accounts.

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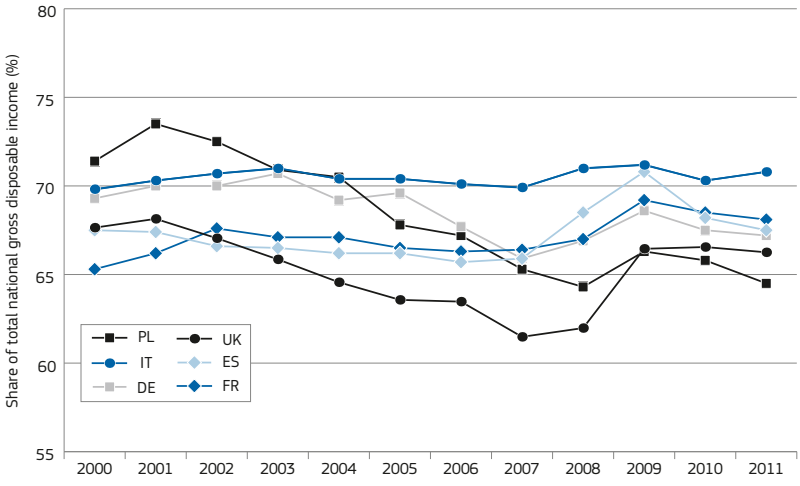
Chart 6: Trends in the shares of household income in total income from economic activity for the larger EU Member States, from 2000 to 2011



Source: Eurostat, National Accounts.

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In conclusion on this point, developments in household disposable income and income adjusted for in-kind transfers received from government differ considerably from GDP developments in many Member States. Household disposable income, and in particular the adjusted disposable income, therefore appears to be a relevant indicator to monitor alongside GDP since it is a more appropriate measure of citizens' command over economic resources.

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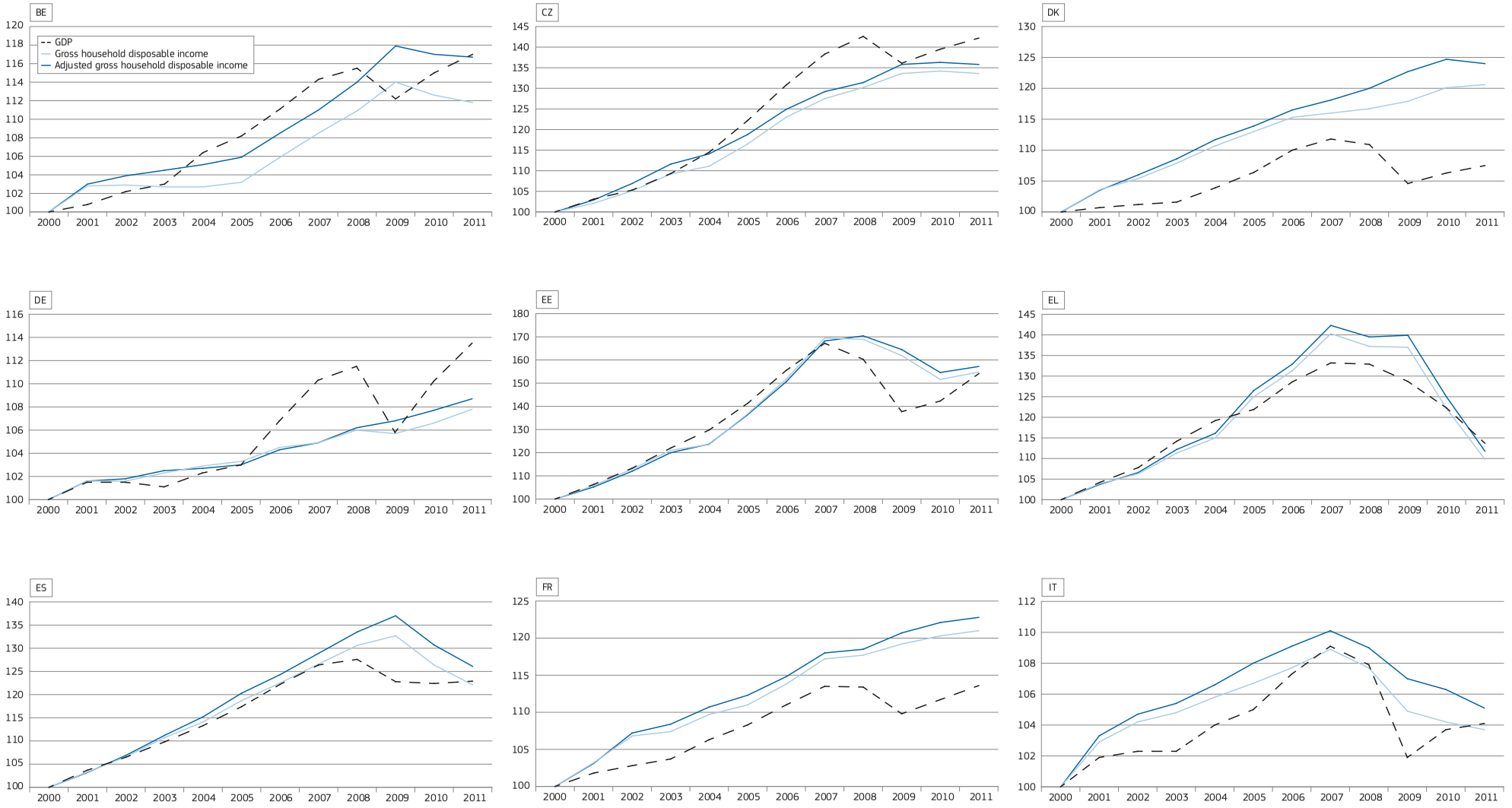
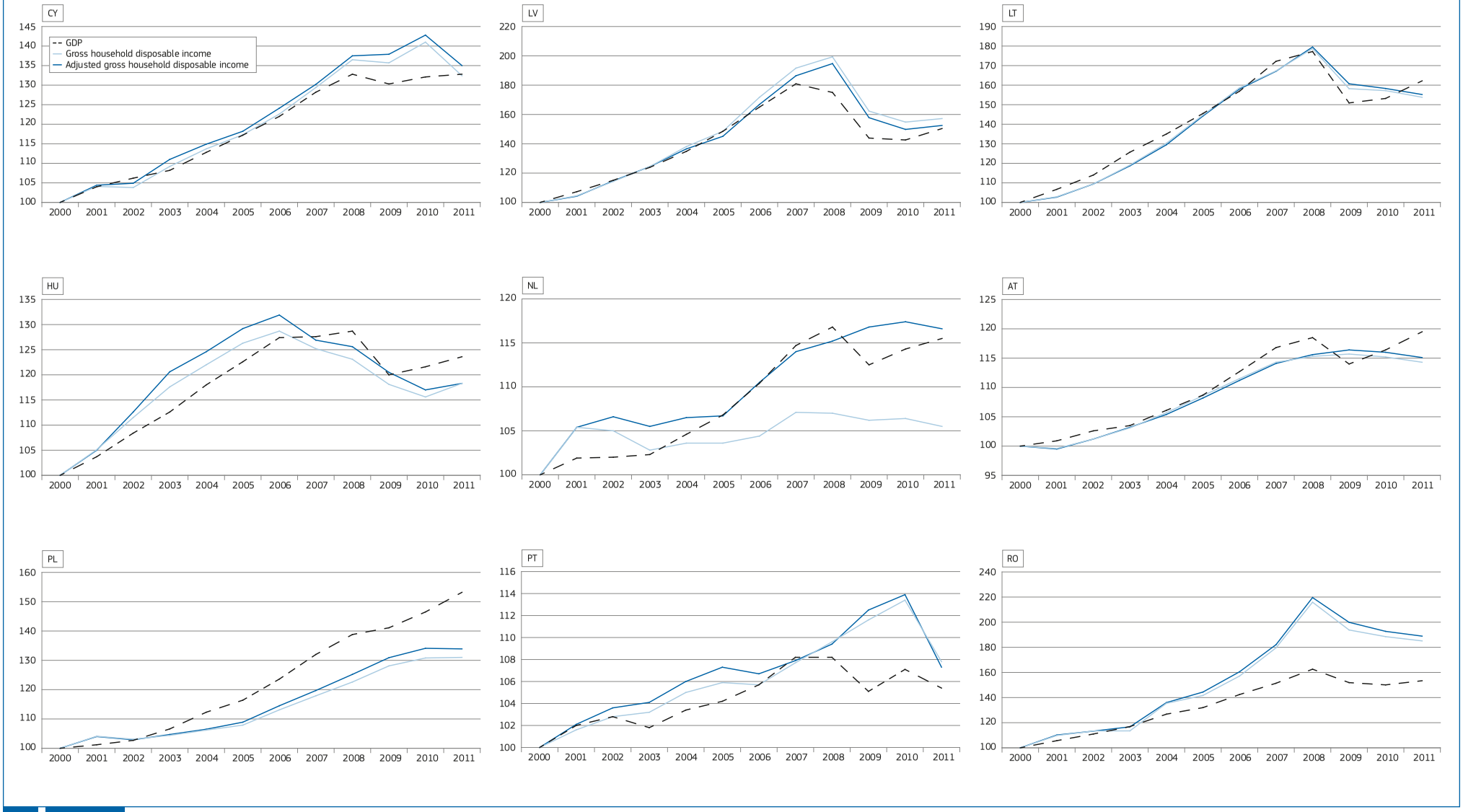
Chart 7: Cumulated growth of real GDP, gross household disposable income and adjusted gross household disposable income across selected EU Member States, 2000–2011





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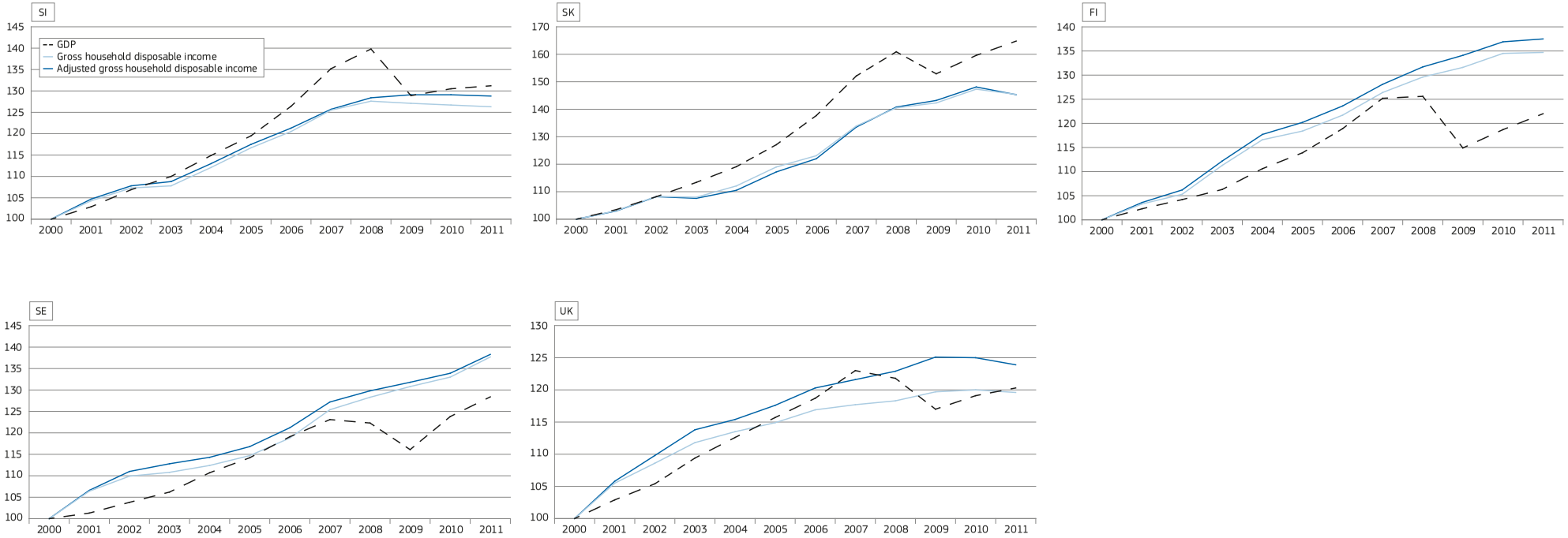


Source: Eurostat, National Accounts.

Note: Cumulated growth (as index with 2000=100) since 2000 of GDP volumes, gross household disposable income in real terms and adjusted gross household disposable income in real terms (i.e. deflated by the price index for the final consumption expenditure of households, 2000=100). The scale of the y-axis varies across the sub-charts.

3.1.4. Median income

As highlighted by Stiglitz *et al.*, average or aggregated measures of income give no indication of how the available resources are distributed across persons or households. For example, average income per capita can remain unchanged while the distribution of income becomes less equal. It is therefore necessary to look at disposable income for different groups.

A first step is to measure median income (the income level such that half of all individuals are above it and half below). The median individual is, in some sense, the 'typical' individual. If inequality increases, the difference between median and mean ([16]) income may well increase, meaning that a focus on the mean (commonly, and hence misleadingly, referred to as the average) may not give an accurate picture of the economic well-being of the 'typical' member of society ([17]).

As part of its assessment of the reform in the way the UK authorities measure and monitor changes in material well-being and its distribution, the LSE Growth Commission (2013) suggests publishing median household income alongside the data on GDP on a regular basis. It argues that a focus on household income provides a better way of capturing what people actually receive out of national income, with the median better than the mean since it is reflective of progress in the middle of the income distribution. For example, increases in GDP that go solely to the rich would not increase this measure. It also emphasises that '*looking at median income would create more focus on inclusive growth that generates wider benefits, and reminds us to look more deeply into distributional issues, particularly for the poorest parts of society*'. The Growth Commission recognises that the median is not perfect either but argues that it is better to use it than ignore distribution issues entirely, and that it is easy to communicate to the public. Moreover, it sees the monitoring of developments in median income as a particularly valuable way of gauging the inclusiveness of the growth that is generated.

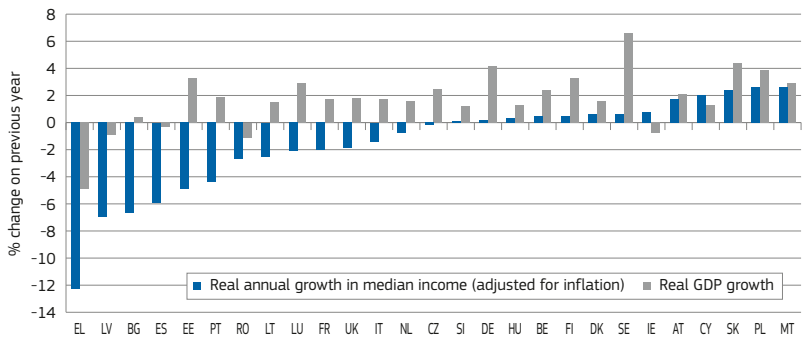
In this section we therefore examine developments in living standards, as measured by the growth in median equivalised disposable income ([18]) (adjusted for inflation ([19])) in EU Member States over recent years. Preference is given to using equivalised disposable income as it takes into account the impact of household size and structure. Moreover, this indicator gives an immediate impression of real income growth for a typical citizen, which also takes into account the impact of price changes. It can be compared directly to the figure for real GDP growth per capita to see to what extent the average citizen is benefiting from economic growth.

Chart 8 shows, for illustrative purposes, the change in median equivalised disposable income in 2010 compared with 2009 ([20]) (after adjusting for inflation) along with real GDP growth. This allows us to see the extent to which changes in GDP in real terms are associated with changes in real median equivalised disposable income, as measured in EU-SILC. It demonstrates that the evolution of real GDP and that of median equivalised disposable income can be rather different. For example, there are several countries where the two indicators did not even change in the same direction between 2009 and 2010. Moreover, even when changes were in the same direction, there were many cases where there was a substantial difference in the magnitude of the changes. It can be noted that, even when GDP growth was positive, the growth in income was, almost without exception, lower, and in several cases was actually negative.

Looking at changes over several years in some selected Member States (Chart 9) confirms the lack of a strong generalised link between annual changes in GDP per capita in real terms and changes in real median equivalised disposable income. Although the two indicators evolved in a broadly similar fashion in Ireland (apart from in 2006), for other Member States there were large differences in the annual changes for several years, underlining the point that monitoring developments in median income bring an added dimension to the assessment of social progress.

In light of the above, it can be argued that the annual growth rate in real median income should be a key indicator to complement GDP (per capita) growth figures. The income figure would be the inflation-adjusted median equivalised disposable income derived from EU-SILC, which would provide an immediate impression of income growth for a typical citizen, taking into

Chart 8: Real annual growth in median equivalised disposable income (adjusted for inflation) and real GDP growth, 2010 compared to 2009



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Source: Eurostat, National Accounts and EU-SILC.

([16]) The mean is the sum of the set of data values divided by the number of data values. The median is the middle point of the data set, in which half the values are above the median and half are below. Large differences between the mean and the median reflect a very unequal distribution with very high values at the top. This is due to the fact that the mean is sensitive to the presence of very high values at the top of the distribution, whereas the median is not.

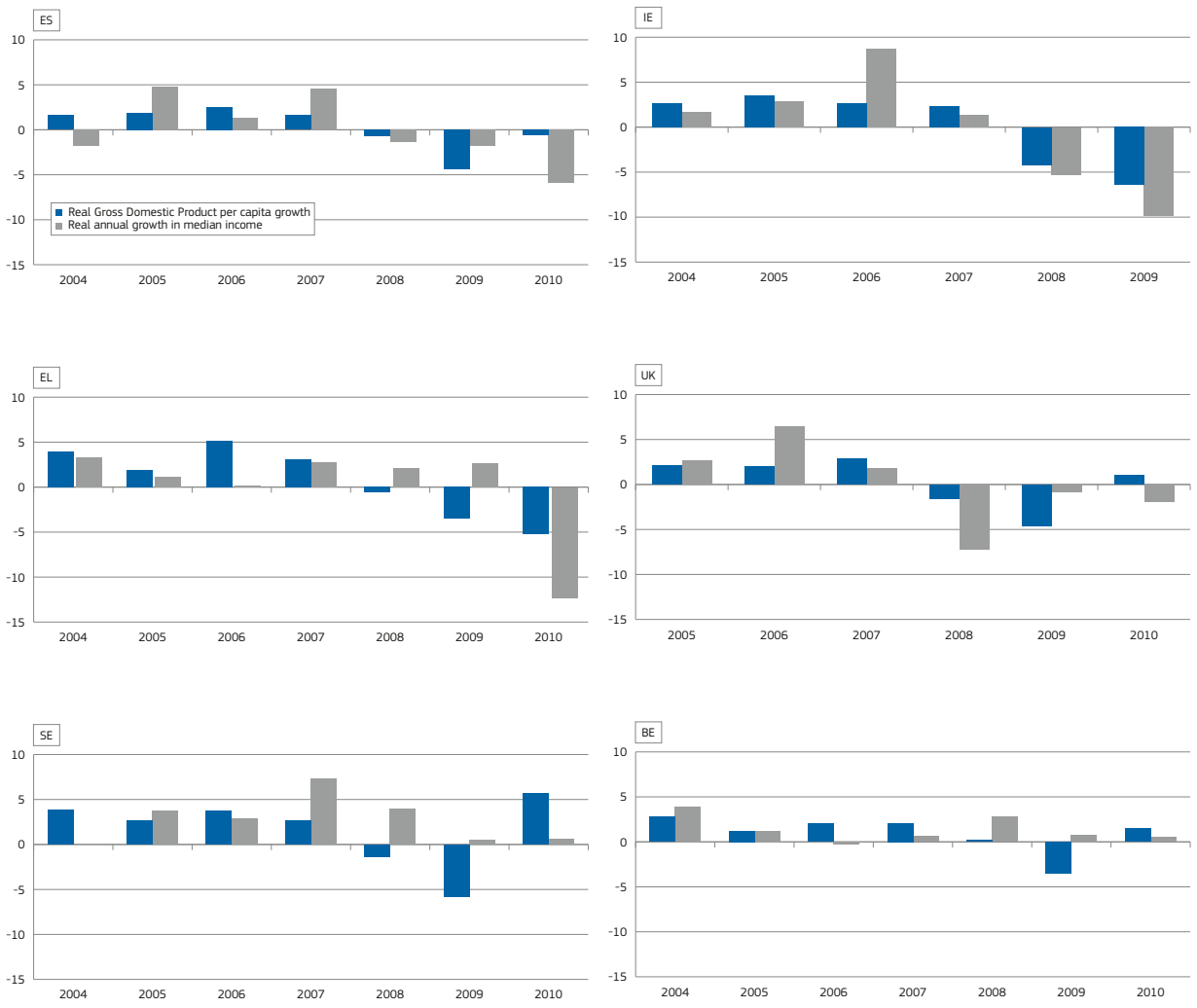
([17]) For example, if all the increases in societal income accrue, say, to those in the top 10 %, median income may remain unchanged, while average income increases.

([18]) The median is the point on the income scale at which half earn more and half earn less, and equivalised disposable income corresponds to the income that households have available for spending and saving, adjusted for household size and composition.

([19]) To take account of inflation use is made of the HICP (Harmonised Index of Consumer Prices).

([20]) The results are purely illustrative of the different patterns in real GDP growth and growth in real median income which may be observed, as growth patterns between 2009 and 2010 were rather unusual.

Chart 9: Annual change in real GDP per capita and in real median equivalised disposable income (%)



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Source: Eurostat, National Accounts and own calculations based on Eurostat, EU-SILC ([1]).

([1]) The EU-SILC data series on household income starts in 2004 (2005 EU-SILC edition) for the EU-25 and in 2006 (2007 EU-SILC edition) for the EU-27.

account price changes, and provide a clear indication of the extent to which the average citizen is benefiting from economic growth.

However, in order to obtain median income figures with similar timeliness to those for GDP it would be necessary to undertake steps to reduce the delays in making data available from EU-SILC, although nowcasting techniques ([21]) might be used to provide estimates of income developments before official figures become available (see for example Navicke, Rastrigina and Sutherland (2013)).

([21]) Nowcasts are similar to economic forecasts, and aim to provide estimates of the evolution of the income distribution, and key income poverty indicators up to year N, for income year N.

3.2. Integrating distributional measures in the monitoring of growth

So far results have been presented based on broad indicators of the effect of economic growth on the population at large. However, even these aggregate indicators, which are focused more on household/individual level developments rather than market production, are not enough to gauge social developments sufficiently. For that, some indications of the distributional effects across the population are required. Hence it is important to examine developments in the different parts of the income distribution in order to have a better picture of the distribution of the benefits of economic growth. While median income provides a reasonable measure of what is happening to the more 'typical' individual or household around the centre of the income distribution, for many purposes it is also important to know what is happening at the bottom of the income distribution (as captured in poverty statistics), and at the top.

3.2.1. Developments in income distribution

Data for the period 2004 to 2010 highlights the extent to which there can be variations in income growth across the different segments of the income distribution. Different patterns are visible across Member States in the relative change in median income per quintile indexed to the respective income figure in 2004, as illustrated in Chart 10.

In some countries, such as Austria, but also Cyprus and Malta, the developments in median income have been broadly similar across quintiles over recent years. In others, such as Denmark, the overall growth in median income in the lowest (i.e. the 1st) quintile ([22]) has clearly been below that for other quintiles, indicating that the poorer segment of the population has shared less in the benefits of growth. A similar pattern is shown by the other Nordic Member States, Finland and Sweden, where median income growth for the lowest quintile has also lagged behind.

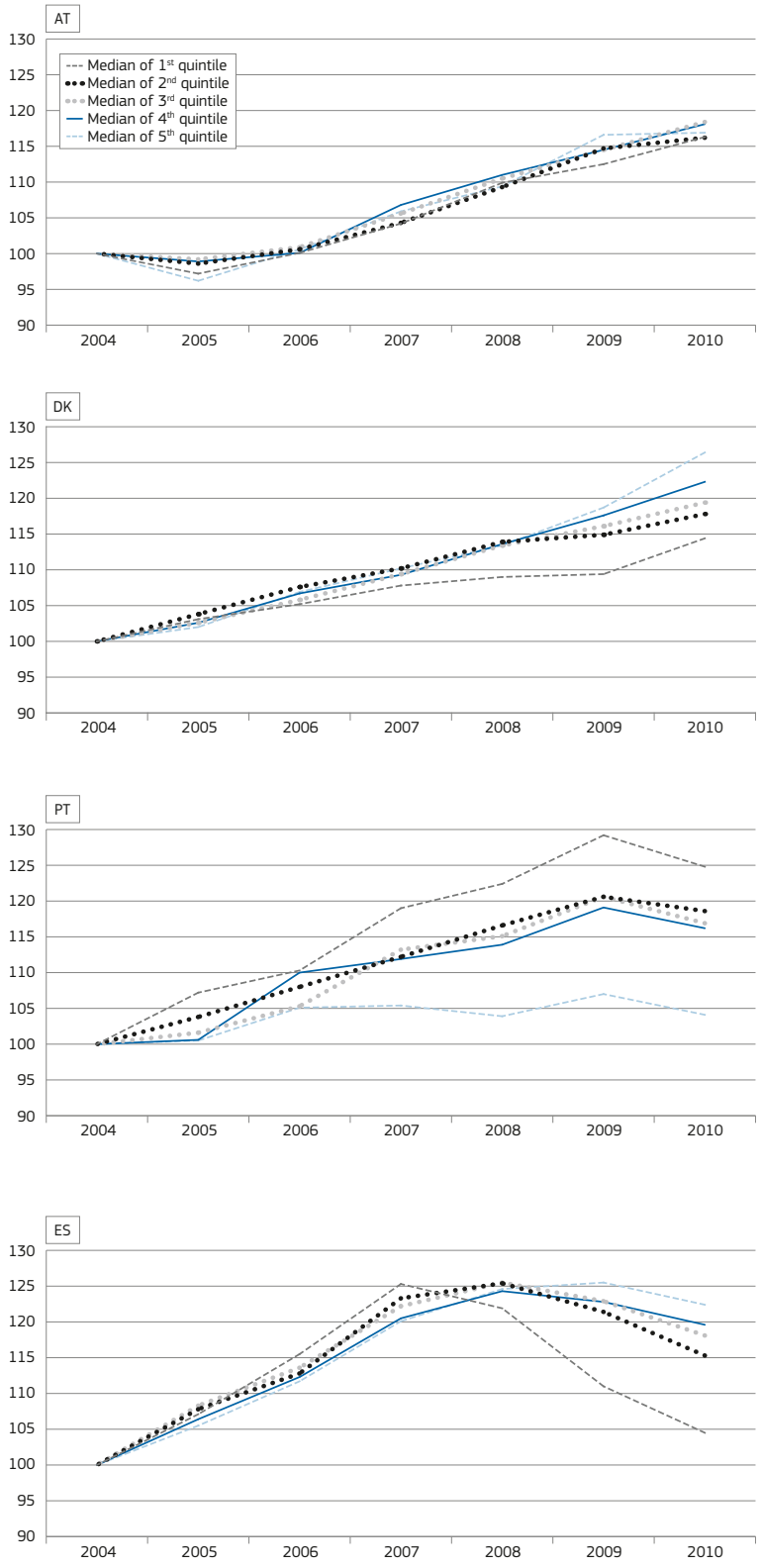
In contrast, in several other Member States it appears that the median income of the lowest quintile has grown relatively more than that of the other quintiles compared to 2004, showing a similar pattern to that of Portugal. Other such cases include the Czech Republic, Poland, Romania, the UK and Ireland (although in the latter median incomes of all quintiles have dramatically adjusted downwards following the crisis, and especially for the bottom quintile).

Finally, in a few countries, incomes of the lowest quintile increased relatively more in the period before the crisis, but subsequently fell more sharply than in the upper quintiles when the crisis hit, with the result that overall income growth for this group has been the weakest. This is clearly the case in Spain, but Italy also shows a somewhat similar pattern.

In light of the above, it is clearly necessary, not just to monitor developments in the median income situation of the population as a whole, but to monitor median income developments *within* different parts of the income distribution, most notably that within the lowest income quintile, in order to identify to what extent this more vulnerable group is falling behind general income developments and not benefiting from economic growth. For comparative purposes, it would seem appropriate to also show the developments for the top income quintile.

An appropriate indicator, therefore, to monitor the developments in income for the different segments of the population could be the annual growth rate in the median equivalised disposable income for the lowest income quintile, together with that for the top income quintile. Moreover, these indicators of how the median incomes for the different extremes of the income distribution have changed over the last year would be particularly informative if they took into account underlying changes in inflation. Presenting the annual growth rate in median equivalised income for the lowest income quintile and for the top income quintile in real terms would show more clearly how incomes had developed for the less well-off and the comparatively rich, taking into account price developments.

Chart 10: Index of median income by quintile (2004 = 100) for selected Member States



Source: Own calculations based on Eurostat, EU-SILC.

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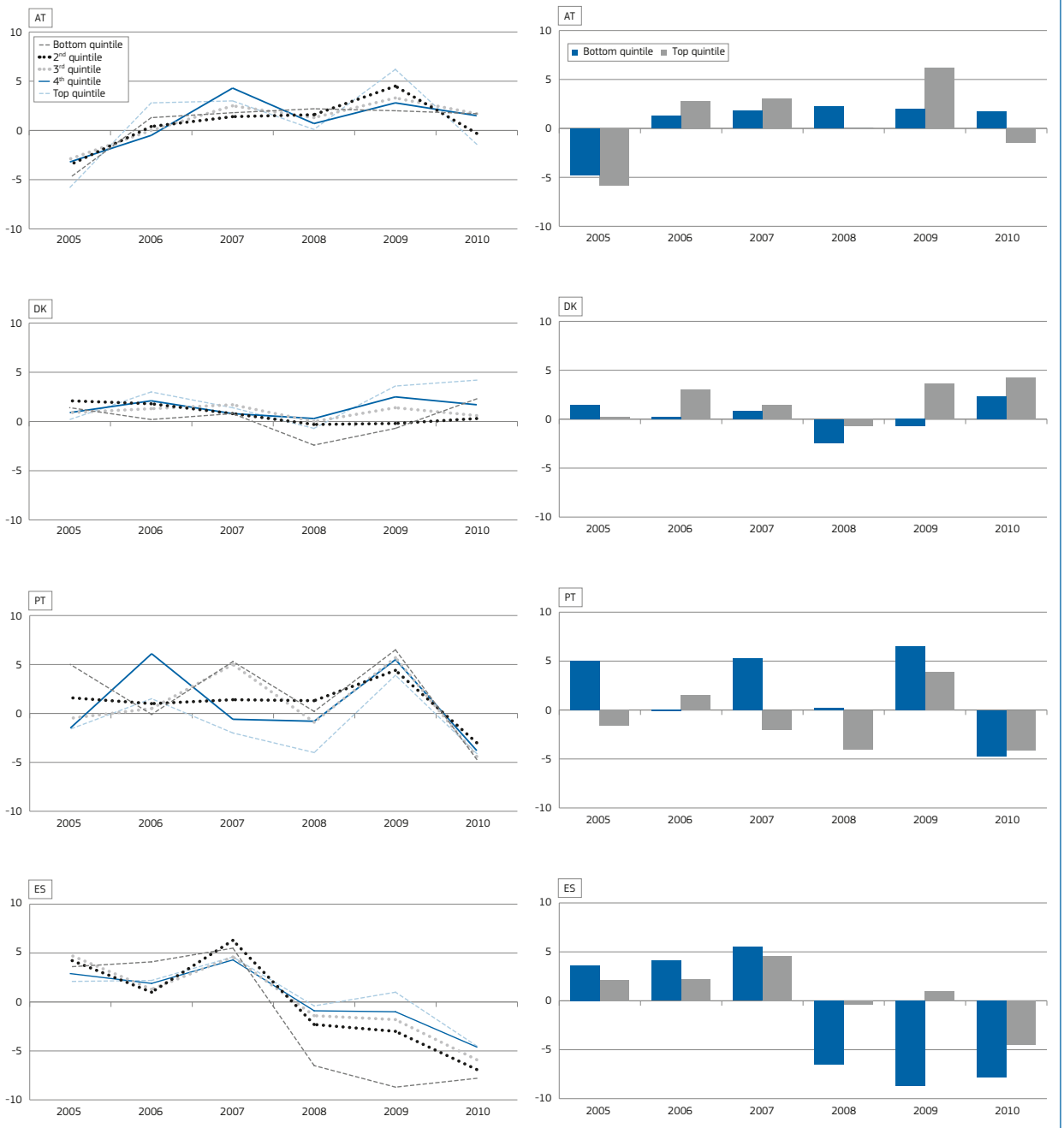
([22]) The 1st or lowest quintile corresponds to that with the lowest income and the 5th or highest quintile to the richest group.

Chart 11: Annual growth in median income across quintiles (adjusted for inflation) and the evolution in median income growth in the bottom and top quintiles (adjusted for inflation) for selected Member States (%)



Source: Own calculations based on Eurostat, EU-SILC.

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The following charts (Chart 11) provide examples of the annual growth rates (as percentages) in equivalised disposable income in real terms across quintiles for the specific Member States mentioned above, together with (on the right hand side) the annual real growth rates of the median income of the lowest and top income quintiles. These once again highlight the different patterns across countries in the evolution of real median income across quintiles, while the charts focusing on the time series for the lowest quintile illustrate how the situation of the poorer income group has developed, and clearly highlight the differing experiences across countries.

An equivalent monitoring of the annual growth rate in real median income for the highest income quintile helps complete the picture, allowing for a direct comparison with the evolution in income at the other end of the distribution. These charts, once again, highlight the broadly similar real income growth (other than in 2009) in the top and bottom quintiles in Austria, the stronger income growth evolution for the top quintile in Denmark, in contrast to the generally weaker evolution for the top quintile in Portugal (while the bottom quintile saw stronger income growth overall), and in Spain the much stronger deterioration in incomes for the lower income group immediately following the crisis, while the top quintile remained relatively unaffected until 2010.

3.2.2. Standard indicators of income inequality

Apart from focusing in detail on the developments in median income for different segments of the income distribution, several well-established overall measures of inequality in the income distribution exist (see Box 3). The choice of which indicator to use entails a judgement concerning which particular aspects of differences in the income distribution are considered the most important, for example the gap between the income going to the top quintile compared to that going to the bottom quintile (S80/S20), or that of the top 10% compared to that of the bottom 40% (Palma ratio), or the extent to which the distribution of income among individuals deviates from a perfectly equal distribution (Gini coefficient).

Box 3: Standard Indicators of Income Inequality

The most widely used indicators of income inequalities are the following:

- **Gini coefficient**: measures the extent to which the distribution of equivalised disposable income among individuals deviates from a perfectly equal distribution. A Gini index of zero represents perfect equality and 1 (or 100%), perfect inequality. Practically, it measures the area between the Lorenz curve (which plots the cumulative shares of total income against the cumulative share of the population) and a line defined by hypothetical perfect equality in income distribution. It is relatively insensitive to the tails of the income distribution, being more sensitive to changes around the mode, making it relatively robust to problems associated with reliability of extreme values.
- **S80/S20 ratio** (or the income quintile share ratio): the ratio of total income received by the 20% of the population with the highest income (the top quintile) to that received by the 20% of the population with the lowest income (the bottom quintile). If S80/S20 is equal to x, it implies that the income of the richest 20% of the population is higher by a factor of x than the income of the poorest 20%. The ratio is an appealing measure of disparity as it is both easily understandable and represents an effective way to measure the distance between the extremes of a distribution. However, by its very nature, it ignores information on income and income dispersion between the 20th and the 80th percentiles, which constitutes the majority of the population under consideration. The presence of extreme income values, belonging to either the upper or the lower tail of the income distribution, could produce a high value of the ratio, even if the interquantile range from the 20th to 80th percentile is fairly equitable.
- **Atkinson index**: An inequality index that allows for varying sensitivity to inequalities in different parts of the income distribution; it incorporates a sensitivity parameter (ε), which can range from 0 (meaning indifference about the nature of the income distribution), to infinity (concern only with the income position of the very lowest income group). In practice, (ε) values of 0.5, 1, 1.5, or 2 are used. The Atkinson index is measured as follows:

$$A_\varepsilon = 1 - \frac{1}{n}\sum_{i=1}^{n}\left(\frac{y_i^{1-\varepsilon}}{\mu}\right)^{\frac{1}{1-\varepsilon}}$$

  where y_i defines the income level of an individual/household i, μ is the mean income, n is the number of individuals/households and ε is a parameter of sensitiveness to transfers at different levels of the distribution. ε can also be understood as a measure of the degree of 'aversion to inequality'.
- **Palma ratio (top 10%/bottom 40%)**: The Palma ratio (see Palma (2011) and Cobham and Sumner (2013)) is the ratio of the top 10% of the population's share of income, divided by the poorest 40% of the population's share of income. It is based on the observation that, in countries at quite different income levels, the five 'middle' deciles (5 to 9) tend to capture around 50% of national income. However, the other half of national income is shared between the richest 10% and the poorest 40%, but the share held by each varies considerably across countries. Intuitively easier to understand than Gini it may be a more relevant measure of inequality for poverty reduction policy. For a given, high Palma value, it is clear what needs to change: to narrow the gap, by raising the share of national income of the poorest 40% and/or by reducing the share of the top 10%.
- **Percentile ratio**: The ratio of the income received by the pth centile to another centile, for example P90/P10 or P90/P50.

The Gini coefficient is the one most widely used to date in the inequality literature. The Atkinson index is one of the most popular welfare based measures of inequality, which allows for greater weight to be placed on changes in a given portion of the income distribution. For example, the Atkinson index can be made sensitive to changes at the lower end of the income distribution, which is the end that usually arouses more concern. The relative advantage of the quintile and percentile ratios is that they provide an easily understandable measure of inequality, and allow for seeing how relative differences within the income distribution develop. Indicators that consider the extremes of the distribution, like S80/S20 or the Palma ratio, are more advantageous if changes in the middle of the distribution are of less concern.

3.2.3. Recent trends in inequality

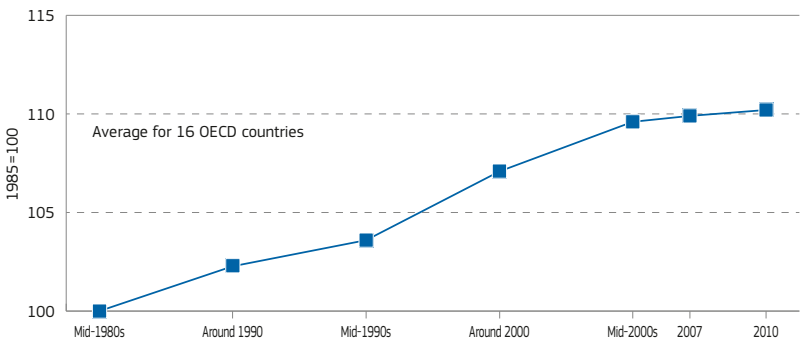
Almost all available indicators suggest that income inequalities have been rising in the industrialised nations since 1970 (for example see Jenkins and Micklewright (2007)) but with considerable variations between countries in terms of both the patterns and timing of changes. Research, such as that by the Growing INequalities' Impacts (GINI) project ([23]), confirms a general long-term rising trend in income inequalities, albeit with important country variations and occasional trend reversals.

Developments in income inequality were the subject of a comprehensive publication by the OECD (2011a), which highlighted a general trend of widening income disparities. While in the mid-1980s the Gini coefficient for the working age population was equal to around 0.29 in OECD countries, it rose to 0.32 in the late 2000s. Particularly striking was the increase in income inequality of traditionally relatively more equal societies, such as the Nordic countries and Germany. The causes of this rising income inequality have attracted much political and scholarly debate, with the OECD (2011a) report providing a wealth of explanatory mechanisms, ranging from rising wage inequality to different tax and benefits policies and household structures.

The principal reasons given for the overall trend include a polarisation in market-derived incomes (a growing difference between low and very high earnings, the increasing importance of unevenly distributed capital income, and job-rich versus job-poor households) as well as changes in family structure (smaller households), and the fact that tax and benefit systems have become less redistributive in many countries since the mid-1990s.

The single most important driver has been greater inequality in wages and salaries, which reflects the fact that earnings account for about three quarters of total household incomes among the working-age population in most OECD countries. The earnings of the richest 10% of employees have risen rapidly in most cases, with top earners moving away from the middle earners faster than the lowest earners, thereby extending the gap between the top and the increasingly squeezed middle-class.

Chart 12: Trends in the OECD average Gini coefficient of income inequality (mid-1980's - 2010)



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Source: OECD (2013).

Greater earnings gains for workers with higher skills (driven by technological progress), the increased prevalence of atypical labour contracts (especially part-time work), more low-paid people in work and the declining coverage of collective-bargaining arrangements in many countries are all seen to have contributed to a widening distribution of wages.

Other factors which have contributed to rising inequality, although much less so than the changes in the labour market, include changing family structures (which make household incomes more diverse and reduce economies of scale) and changing marriage behaviours, the effects of cuts to benefit levels and the tightening of eligibility rules to contain expenditures for social protection, and the failure of transfers to the lowest income groups to keep pace with earnings growth.

A newly released OECD report (OECD 2013) highlights the development of income inequality during the initial part of the crisis, covering the period 2007–10. It shows that market income (i.e. work + capital income) decreased considerably during 2007–10, but that disposable income fell less strongly, due to an offsetting effect stemming from an increase in social transfers and/or lower direct taxes and social security contributions. However, the loss in income was not evenly shared among income groups, with the result that income inequality (as measured by the Gini coefficient) continued to edge upwards during the crisis (Chart 12).

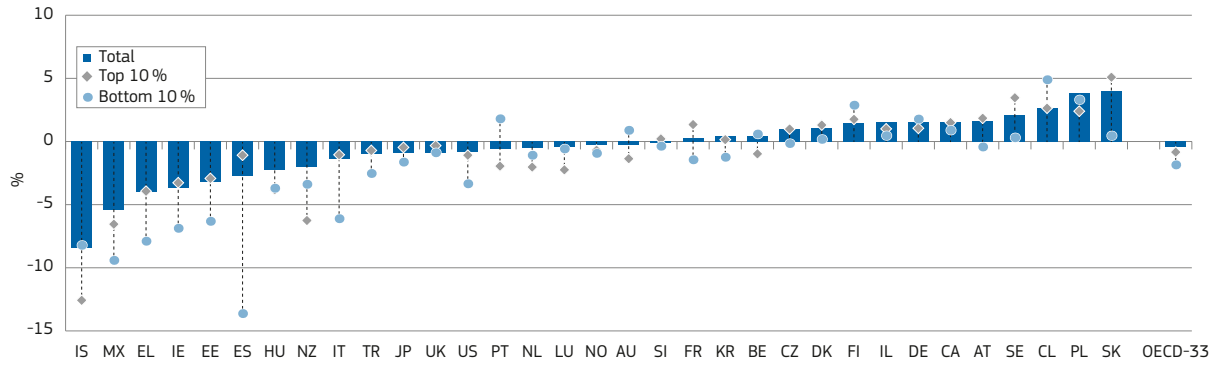
Focusing on the top and bottom 10% of the population in 2007 and 2010 shows that lower income households either lost more from income falls, or benefited less from the often sluggish recovery (Chart 13). Across the OECD countries, real household disposable income stagnated. The average income of the top 10% in 2010 was similar to that in 2007 while the income of the bottom 10% in 2010 was lower than that in 2007 by 2% per year. Among EU Member States, particularly pronounced differences in household income declines were recorded in Spain and Italy, and to a somewhat lesser extent in Greece, Ireland and Estonia.

In general, but particularly in some of the countries where the crisis hit hardest, poorer households either lost more income during the recession or benefited less from recovery. The OECD warns that the data only describes the situation up to 2010, since which time governments have shifted the focus towards consolidation. Given the persistence of sluggish growth, the job crisis and the adoption of austerity measures, the OECD raises concerns about the ability of the tax-benefit systems to keep income inequality and poverty in check.

However, analysis of the income quintile ratio (S80/S20) in the period for which high quality harmonised data on household income is available from EU-SILC, namely 2006 to 2011 (reflecting the income of 2005 to 2010) shows a slightly different and more varied picture concerning recent developments in inequality across EU Member States. The group of nine countries presented on Chart 14 experienced a trend towards greater equality of the income distribution, despite some volatility in a few cases. In Hungary, the ratio of the total income received by the 20% of the population with the highest income to that received by the 20% of the population with the lowest income declined by nearly 30%. The reduction in the income ratio was also strong in Latvia (16.5%) and in Portugal (14.9%).

([23]) http://www.gini-research.org/articles/home

Chart 13: Annual percentage changes in household disposable income between 2007 and 2010, by income group



Source: OECD (2013).

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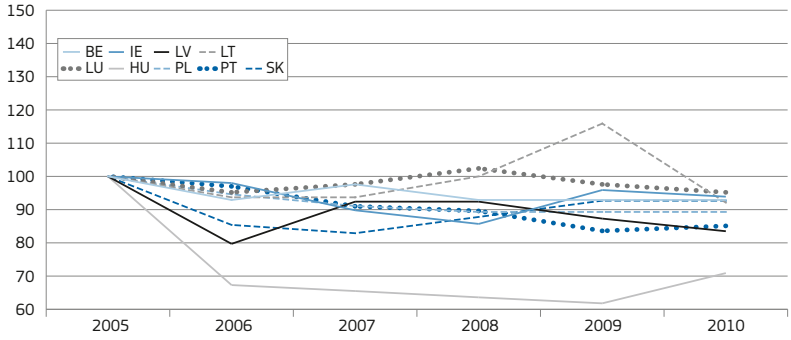
That development differs markedly from the situation observed in the Czech Republic, Cyprus, Malta, the Netherlands, Austria, Finland, and the UK (see Chart 15), where there was little change in the income ratio over the period, with the 2010 values all close to the ones recorded in 2005.

There is, moreover, a group of countries where income, as measured through EU-SILC, became markedly less equally distributed between the top 20% and bottom 20% of the population (Chart 16). The biggest relative rise in the S80/S20 inequality ratio was in Denmark, Spain and Bulgaria, all with rises of the order of 30%. Moreover, Bulgaria experienced a notable pre-crisis surge in the inequality ratio, which peaked in 2006, before gradually adjusting downwards again over the following years, a pattern also observed in Romania and in Germany. For both Denmark and Spain, the rise in inequality was much more evident following the onset of the crisis, while for France the trend has been one of a more gradual continuous rise across the whole period.

Chart 17 covers countries (Estonia, Greece, Italy, Slovenia and Sweden) where the volatility of the income quintile ratio does not enable straightforward conclusions to be drawn about recent trends. In these countries, inequality dropped at some stage between 2005 and 2010 (in 2006 in Sweden, in 2007 in Estonia and Italy, in 2008 in Slovenia and in 2009 in Greece) but in all of them the decline in inequality was subsequently followed by an upward adjustment, resulting in values in 2010 being almost the same as in 2005.

Chart 14: Index of S80/S20 ratio 2005-2010 (2000=100) ([1]): Countries where inequality diminished and the income quintile ratio fell



Source: Calculations by Commission services based on Eurostat data from EU-SILC.

([1]) The years in the Chart refer to the year in which the income was achieved. In Eurostat tables, the income of e.g. 2005 appears among the results from 2006, i.e. the year of the EU-SILC data collection.

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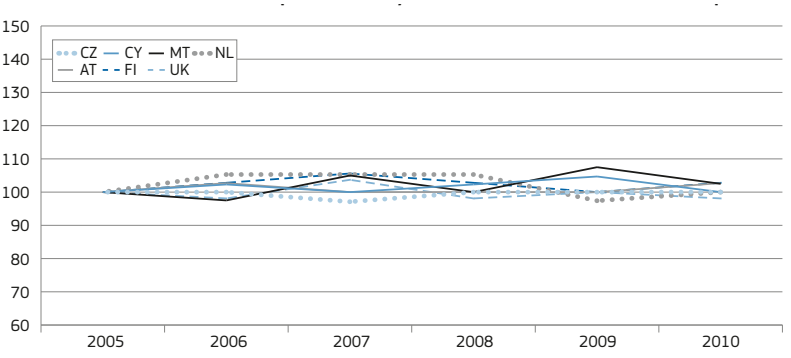
Chart 15: Index of S80/S20 ratio 2005-2010 (2000=100): Countries where the income quintile ratio stayed within a narrow band around the initial point



Source: Calculations by Commission services based on Eurostat data from EU-SILC.

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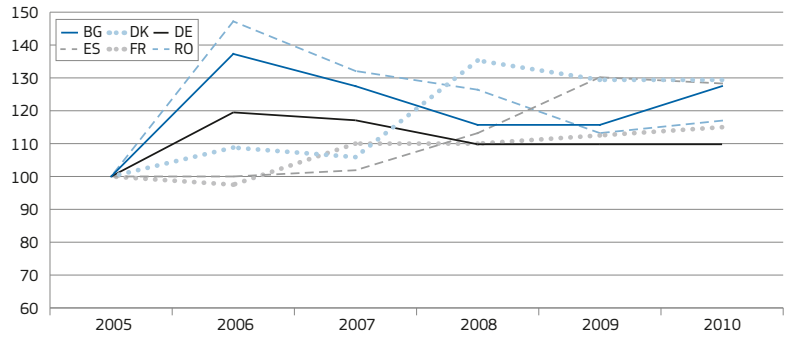
Chart 16: Index of S80/S20 ratio 2005-2010 (2000=100): Countries where inequality rose and the income quintile ratio went up



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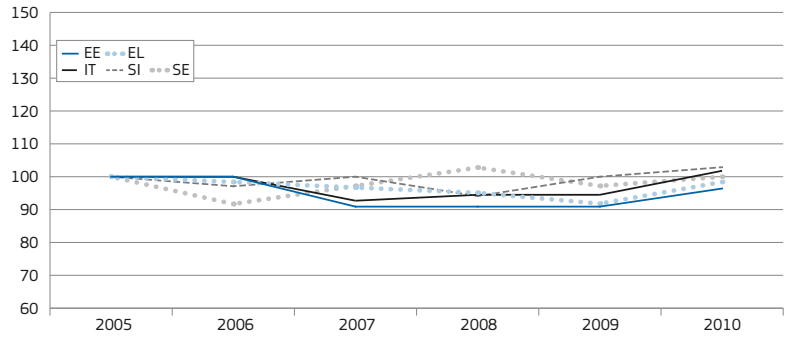
Source: Calculations by Commission services based on Eurostat data from EU-SILC.

Chart 17: Index of S80/S20 ratio 2005-2010 (2000=100): Countries where the income quintile ratio dropped substantially at some point but moved back to the initial level



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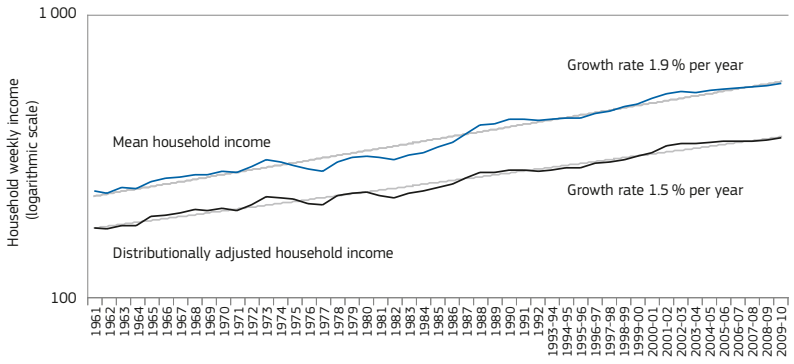
Source: Calculations by Commission services based on Eurostat data from EU-SILC.

Chart 18: Inequality adjusted household income growth in the UK, 1961–2010



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Source: Adapted from Atkinson (2013). *Note:* The upper series shows the mean household income in real terms, expressed in 2011/12 prices, measured on a logarithmic scale, so that constant proportionate growth takes the form of a straight line. The second series shows the mean income multiplied by a distributional adjustment equal to 1 minus the Gini coefficient. The data is from the Institute for Fiscal Studies website ([1]).

([1]) Available at http://www.ifs.org.uk/fiscalFacts/povertyStats.

3.2.4. Distributionally-sensitive indices of national income

There are several ways of adjusting data on GDP per capita, or any other income variable, to take account of distributional variations in income across the population (see Box 4). Such 'distributionally sensitive' measures of national income/income growth use an index of income equality to produce adjusted time series of growth, and this section reviews the extent to which these can modify growth outcomes.

Atkinson (2013) provides an illustration of the potential distributional effect using the long run historical experience of the United Kingdom (Chart 18). This shows the impact of the distributional adjustment applied to mean household income, using the Gini coefficient (i.e. the mean income multiplied by a distributional adjustment equal to 1 minus the Gini). When account is taken of rising inequality, the annual growth rate of household income over the period 1961–2010 falls from 1.9% to 1.5% — a significant difference. The distributional adjustment also changes the relative performance in different periods. Whereas mean income grew at 3.2% per annum in the 1980s, compared with 2.1% in the 1990s, the distributionally-adjusted growth rates are virtually the same (2.1% in the 1980s and 2.0% in the 1990s). In effect, the worsening of the income distribution in the 1980s effectively wiped out the gain from the higher growth rate.

Sen has shown how weights based on a person's rank in the distribution (so that a person who is F per cent of the way from the bottom receives a weight of 2(100-F)/100), imply that the distributional impact should be measured by the Gini coefficient. The implications of applying such a distributional adjustment are shown in Chart 19, which shows the change in the distributional adjustment (1-Gini) between 2005 and 2010.

In this chart, a positive change means that income inequality has fallen, so that the distributionally adjusted income has risen, and vice-versa. For example, the Gini coefficient in Portugal was 0.377 in 2005 and 0.342 in 2010, producing the 5.6% ([24]) improvement in

([24]) ((1-0.342)-(1-0.377))/(1-0.377) as a percentage.

the distributional adjustment shown in the chart. Distinct downward shifts in the adjustment factor can be seen in the cases of Bulgaria, Denmark, France, Germany (although in this case it reflects a sharp jump in the Gini in 2006 which declined slightly thereafter) and Spain, reflecting rises in income inequality. In contrast, the distributional adjustment factor rose by 5% or more in Hungary, Latvia and Portugal and, to a lesser extent (over 2%), in Belgium, Ireland, Lithuania, Poland and Slovakia, due to reductions in inequality over the period.

Looking at how the above inequality adjustment has impacted on trends in an overall aggregate measure of national income, namely in terms of real GDP per capita developments between 2005 and 2010 (Chart 20), it is clear that the adjustment can have a substantial impact on growth figures in a considerable number of countries. For example, positive developments in reducing inequality over this period in some countries resulted in the inequality-adjusted GDP per capita growth figure being around 4 percentage points higher than the unadjusted figures in Lithuania, Poland, and Slovakia, and around 6 percentage points or more higher in Hungary, Latvia and Portugal. In Ireland the reduction in inequality has helped to dampen the extent of the fall in GDP per capita by around 3 percentage points. In contrast, worsening inequality has led to an even stronger negative adjusted growth figure in Denmark and Spain, and in France to the growth figure falling from close to static growth to a decline of over 4%. Similarly, strong raw growth figures in Bulgaria and Germany are dampened considerably when the effects of rising inequality are taken into account through the adjusted figures. In only a few cases (Cyprus, the Czech Republic, Finland, Italy, Romania and Slovenia) did the adjustment for changes in inequality have little or no effect.

Focusing on how the distributional adjustment impacts on the time series for an alternative income measure, namely real annual growth in mean equivalised income ([25]) (Chart 21), it is again clear that the adjustment can have substantial effects. For example, in Denmark and Spain, two of the countries identified above as having rising inequality over the period 2006 to 2010, it is clear that

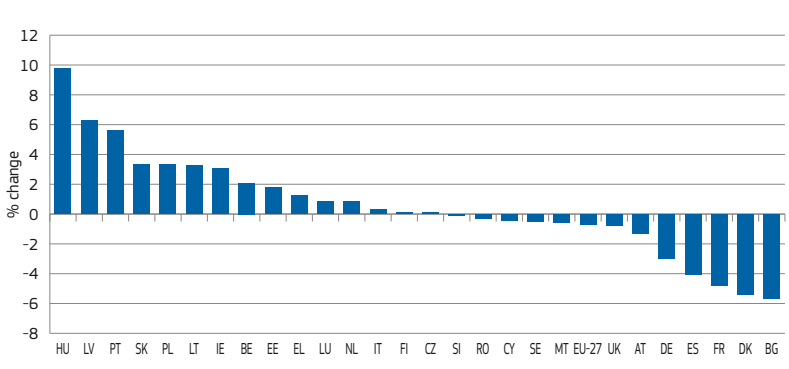
Box 4: Distributionally-sensitive measures of national income

The most commonly used distributionally-sensitive measures of national income are those developed by Sen (1976, 1979) and Atkinson (1970). Both approaches are based on the product of real mean income and an index of income equality, with the mean income adjusted downwards by a factor that depends on the extent of inequality. Recently, Jenkins has proposed an adjustment to the Atkinson measure which helps identify who gains and who loses from growth. These measures are described below:

- **Sen index** of 'real national income': the appropriate adjustment factor is (1-Gini), i.e. one minus the Gini coefficient. Since a higher inequality implies a lower (1-Gini), this penalises regions or countries with higher inequalities, i.e. mean income is adjusted downwards if inequality measured by Gini is high. Shaikh and Ragab (2008) show that inequality-discounted GDP per capita (i.e. adjusted by the factor 1-Gini) can be interpreted as a measure of the relative per capita income of the first seventy per cent of a nation's population, and as such is a measure of the income of the 'vast majority' of the population. This provides a simple and intuitive meaning for (1-Gini), in that comparing countries in terms of their inequality-adjusted average per capita incomes turns out to be equivalent to comparing them in terms of the real per capita incomes of the first seventy per cent of the population.
- **Atkinson index**: the equality index = 1 - A(ε) (i.e. one minus the Atkinson inequality index A(ε), where ε ≥ 0 is the inequality-aversion parameter). Larger values mean that greater weight in A(ε) is given to income differences towards the bottom of the income distribution relative to those in the middle or top; ε = 0 is the case in which no distributional adjustment is made.
- **Jenkins** (1997) proposes an increasing transformation of the Atkinson measure, showing that it is additively-decomposable by population subgroup. The advantage is that one can then write the income measure for the population as a whole as a size-weighted sum of the income measures for each population subgroup, thereby having a consistent accounting framework for summarising who gains and who loses.

As Jenkins (2012) points out, transparency and understandability suggest using measures that incorporate inequality indices that are already commonly used in official statistics. This would favour the use of the Gini-based measure of Sen, which uses an indicator of inequality which is well-established and widely available, an added advantage being that the Gini coefficient is less sensitive than many other inequality indices to outlier values.

Chart 19: Change in the distributional adjustment (1-Gini) from 2005 to 2010



Source: Eurostat, EU-SILC.

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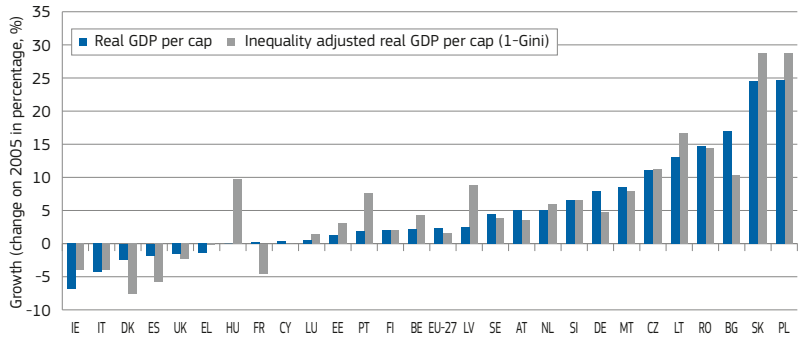
([25]) The reference period covered here is generally 2006 to 2010 (for Romania, 2007 to 2010).

Chart 20: Change in real GDP per capita and inequality adjusted real GDP per capita between 2005 and 2010



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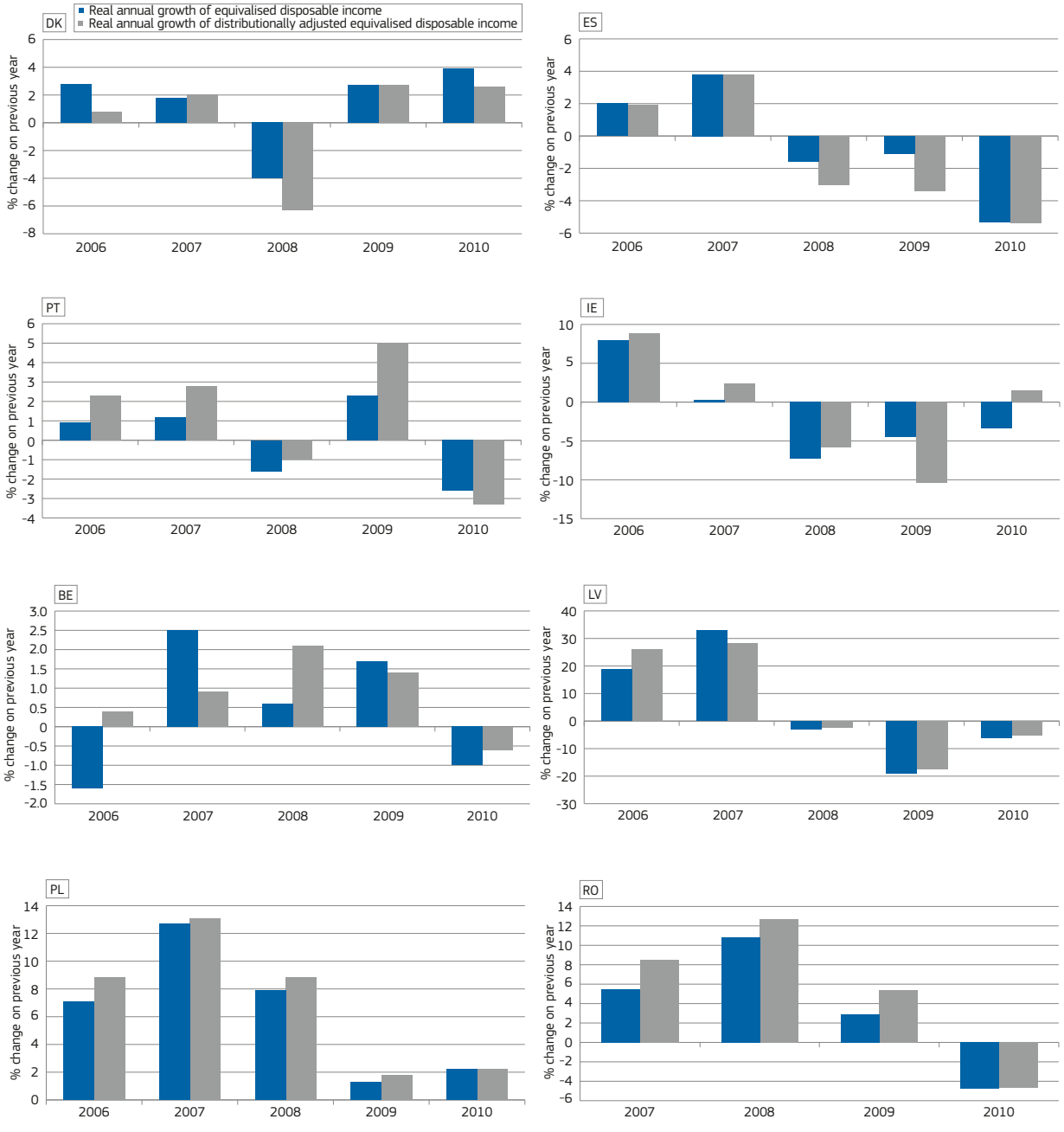
Source: Own calculations based on Eurostat National Accounts and EU-SILC indicators.

the inequality adjusted growth in income has almost consistently been below the growth in mean income across the whole period. However, for both, the largest disparity in the adjusted and unadjusted real income growth occurred in the initial phase of the crisis, with rising inequality increasing the drop in incomes still further.

In other countries the results from making the distributional adjustment vary. In Portugal the adjusted real income growth has almost always been more positive in recent years, reflecting the almost continuous decline in inequality.

Chart 21: Annual real growth rate of distributionally adjusted mean equivalised disposable income (Sen index) and mean equivalised disposable income for selected Member States, 2006 to 2010



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Source: Own calculations using Eurostat, EU-SILC and National Accounts (HICP) data.

Note: The scale of the y-axis varies across the sub-charts.

The situation has been rather similar in Ireland, apart from the year 2009 when a sharp jump in inequality led to a more pronounced downwards adjustment, although the situation was turned around the following year.

In several countries, including Latvia, Poland and Romania, the annual growth patterns since 2006 are very similar overall for both the adjusted and unadjusted series, but indicate a general and continuous slight improvement in income distribution. Finally, in a few countries such as Belgium, the impact of the distributional adjustment is more volatile, with adjusted incomes trailing in some years and being ahead in others. Nevertheless that gap between the adjusted and unadjusted figures often appears substantial.

Such measures of the impact of inequality in the income distribution on overall income developments provide an alternative way of monitoring the inclusiveness of growth to those highlighted earlier (e.g. median income and median income developments for the lowest and highest quintiles).

Of course timeliness is an issue with regard to complementing GDP figures by distributionally sensitive estimates of real income growth, which generally require estimates of inequality from household surveys. Here efforts are currently underway to make data more quickly available from the EU Statistics on Income and Living Conditions. At the same time, greater use of tax-benefit microsimulation models is being explored in order to 'nowcast' the contemporary income distribution (i.e. use past distributional data and link it to more recent economic and labour market developments and tax-benefit policy changes to forecast the current situation) before the survey-based estimates became available — just as modelling and imputation are employed for deriving timely GDP estimates (see for example Navicke, Rastrigina and Sutherland (2013)).

3.3. Measures of wealth distribution

One complementary area to examine is the inequality in the distribution of wealth. Indeed, the distribution of income only provides a limited snapshot of the true inequality situation in a society, while wealth, which reflects the ability to command resources such as personal savings and assets that have been accumulated over time, ensures the sustainability of material living conditions over the long term. Moreover, the relationship of wealth to income is not straightforward: high levels of income inequality do not necessarily go together with high levels of wealth inequality, and income-poor households are not always wealth-poor.

The following section reports on the results from the first wave of the European Central Bank's wealth survey (see Box 5) and examines the distribution of wealth both across and within euro area countries.

3.3.1. Variation in wealth across euro area countries

According to the ECB HFCS, household net wealth varies substantially across euro area countries. The median ranges from €51 400 (in Germany) to €397 800 (in Luxembourg), while the mean ranges from €79 700 (in Slovakia) to €710 100 (in Luxembourg). The marked variation is the result of many factors, including income, household structure, home ownership, house prices, the provision of public housing, expected public pensions, inter-generational transfers/inheritances, taxation of housing and cultural aspects.

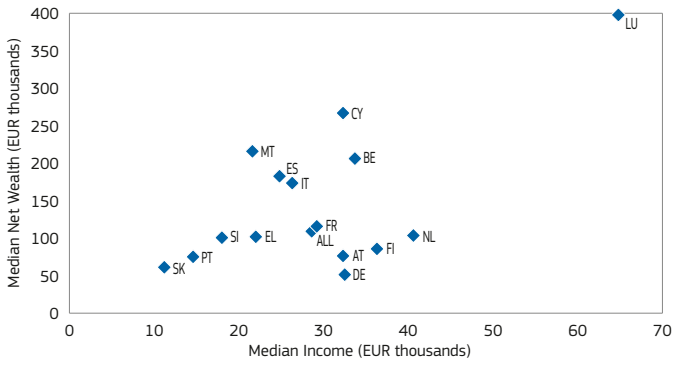
Box 5: European Central Bank's Household Finance and Consumption Survey (HFCS)

The European Central Bank (ECB) has recently published the results of the first wave of the Household Finance and Consumption Survey (HFCS). The HFCS includes data from over 62 000 households in 15 euro area countries, collected (predominantly) in 2010. It provides detailed household-level data on wealth as well as data on various aspects of household balance sheets and related economic and demographic variables, including income, voluntary pensions, employment and measures of consumption. Nevertheless, it must be noted that the ability to do completely robust cross-country comparisons using HFCS data is affected by several data issues, which include the following:

- The lack of information on access to 'collective' wealth such as publicly provided healthcare, social security and pension provisions.
- Incomplete coverage of all pension assets ([1]), especially of statutory pension systems.
- The different fieldwork periods in different countries, which can be especially problematic in periods of economic turmoil.
- Values of property are based on respondents' own evaluations.
- Response rates are low in certain countries (of the order of 20% or below in Belgium, Germany and Luxembourg).

([1]) The definitions of net wealth and financial assets adopted in the ECB (2013a) report include voluntary private pensions and whole life insurance, but do not include public and occupational pensions.

Chart 22: Median net household wealth and household income across euro area countries



Source: European Central Bank, Household Finance and Consumption Survey.

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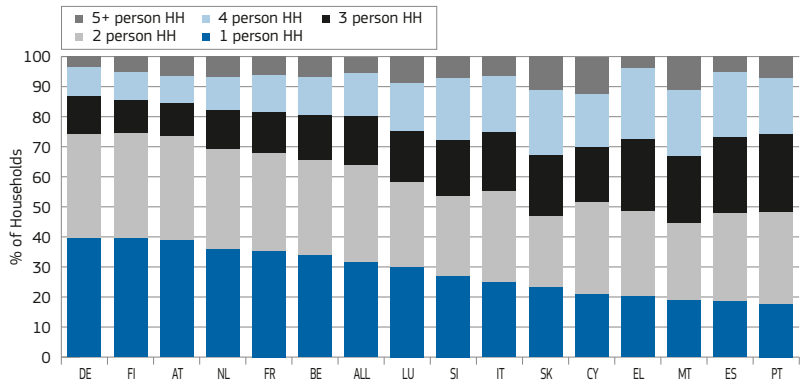
Chart 23: Composition of households by household size



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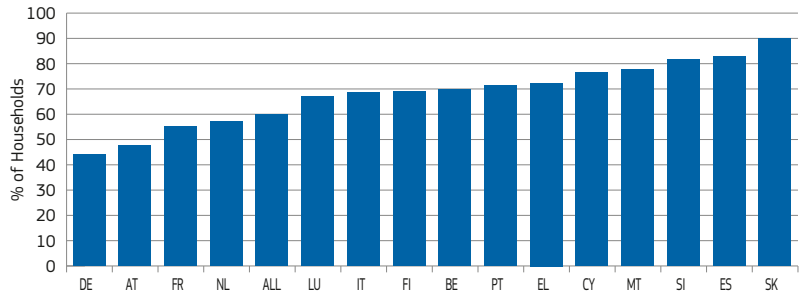
Source: European Central Bank, Household Finance and Consumption Survey.

Chart 24: Share of households which are owner-occupiers



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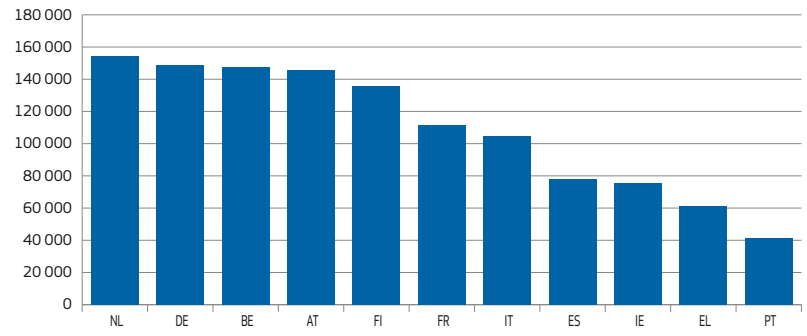
Source: European Central Bank, Household Finance and Consumption Survey.

Chart 25: Total capital stock per capita (euro)



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Source: Reproduced from De Grauwe and Ji (2013).

Chart 22 shows median net wealth plotted against median income. The chart gives the impression that, in general, there is a positive relationship between median household income and median household net wealth for most countries, with Austria, Germany, Finland and the Netherlands being clear exceptions (high income but low net wealth) together with Cyprus and Malta (net wealth much higher than expected relative to income levels). Note that Austria and Germany are both near the top of the distribution in terms of income. However, without Luxembourg (clearly an outlier), there would be no strong link between median household wealth and income. This at first sight is unexpected as a large part of wealth is generally built up though the accumulation of income. Particularly surprising is data suggesting that Austria and Germany are among the countries with the lowest household wealth, while GDP per capita and median incomes are among the highest.

A few key factors explain much of the variation in private net wealth across euro area countries:

- First, the underlying distribution in the size and composition of households, which varies considerably across countries, influences the wealth of the 'typical' household. There are far more single households in the Northern than in the Southern euro area members (Chart 23). In Austria, Finland and Germany, around 40% of households are single households, meaning there is less opportunity to 'pool' assets in households in these countries. In Southern Member States single households only account for some 20% of households. The very different household structures across countries clearly influence some of the typical measures of the distribution of household wealth. Another significant related issue is that home-ownership rates for single-person households are much lower.

- Second, an examination of the components of household net wealth shows that most of the variation across countries is due to varying traditions involving home ownership, given that property is clearly the biggest factor in household net wealth. Germany and Austria have the lowest home ownership rates in the euro area (Chart 24), and while an 'average (or typical) household' in Germany and Austria is a 'renter' household, in the other euro area countries it is a 'homeowner' household.

In effect, the HFCS figures on the private wealth of households only offer a limited insight into the living standard or true wealth of a society, as they do not reflect households' access to 'collective' wealth (such as publicly provided healthcare, social security and pension provisions). For example, if part of the 'wealth' is collectively owned in the welfare state this makes it less necessary for individuals to save to cover themselves against risks. In Northern countries especially, part of citizens' wealth is collectively owned — good healthcare infrastructure, and reliable social security, are assets that citizens can rely on. Moreover, if saving for old age and major health expenditures are largely handled through publicly organised social security systems, lower income groups have less reason to build up wealth, whereas if the state does not arrange this, then individuals are forced to do so from their private means. Hence comparative

ratios of net private wealth across countries alone can give a highly distorted picture regarding the wealth of societies.

This is very much in line with the findings of De Grauwe and Ji (2013), who use Eurostat and OECD data to calculate total capital stock per capita, which includes government and corporate sector wealth, to provide a more comprehensive measure of the wealth of a nation. On this basis, Germany is second highest in the euro area, and the total capital stock per capita of Northern countries is more than twice as high as Southern countries such as Greece and Portugal (Chart 25).

In this context, Maestri *et al.* (2013) find that social expenditure is an important driver of the cross-country variation in wealth inequality, with low spending on housing policies and old age pushing poorer households to accumulate some savings. In countries where poorer households are supported by housing policies and subsidies, there is much less incentive to accumulate (housing) wealth.

3.3.2. Inequality in wealth within euro area countries

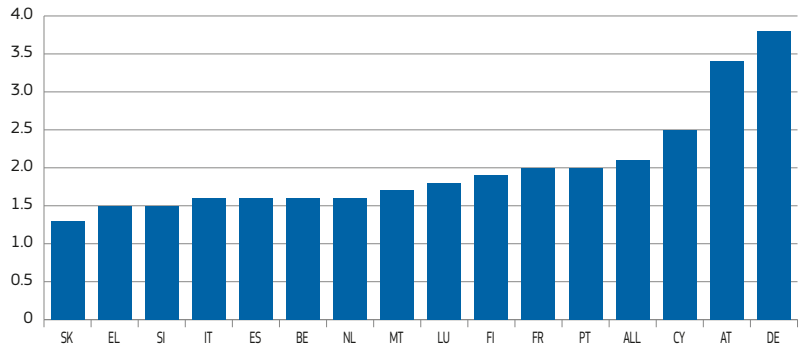
Comparison of the median and mean net wealth figures gives an indication of the distribution of wealth within each country. The larger the ratio of the mean to the median, the greater the inequality in the distribution of wealth (Chart 26). Clearly Austria and Germany stand out as countries with by far the highest inequality in wealth (both with ratios of around 3.5 or more, while in most other countries it is below 2). This indicates that household wealth in Austria and Germany ([26]) is more concentrated in the richest households than in the other euro area countries.

The distribution of mean net wealth by quintiles (Chart 27) for Austria and Germany highlights the strongly skewed nature of the distribution towards the upper quintiles, while net wealth among the two bottom quintiles is slightly negative (bottom quintile) or not much above zero (second quintile). This compares with a much less skewed distribution in countries such as Slovenia and Slovakia, where wealth is relatively more sizable among the lower quintiles.

Using a range of sources, Maestri *et al.* (2013) examine the evolution of wealth inequality over time and report that increased polarisation took place during the 1980s and 1990s in most countries. They find that the evolution of capital, financial assets, debt, their fiscal treatment and the 'superstar' phenomenon all help to explain trends over time. The evolution of capital compared to labour and their respective returns, together with the weakening of taxation on capital, contributed to increased wealth inequality, with the 'superstar' phenomenon contributing to the increase in wealth shares at the top.

([26]) The relatively low level of median wealth in Germany is not a new finding. In the 2008 OECD report 'Growing Unequal' a similar low net worth for the median household is also reported for Germany.

Chart 26: Ratio of mean wealth to median wealth in euro area countries



Source: European Central Bank, Eurosystem Household Finance and Consumption Survey.

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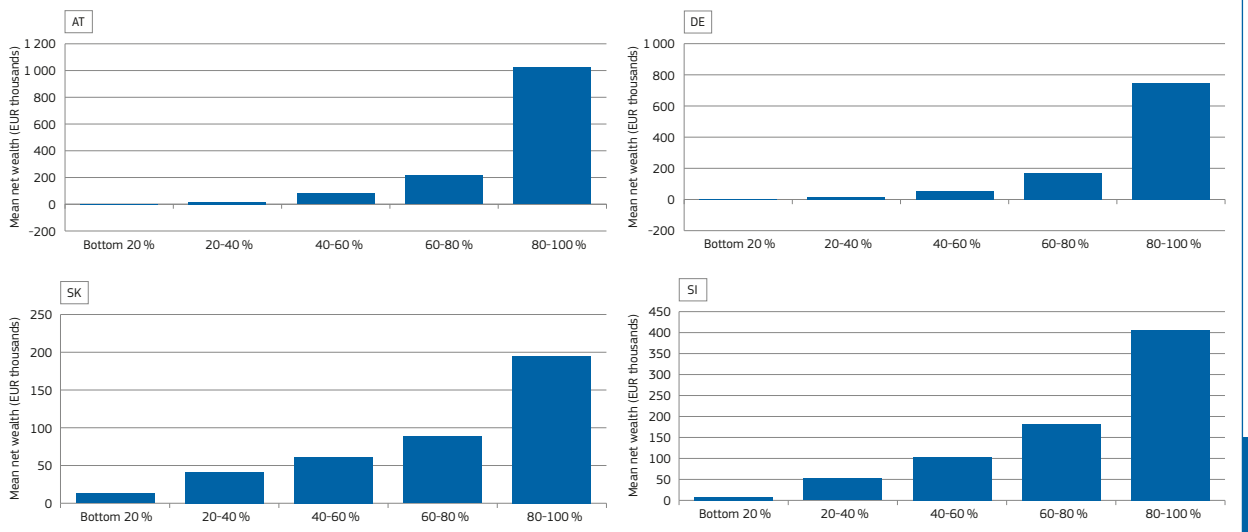
Chart 27: Mean net wealth by wealth quintiles



Source: European Central Bank, Household Finance and Consumption survey.
Note: The scale of the y-axis varies across the sub-charts.

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4. How do distributional measures relate to quality of life outcomes and the broader sustainability agenda?

There has been growing political awareness and concern about rising inequality, especially given its apparent negative effect on quality of life and other social outcomes (see for example Wilkinson and Pickett (2009)). Critics, such as Stiglitz have argued that inequality is not only socially divisive but also economically disruptive, for example via its impact on social capital. This section considers the evidence supporting this view as presented in recent studies and literature.

There are a number of reasons why a high level of inequality, or rapidly increasing inequality, might be detrimental, both socially and economically. Increased inequality can cause rifts in society that undermine cohesion and trust and even lead to civil unrest. From an economic perspective, it might lead to the waste of human capital and economic potential.

Ideally this chapter would address all aspects of the gap between rich and poor, going beyond income and wealth and relate also to inequalities in health, life satisfaction and quality of life. Various aspects associated with low socio-economic status — such as low income, greater risk of unemployment, poor health, exposure to pollution, low-quality nutrition and high stress — risk having a cumulative and self-reinforcing effect that may be obvious to those who witness it but which is not always fully recognised in policies ([27]).

Despite these limitations, there is a growing awareness that less inequality is not just a social goal but can actually foster growth through the better use of human capital by creating better opportunities among the more disadvantaged, with fewer negative spill-over effects of inequality on society at large (Asplund (2004); Korpi (1985, 2005)).

4.1. Inequality and links to measures of quality of life and other social outcomes

The Communication 'GDP and Beyond' (European Commission, 2009) called for GDP to be complemented by indicators of quality of life and well-being and for better reporting on distribution and inequality. In the same vein, the Stiglitz report made a series of recommendations:

- Quality of life depends on people's objective conditions and capabilities (*Recommendation 6*).
- Quality of life indicators in all the dimensions (...) should assess inequalities in a comprehensive way (*Recommendation 7*).
- Surveys should be designed to assess the links between the various quality of life domains (*Recommendation 8*).
- Measures of both objective and subjective well-being provide key information about people's quality of life (*Recommendation 10*).

Seeking to accommodate these recommendations, the European Statistical System has committed itself to using the European Union statistics on income and living conditions (EU-SILC) instrument as the core tool for measuring quality of life, including the incorporation of further topics and subjective questions. Moreover, it will complement the coverage of the different dimensions of quality of life (such as health, education and personal safety) using additional data sources (Eurostat, 2012)) ([28]). Among the various currently available data sources on quality of life and well-being, Eurofound's European Quality of Life Survey and the Eurobarometer surveys (notably the long term data series on life satisfaction) can be mentioned. Furthermore, various well-being data sets exist worldwide. Together these sources are enabling researchers to draw international comparisons and study well-being in a variety of cultural and socio-economic contexts.

Traditionally, economists have used the term 'utility' to measure well-being, with its maximisation being seen as the primary pursuit of human activity. Today few economists would fully subscribe to that, with most recognising that it is difficult to measure, and particularly difficult to compare either over time or between people (Van Praag B., Ferrer-i-Carbonell, A. (2009)).

In practice, consumer preferences for goods and services as expressed through market exchanges were seen as the only measurable manifestations of the search for human satisfaction. Nevertheless, in order to analyse human welfare beyond consumption and material conditions, and to bring it closer to everyday concepts of happiness and personal prosperity, economists have begun to make increasing use of 'subjective well-being' as a criteria in their empirical work in this area (Box 6).

According to Rayo, L. and Becker, G. S. 2007, 'The principal motivating factor in our lives is the pursuit of happiness. In most cultures, when seeking this end, individuals place a high priority on income, and spend much of their waking time procuring this intermediate goal. The connection between income and happiness is by no means trivial, however.' For example, personality and genes show a strong influence on one's subjective well-being. Only 20% to 50% of subjective well-being can be explained by external factors such as one's environment and the resources at one's disposal and therefore could be a matter for policy. The longer the period during which subjective well-being is measured and the longer the period for possible adaptation, the bigger the role of personality and genes in explaining the variance in reported well-being (Diener E., Lucas, R. E. (2003)).

([27]) For an example of an attempt at a scientific measurement of the interplay of these factors see Blanchflower et al. 2011 available at www.andrewoswald.com/docs/DecBiomarkersBlanchChristakisOs2011.pdf

([28]) There is an ongoing project at Eurostat for measuring Quality of Life Indicators. Its mandate, approved by the Directors of Social Statistics in March 2012, is to finalise a dashboard of ESS indicators based on the 8+1 dimensions mentioned in the Stiglitz report, and identify potential gaps and make recommendations for future indicators to be collected. A first preliminary dashboard was published in May 2013 at this link: http://epp.eurostat.ec.europa.eu/portal/page/portal/quality_life/introduction

Box 6: What is subjective well-being and how is it relevant for social policy?

Subjective well-being refers to three closely related yet distinctive aspects of the human condition:

a. *Life satisfaction* — a cognitive evaluation of one's life as a whole, summarising a lengthy period of life, not just a momentary emotional state. It is a sense of contentment, a conviction that one has been living a good life which is up to one's expectations.

b. *A hedonistic experience or effect*, with a range of positive and negative emotional states such as joy, pride, pain, anger, worry, anxiety, and including happiness. It is less sensitive to income than life satisfaction (Kahneman D. and Deaton A. (2010)).

c. *The eudaimonic aspect* — a sense of purpose and direction in life linked to a conviction that one's actions have meaning and value, and serve a good purpose. The word is derived from the Ancient philosophical debates, notably of Aristotle and the Stoics, about ethics and virtue and about what constitutes a good life.

The body of studies about experienced (subjective) well-being, life satisfaction and happiness has grown almost exponentially over the past thirty years. The kinds of underlying assumptions in this domain are that:

1. People know when they are happy and can communicate this fact.
2. When you ask people how they feel and whether they are doing well, they will be able to give a meaningful answer.
3. Large samples help cope with possible noise in the answers stemming from particular circumstances that are volatile and not of a defining character for a person's quality of life. Surveying large populations is likely to cancel out much of that noise.
4. The measurement errors resulting from the choice of methodology, e.g. the framing of the well-being question and its place in a sequence of questions, can be minimised through the standardisation of survey designs across populations.
5. Despite its intrinsically subjective nature, the scores and answers to subjective well-being questions correlate with miscellaneous other indications about a person's happiness, e.g. activity of the pre-frontal cortex of the brain measured by EEG, systolic blood pressure, hypertension and heart conditions, etc.
6. Cultural bias (i.e. the observation that subjective well-being answers may be driven by cultural norms and normative visions) remains a debated methodological issue and there are reasons to be cautious about cross-country comparisons of levels of subjective well-being. (The cultural bias in subjective well-being measurement will be the subject matter of a joint research project between the OECD and the European Commission in 2014.)

Policy uses of subjective well-being

The Stiglitz report states in its recommendations that '*Measures of both objective and subjective well-being provide key information about people's quality of life. Statistical offices should [therefore] incorporate questions to capture people's life evaluations, hedonic experiences and priorities.*' Insights from subjective well-being studies offer a number of indications as to where and how governments can help maximise happiness of societies and reduce suffering, including the following:

1. With regard to subjective well-being, people are sensitive to their relative position in society — people care about their relative position in terms of income, wealth and status as much as they care about their objective plight. Therefore priority should be given to achieving a fair distribution of resources. Moreover, policies designed to raise everybody's income without addressing underlying inequalities will fail to maximise societal well-being.
2. People are loss-averse, meaning that, psychologically, losses are more important than gains (i.e. the loss of the same amount of resource incurs a greater satisfaction loss than the satisfaction gained from an increase of the same amount of resource). As Kahneman puts it: 'when directly compared or weighted against each other, losses loom larger than gains' (Kahneman (2011)).
3. Economic growth, meaning the increase of production or the volume of monetary exchanges, can have externalities that are detrimental to human well-being.

If the lessons from the well-being studies undertaken over the past thirty years by some of the world's most renowned economists, psychologists and sociologists are to be taken seriously, economic policy should recognise that among the key determinants of low subjective well-being are material deprivation, poor health and being limited by disability, while high subjective well-being is driven mainly by social relationships, good work/life balance, and quality public services. The focus should therefore be on tackling deprivation, poor health and disabilities, and better integrating vulnerable people into society, maintaining reasonable working hours allowing for a social life and the development of personal interests, and finally maintaining quality public services despite austerity. As stated in a recent UK Office of National Statistics report (ONS 2012), '*What determines happiness includes physical and mental health, the strength of family and community ties, autonomy and a sense of control over one's life, and leisure time.*'

The so-called Easterlin paradox suggests that a society's economic development as measured by GDP per capita and its average level of happiness are not linked, at least when the level of economic development is such that basic needs are satisfied ([29]). The thesis is named after Richard Easterlin, whose seminal paper of 1974 was entitled '*Does Economic Growth Improve the Human Lot?*'. He had tracked responses to a happiness question in the US General Social Survey between 1949 and 1970 and observed that average reported happiness showed no long-term trend and declined between 1960 and 1970 despite a steady growth in GDP per capita throughout the period. However, it must be noted that the Easterlin paradox is still debated in the scientific literature ([30]).

The explanation by Easterlin highlights that some unintended consequences of growth, such as pollution, may diminish the positive effects of growth on happiness. Another standard explanation points to the fact that human beings care about status and their relative position (Oswald, 2003 and Wilkinson, 2009). Raising the income of everybody, even in equal measure, while maintaining the pecking order, is unlikely to bring significant gains in happiness, particularly to those lower down in the pecking order. A different explanation could be attempted based on the distinction between pleasures and comforts introduced by Scitovsky in his classic book '*The Joyless Economy: The Psychology of Human Satisfaction*'. In contrast to pleasures, which are arousing experiences, he sees comforts ultimately producing no significant hedonic experience at all (Scitovsky T. (1976)). In effect, modern societies are better at raising comfort than pleasure.

In the same context, Tim Jackson from the UK Sustainable Development Commission, has returned to an earlier debate about the limits of growth, indicating that:

'Every society clings to a myth by which it lives. Ours is the myth of economic growth. For the last five decades the pursuit of growth has been the single most important policy goal across the world. The global economy is almost five times the size it was half a century ago. If it continues to grow at the same rate the economy will be 80 times that size by the year 2100' (Jackson (2009)).

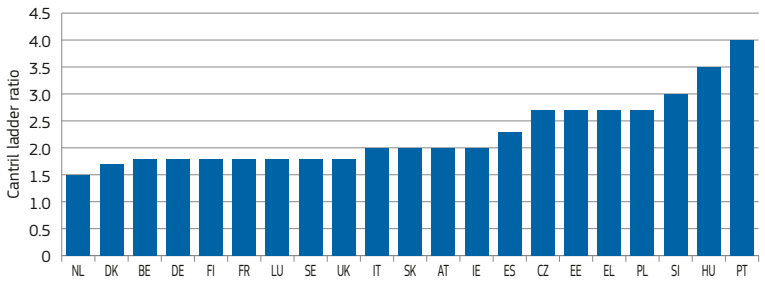
4.1.1. Variation in quality of life and other social outcomes across and within countries, and by income level

The Stiglitz report states in its recommendation number 10 that 'Measures of both objective and subjective well-being provide key information about people's quality of life. Statistical offices should [therefore] incorporate questions to capture people's life evaluations, hedonic experiences and priorities.'

In practice, perceived inequalities in experienced well-being are large. In many countries, the 20% of the population with the highest levels of well-being report life satisfaction of over 6 points higher than the 20% of the population with the lowest levels of well-being, with satisfaction being measured on a scale of 0–10.

Chart 28 presents an overview of the variation across EU Member States in life satisfaction by showing the ratio between the 90th and 10th percentiles of the distribution. The calculation is based on Gallup data and measures life satisfaction using

Chart 28: Inequality in life satisfaction — ratio between the 90th and 10th percentile of Cantril ladder scores, 2010



Source: The Gallup World Poll, calculations by the OECD.

Note: The Cantril ladder measures life satisfaction on a scale from 0 to 10. The data for Estonia is from 2009.

Reading Note: The Cantril ladder measures life satisfaction on a scale from 0 to 10. The ratio shown above is based on the scores for the 10th and 90th percentiles which represent integer values as they refer to the single 10th and 90th percentile respondent in an idealised sample of 100 respondents or 100th and 900th respondent in a sample of 1 000. The values do *not* refer to average scores of the 1st and 10th segment of the sample.

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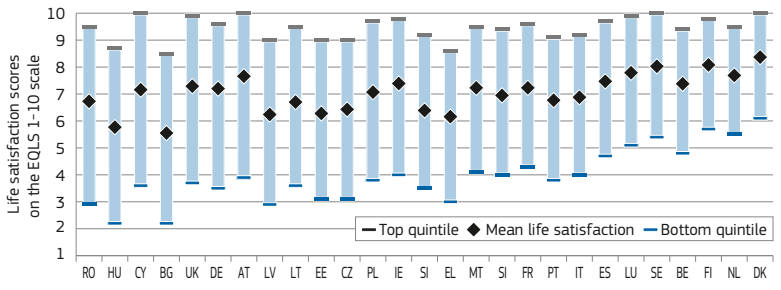
Chart 29: Life satisfaction gap between the top and bottom 20% of the life satisfaction distribution



Source: European Quality of Life Survey 2011/2012, calculations by Eurofound.

Note: The distribution and the respective quintiles used here refer to the life satisfaction itself, not income. Countries are ordered by the distance between top and bottom.

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([29]) See http://www.wikiprogress.org/index.php/Easterlin_Paradox for a good summary of the debate around the Easterlin paradox — Wikiprogress is a website launched by the OECD at the World Forum on Statistics, Knowledge and Policy in Busan in 2009.

([30]) Betsey Stevenson & Justin Wolfers, 2013. 'Subjective Well-Being and Income: Is There Any Evidence of Satiation?', American Economic Review, American Economic Association, Vol. 103(3), pages 598–604; 'The Great Happiness Moderation' (with Sarah Flèche and Claudia Senik), in Happiness and Economic Growth: Lessons from Developing Countries, A. E. Clark and C. Senik (Eds.), Oxford: Oxford University Press, forthcoming.

the so-called Cantril ladder ([31]) — a self-anchoring scale proposed by Hadley Cantril in 1965. The ratio varies from 1.5 (the Netherlands) to 4 (Portugal).

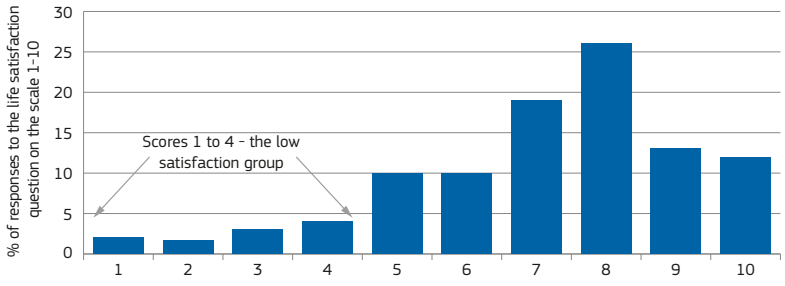
The European Quality of Life Survey also collects data on subjective well-being, using a 1-10 scale. Three surveys have been conducted so far — in 2003, 2007 and 2011/2012. The results show that lower income quartiles have consistently lower scores in life satisfaction and happiness, and suffered the largest declines during the crisis while the top income quartiles have seen their well-being rise in several countries, including in Southern Europe (Eurofound (2013)).

Chart 29 shows the distribution of life satisfaction, again not according to income but to life satisfaction itself. The difference between the top and bottom quintiles of the distribution varies considerably among countries, with the largest gaps generally appearing in the Central and Eastern European Member States but also in Cyprus, the UK, Germany and Austria (even though average life satisfaction is relatively high in the latter four). The smallest gaps are observed in the Benelux and Nordic Member States.

Chart 30 shows what percentages of responses on the EU level correspond with the scale scores from 1–10, displaying a large concentration around 7 and 8, but with a sizeable proportion of the EU population with extremely low scores.

Chart 31 indicates some of the factors driving these low scores. For example, the graph shows that 16% of respondents who score very low (i.e. 1–4) on life satisfaction in the EQLS survey, declare they have no close support (from other people), while the average among all other respondents (i.e. for all other life satisfaction scores combined) is half that at 8%. Being deprived of at least two essential consumer items is by far the strongest predictor of low life satisfaction. Two thirds among those with low (1–4) life satisfaction scores experience this situation of 'material deprivation', while the share among all other respondents is only a third. (Here material

Chart 30: Distribution of EU-27 life satisfaction scores on the 1–10 scale



Source: European Quality of Life Survey 2011/2012, calculations by Eurofound.

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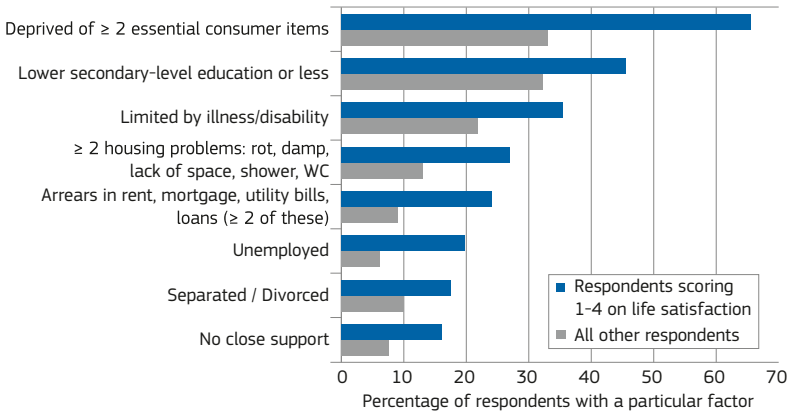
Chart 31: Risk factors in the group scoring low (1–4) on life satisfaction



Source: European Quality of Life Survey 2011/2012, calculations by Eurofound.

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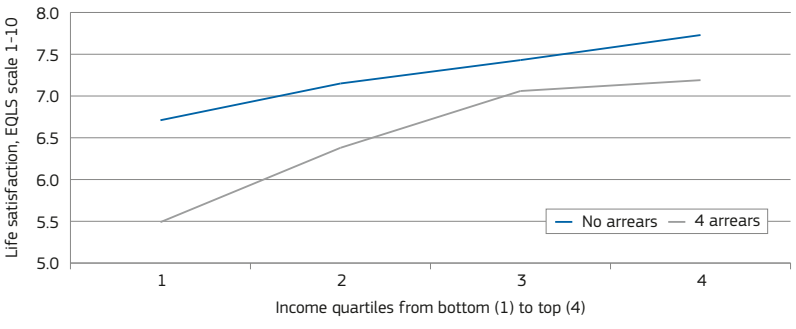
Chart 32: Comparison of life satisfaction by income quartiles, for respondents with no arrears vs. those with 4 arrears in the past 12 months (rent or mortgage, utility bills, consumer loans, private loans)



Source: European Quality of Life Survey 2011/2012, calculations by Eurofound.

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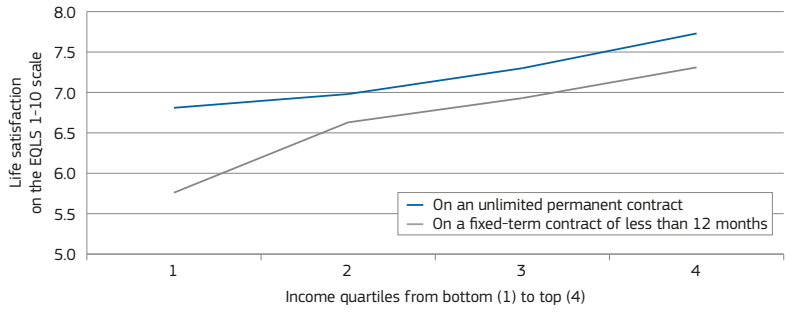
([31]) This is based on answers to the question 'Please imagine a ladder with steps numbered from zero at the bottom to 10 at the top. The top of the ladder represents the best possible life for you and the bottom of the ladder represents the worst possible life for you. On which step of the ladder would you say you personally feel you stand at this time?' (Harter & Arora, 2008).

Chart 33: Life satisfaction for different income quartiles, for respondents on a permanent contract vs. those on a temporary contract of less than a year



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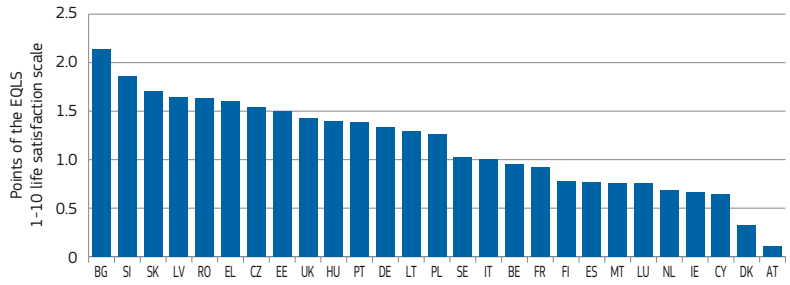
Source: European Quality of Life Survey 2012, calculations by Eurofound.

Chart 34: Gap in life satisfaction between top and bottom income quartile, by country



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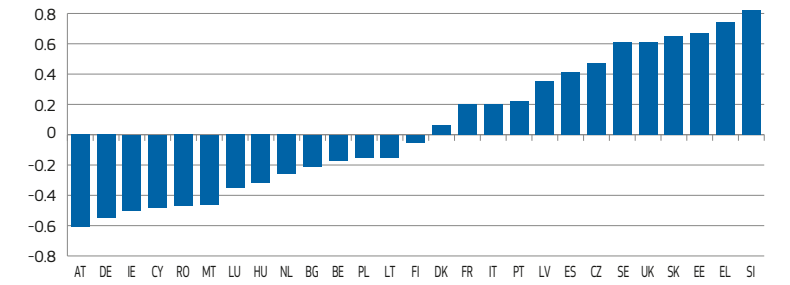
Source: European Quality of Life Survey 2011/2012, calculations by New Economics Foundation.

Chart 35: The 2007 to 2011 change in the life satisfaction gap between top and bottom income quartiles



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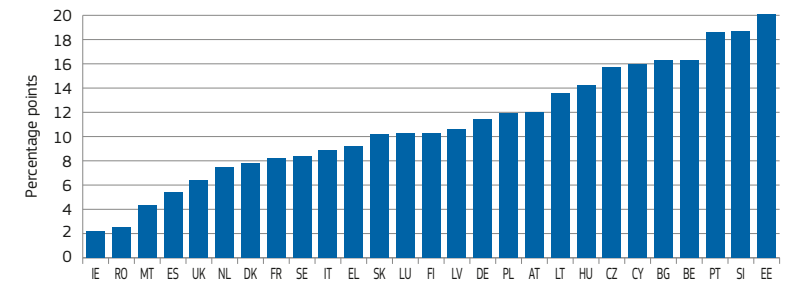
Source: European Quality of Life Survey 2007–2011/2012, calculations by The New Economic Foundation.

Chart 36: Gap between 1st and 5th income quintile in self-perceived 'very bad' or 'bad' health



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Source: Calculations by Commission services based on Eurostat data from EU-SILC 2011.

deprivation ([32]) is measured as an inability to afford consumer items or a quality of life deemed to be standard or normal in contemporary society.) Other factors helping to explain low life satisfaction are low education, illness and disability, poor quality housing, being in arrears, being unemployed and being separated or divorced.

The following two charts (Chart 32 and Chart 33) link life satisfaction scores to the existence of financial problems (payment arrears) and being on a short-term employment contract, and highlight the more pronounced impact of such factors on low income groups.

The following graphs focus on the gap in subjective well-being scores across income quartiles, by country and over time. Chart 34 highlights the fact that relative income appears to be an important element in life satisfaction in most countries, except possibly in Austria and Denmark, with the effect being more marked in the central and eastern European countries, Germany, Greece, Portugal and the UK. Chart 35 shows a mixed picture with respect to the changes in the gap following the crisis, with the gap decreasing in half of the Member States while increasing in the other half (mainly those hardest hit by the crisis) over the period 2007 to 2011.

Inequalities in health

Another area where income inequality may impact on social outcomes is with regard to health. In 2008, the WHO Committee on Social Determinants of Health concluded that social inequalities in health arise because of inequalities in the conditions of daily life and the fundamental drivers that give rise to them (WHO CSDH (2008)). The range of interacting factors that shape health includes material circumstances, the social environment, psychosocial factors, behaviours and biological factors. These factors are, in turn, influenced by social

([32]) The European Quality of Life Survey from which the present analysis draws used a 6-item material deprivation list of items:

1. keeping the home adequately warm;
2. paying for a week's annual holiday away from home (not staying with relatives);
3. having a meal with meat, chicken or fish every second day;
4. replacing worn-out furniture;
5. buying new clothes rather than second-hand ones;
6. inviting friends or family for a drink or meal at least once a month.

Note that the EQLS 6-item list used here is different from the material deprivation list used in the EU-SILC survey and consequently in the monitoring of poverty and exclusion in the Europe 2020 strategy.

Table 2: Estimated odds of reporting poor or very poor general health and long-standing illness, by socio-economic characteristics in the EU-25 in 2010

	Poor or very poor general health	
	Adjusted for one characteristic Odds ratio	Adjusted for all three characteristics Odds ratio
Education (ISCED)		
Tertiary (5&6) — *baseline*	*1.0*	*1.0*
Post-secondary, non-tertiary (4)	1.4	1.1
Upper secondary (3)	1.8	1.4
Lower secondary (2)	2.8	1.8
Primary (1)	3.8	2.1
No education or pre-primary (0)	7.7	3.5
Income		
Highest decile *(baseline)*	*1.0*	*1.0*
9th decile	1.5	
8th decile	1.9	
7th decile	2.1	1.3
6th decile	2.5	
5th decile	3.1	
4th decile	3.5	
3rd decile	4.3	1.4
2nd decile	5.2	
Lowest decile	6.1	
Material deprivation		
0 items *(baseline)*	*1.0*	*1.0*
1 item	2.1	1.8
2 items	3.4	2.8
3 items	4.8	3.9
4+ items	7.2	5.5

Source: Marmot *et al.* (2013).

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position, itself shaped by education, occupation, income, gender, ethnicity and race. All these influences are affected by the socio-political and cultural and social context in which they sit. A loose summary of this is the 'causes of the causes' of poor health (Marmot *et al.* (2013)).

In recent decades much public health activity has focused on proximate causes of ill health. In relation to chronic disease this has meant aspects of lifestyle, such as smoking, diet, alcohol consumption, physical activity. One of the ways in which social determinants influence health includes the effects that lack of control, stress and reduced capabilities have on such behaviours (Marmot *et al.* (2013)). The relationship between GDP and health is not straightforward. Higher average levels of economic activity do not necessarily result in higher levels of health because many other factors such as patterns of income distribution, consumption, services and the impact of public policies on health can play an even greater role.

The European Commission regularly monitors health inequalities in the European Union (see for example European Commission (2013b)), with the research showing a clear socio-economic gradient with respect to health. For example, Chart 36 shows a cross-country comparison of the health gap between low and high income groups. Since all the data is self-reported ratings of one's health they are vulnerable to a cultural bias, but they nevertheless indicate a clear and substantial gap between top and bottom income quintiles in most Member States. Moreover, Table 2 shows a consistent socio-economic gradient in the risk of being of poor health according to three criteria: level of education, income level and degree of material deprivation experienced, with low income and education being associated with lower life expectancy and a greater risk of poor health.

4.1.2. Latest research findings on the impact of income inequality on social outcomes

Discussions around the issue of whether income inequality affects an individual's happiness date back to the debate on relative deprivation and relative utility, and whether a person's utility depends not only on their own income but also on their relative position in society (van de Stadt, Kapteyn and van de Geer (1985)). An intuitive explanation is provided by Hirschman and Rothschild (1973) using the analogy of a traffic jam on a two-lane motorway to explain the effect of income inequality on happiness. They call this the 'tunnel effect' (Hirschman and Rothschild (1973)):

'*Suppose that I drive through a two-lane tunnel, both lanes going the same direction, and run into a serious traffic jam. No car is moving in either lane as far as I can see (which is not very far). I am in the left lane and feel dejected. After a while the cars in the right lane begin to move. Naturally, my spirits lift considerably, for I know that the jam has been broken and that my lane's turn to move will surely come any moment now. But suppose that the expectation is disappointed and only the right lane keeps moving: in that case I will at some point become quite furious*'.

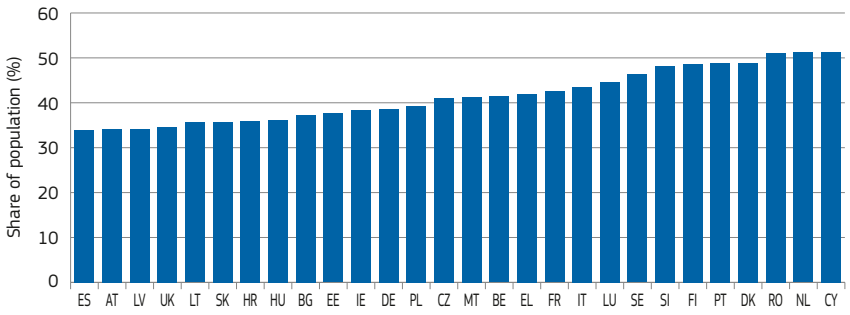
In this respect, there is evidence to suggest that the way income and social inequalities are viewed by those affected will depend on the possibilities for advancement which are open to them (see Box 7 for a summary of actual income mobility across EU countries).

Box 7: Can people move up the income distribution?

A key issue in terms of effects of inequalities is whether people feel there is a genuine chance to move up the income and social ladder, or whether such opportunities are effectively absent or limited. Empirical evidence (see d'Hombres *et al.* (2012) for a summary) suggests that the perception of income inequality as a negative force in society depends critically on the perceived possibility for upward social mobility.

Data published by Eurostat concerning the year-to-year transitions by income decile indicate different levels of mobility within the income distribution across EU Member States. Average figures for the period 2006-2010 on the share of the population experiencing no year-to-year change in their position in the income distribution (Chart 37) suggest relatively strong income mobility in countries such as Austria, Spain and the UK as well as many Eastern European Member States. In contrast mobility is more limited in the Netherlands and the Nordic Member States, Cyprus, Portugal and Romania.

Chart 37: Share of the population (%) experiencing no year-to-year change in income decile averaged over the period 2006-2010



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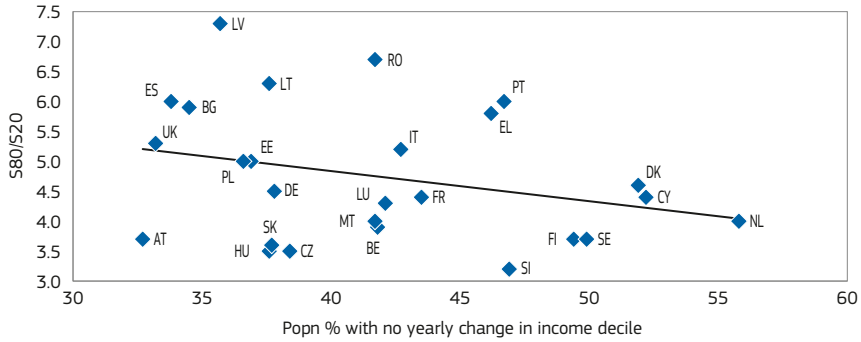
Source: Eurostat, EU-SILC.
Note: Average is based on available data for the income years 2006-2010.

Focusing on the period just before the onset of the crisis (which has subsequently had a large impact on transitions within the income distribution in some countries through job losses and wage adjustments etc.), no strong relationship is apparent between the level of inequality in countries and the amount of mobility within their income distribution, although high inequality countries (such as the Baltic States, Bulgaria and Spain) tend to have relatively high mobility, while the Nordic Countries, Cyprus and the Netherlands have low inequality but also low income mobility (Chart 38).

Chart 38: S80/S20 income inequality measure versus income mobility, 2008 income year



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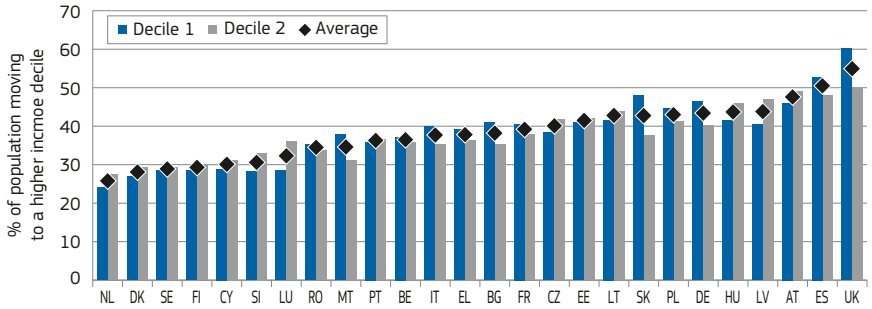
Source: Eurostat, EU-SILC.
Note: Based on 2009 SILC data (income year 2008).

Focusing specifically on upward mobility within the lower deciles (i.e. whether people at the bottom of the income distribution have good chances to move up the income ladder), a similar pattern is observed (Chart 39). In the Nordic Member States and the Netherlands there are relatively fewer chances to move out of the first or second decile to a higher income decile, while in Spain and the UK more than 50% manage to make this transition.

Chart 39: Share of population in deciles 1 and 2 moving up the income distribution in 2008

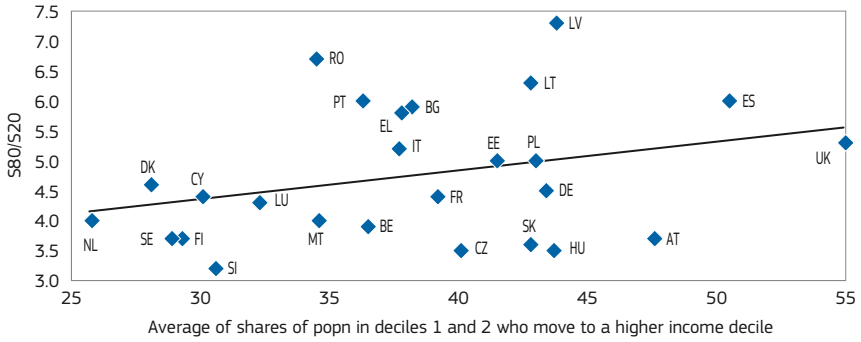


Source: Eurostat, EU-SILC.

Note: Countries ordered according to average across first and second decile in the share of population who move to a higher income decile.

Comparison of the chances of upward mobility in the lowest deciles with the overall level of income inequality again suggests that, while overall inequality is low in the Nordic States and the Netherlands, the chances for people to move up the income ladder are rather limited, in contrast to the greater upward mobility from the lower income range in Spain and the UK (Chart 40). The greatest challenges would appear to be in countries such as Bulgaria, Greece, Italy, Portugal and Romania which combine relatively high levels of income inequality with limited chances for people to progress out of the lowest income brackets. Dissatisfaction with inequality, and its impact on well-being and life satisfaction, might therefore be expected to be more evident in these Member States.

Chart 40: S80/S20 income inequality measure versus upward income mobility for the lower deciles in 2008



Source: Eurostat, EU-SILC.

Note: Average of shares of population in deciles 1 and 2 who moved to a higher income decile in 2008.

Based on an extensive review of the literature on income inequality and its social consequences, d'Hombres *et al.* (2012) find that higher criminality, reduced involvement in the political process and, to some extent, lower social capital formation and well-being, appear to be tangible negative products of rising income inequality. In particular, the authors highlight that:

- The effect of income inequality on happiness depends critically on the perceived mobility in a country. If income mobility is high, as in the USA, income inequality tends to be positively associated with reported well-being as individuals tend to consider that they will eventually reach a higher income. The opposite is observed in low mobility countries (i.e. typically European countries) because individuals feel that it is impossible to reach a higher level of income.

- The majority of the studies focusing on the relationship between the income distribution and criminality conclude that income inequality has a detrimental effect on criminal behaviour.

- Empirical analyses of the harmful effect of income inequality on health are not usually conclusive, at least not in wealthier European countries. This is in line with the fact that there is still no widely accepted explanation of how income inequality is likely to impact on health. Furthermore, some researchers tend to suggest that the causality can run in the other direction, from health status to income inequality.

- Heterogeneous societies might be expected to be characterised by fewer contacts and in consequence, by lower levels of social capital. This prediction appears to be empirically validated by cross-country studies, as well as

by those focusing on the US context. Findings specific to EU countries are limited and less conclusive.

- The relationship between voter turnout and inequality is likely to be mutually reinforcing in so far as the benefits from voting are lower for the low-income group, reducing their incentive to vote. If this is the case, policies may favour the better-off groups, thus adding to income disparities. These predictions are confirmed by the majority of cross-country and single-country studies reviewed in the above report.

Based on an analysis of simple bivariate correlations, Elia *et al.* (2013) complement the above literature review by examining the correlations at NUTS1 level between income inequality and social outcomes. Their analysis reports significant bivariate correlations between higher income inequality and lower recorded voter turnout, lower participation in voluntary organisations, higher crime rates, higher early school leaver rates, and lower levels of trust. Conversely, outcomes related to well-being and health were not found to be significantly associated with income disparities. However, since this analysis relied on bivariate correlations none of the statistical associations could be regarded as evidence of a causal relationship.

As a final step, d'Hombres *et al.* (2013) carried out a multivariate analysis on a selected number of social outcomes, while controlling for a number of individual and country level specificities ([33]). The social outcomes studied were health, social capital (i.e. trust and participation in organisations) and happiness. The study concluded that the adverse effect of income inequality on a range of social outcomes as proposed by Wilkinson and Pickett (2009) could not be confirmed by the data, except with respect to trust. In particular, the analysis could not find a strong and significant effect of income inequality on health, happiness and participation in associational activities. These results are robust to the inclusion of a large number of individual and country-specific variables and different estimation strategies. However, the analysis suggests that income inequality has a potentially damaging effect on trust, the implications of which should not be underestimated, as highlighted in the following paragraphs.

According to many researchers, trust is critical for the functioning of societies (e.g. see Putnam (2000)). Social capital and trust are factors linked to cooperative behaviours and investment decisions as well as to the quality of institutions, all of which are important determinants of economic performance (Knack and Keefer (1997), and Guiso *et al.* (2004)).

When resources are not evenly distributed, poor individuals may see themselves as living in an unfair society where the rich exploit the poor, leading low-income individuals to develop distrust against richer individuals (Rothstein and Uslaner (2005)). Most cross-country studies conclude that, when income inequality is high, social capital is under-developed (Knack and Keefer (1997), Leigh (2006), Fisher and Torgler (2006), Berggren and Jordhal (2006), Bjørnskov (2006)). Based on aggregated country-level data drawn from the World Values Surveys, cross-country estimates reported in Knack and Keefer (1997) show that income inequality is negatively and significantly related to trust and civic cooperation.

As a final point on the importance of trust for the functioning of societies, it is useful to recall that, according to the pioneer economist Adam Smith (1760), the perception of fairness is the '*main pillar that upholds the whole edifice [...] if it is removed, the great, the immense fabric of human society must in a moment crumble to atoms*'. If correct it underlines the need to be concerned that rising income inequality may be leading to lower levels of trust.

4.2. Impact of inequality on economic efficiency and the sustainability of economic growth

Apart from the link to notions of fairness, solidarity and well-being, the evidence available suggests that there is a strong case for promoting greater equality in terms of its contribution to economic efficiency, notably by improving the use of available human capital. Moreover, high and rising levels of income inequalities can undermine sustainable growth by inducing insufficient aggregate demand and/or unsustainable borrowing at the lower end of the income distribution.

When the benefits of growth are not widely shared, and too many people are unable to fulfil their potential, this threatens economic and social stability, particularly in poorer countries. Likewise, inequality can dampen economic opportunity by preventing poorer sections of society from accessing the financing needed to pursue profitable investments, and restrict them to less productive activities. It can also leave countries much more exposed to the effects of adverse shocks — with fewer people able to dip into savings during bad times, the decline in growth can be larger. This section therefore reviews the evidence on the implications of inequalities for the achievement of sustainable growth.

4.2.1. Does inequality reduce economic efficiency?

In an influential 1975 book 'Equality and Efficiency: The Big Tradeoff', Okun argued that the pursuit of equality can reduce economic efficiency. He argued that, not only can a more equal distribution of incomes reduce incentives to work and invest, but the efforts needed to redistribute — through such mechanisms as the tax code and minimum wages — can themselves be costly. He compared these mechanisms to a 'leaky bucket' from which some of the resources transferred from rich to poor 'will simply disappear in transit, so the poor will not receive all the money that is taken from the rich' as a result, for example, of administrative costs.

More recent research (Berg, Ostry, and Zettelmeyer (2011); and Berg and Ostry (2011)) contradicts this view, finding that when growth is looked at over the long term, the trade-off between efficiency and equality may not exist. In fact equality appears to be an important ingredient in promoting and sustaining growth.

Clearly the relationship between income inequality and economic growth is complex. Some inequality is integral to the effective functioning of a market economy given the incentives needed for investment and growth, but inequality (particularly if it is high and rising) can also be destructive to growth, for

([33]) The analysis examines the relationship between income inequality and social outcomes in a cross-country context, using a long time period (1981–2008) and with the time-invariant country heterogeneity accounted for.

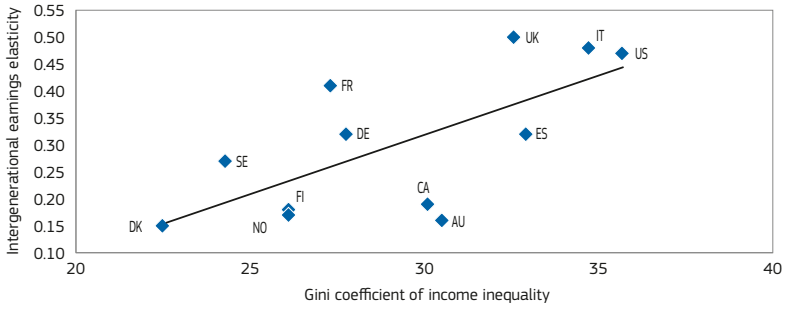
example by amplifying the risk of crisis or making it difficult for the poor to invest in education.

In a recent article Stiglitz claims that inequality is holding back the recovery in the US ([34]), arguing that the middle class is too weak to support the consumer spending that has historically driven economic growth, and the 'hollowing out' of this section of the population since the 1970s has resulted in them being unable to invest in their future by educating themselves and their children, and by starting or improving businesses.

In the long run, inequality might provide the basic incentive to invest in assets such as education, training and continuing education, but rising poverty and greater incidence of low incomes may deny this option to many and thus lower growth potential. An extension of this argument is that more unequal societies are also polarised societies, where the poor not only lack access to credit and public services, but also no longer have the capacity to aspire (Appadurai (2004)) since social mobility becomes less and less attainable.

In this context, according to the OECD (OECD (2008)), the degree of intergenerational mobility in countries (as reflected by changes in the position in the income distribution between parents and their children) is related to the level of inequality in the country. Chart 41 shows a positive relation in a cross-section of twelve OECD countries between the extent of intergenerational earnings elasticity ([35]) (which reflects the extent to which people's income positions are influenced by those of their parents, and hence reflects the opposite of intergenerational mobility) and conventional measures of income inequality at a point in time around 2000. Most significantly, countries with the most equal distributions of income (i.e. with low inequality) exhibit the highest income mobility across generations, as indicated by low intergenerational earnings elasticities. For example, the influence of fathers' income level on that of their sons is weak in the Nordic countries, where inequality is low, but strongest in Britain, Italy and the USA, where inequality is high.

Chart 41: Intergenerational mobility and static income inequality



Source: OECD (2008), 'Growing Unequal? Income Distribution and Poverty in OECD Countries'.

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More generally, as highlighted previously inequality seems to be associated with less sustained growth. Berg and Ostry (2011) find that income inequality stands out as a key driver of the duration of growth spells, with longer growth spells being robustly associated with more equality in the income distribution (conversely, high growth spells are much more likely to end sooner in countries with less equal income distributions), and with the effect being large as well as significant. They emphasise that it is a serious error to separate analyses of growth and income distribution, and that there are major long-run benefits for growth of reducing inequality.

Referring to their analogy cited previously (at the start of Section 2), they highlight that ***'a rising tide is still critical to lifting all boats, helping to raise the lowest boats may actually help to keep the tide rising'***. From a longer-term perspective, reduced inequality and sustained growth may be two sides of the same coin, with sustainable economic progress most likely to be achieved when the benefits are widely shared.

It is perhaps worth highlighting that, in line with the above findings, the Europe 2020 Strategy stresses that growth cannot be smart or sustainable *unless* it is also inclusive, i.e. with greater equality. The targets of a 75% employment rate and of lifting at least 20 million people out of the risk of poverty or social exclusion are intended to shape the EU's socio-economic development model precisely in the direction of a more inclusive growth.

In this context, there is a clear need for pro-active public policies to improve opportunities and transitions at the lower end of the labour market and at the bottom of the income distribution, while tackling excesses at the top. This need is well-summarised in the concept of social investment, which is intended to guide the design of 21st century welfare states as part of the effort to achieve and support inclusive growth.

4.2.2. Links between the crisis and aspects related to inequality in the distribution of the benefits from growth

Income inequalities, with their many causes including labour market polarisation, financial sector de-regulation, loopholes in tax systems and weakening of the welfare state, are increasingly viewed as a factor that contributed to the economic and social crisis and that makes recovery more difficult. Indeed, many economists now agree that inequality was a fundamental driver of the crisis, as argued in a recent book by Stiglitz (2012) in relation to the US and as highlighted in a speech by the former Managing Director of the International Monetary Fund ([36]):

'*Fundamentally, the growth model that co-existed with globalization was unbalanced and unsustainable. ... Inequality may have actually stoked this unsustainable model.*

([34]) 'Inequality is holding back the recovery', New York Times opinion pages, January 19, 2013 (see http://nyti.ms/T2pAnW).

([35]) Roughly speaking, intergenerational earning elasticity represents the fraction of income that is on average transmitted across generations (here measured by the earnings elasticity between fathers and sons). For example, an elasticity value of 0.4 indicates that 40% of the father's income position is transmitted to the next generation. A value of zero represents a case of complete mobility where the incomes of father and son are completely unrelated. A value of unity represents a case of complete immobility where the father's income position is completely passed on to the next generation.

([36]) Human Development and Wealth Distribution, By Dominique Strauss-Kahn, Managing Director, International Monetary Fund, Agadir, November 1, 2010 (http://www.imf.org/external/np/speeches/2010/110110.htm).

In countries like the United States, borrowing seemed to allow ordinary people to share in the rising prosperity. Like the Great Depression before it, the Great Recession was preceded by an increase in the income share of the rich, a growing financial sector, and a major rise in debt.'

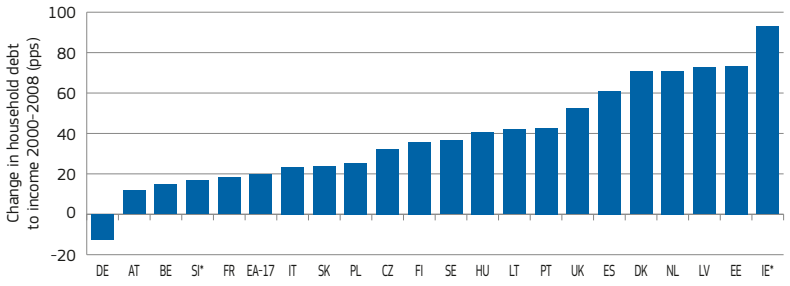
If this is the case, how and through what means did rising inequality lead to the crisis? As explained for example by O'Farrell (2011), the financial system was able to disguise the fundamental economic and social imbalances caused by rising inequality in the period leading up to the crisis, and to offset some of its effects. Specifically, the downward pressure on demand that one would normally expect from sluggish wage/income growth was compensated for by the availability of credit in countries such as the US, Ireland and the UK, and by export-led demand and output growth in Germany and some other countries.

Rising inequality in a climate of increasing consumption led to poorer households increasing their borrowing. In a number of countries, most prominently in the USA, low income groups borrowed money to increase their consumption (Frank *et al.* (2010); Kumhof and Rancière (2010)) and this appears to have allowed them to cope with the erosion of their relative income situation and to maintain higher living standards.

So, rather than investing in productive projects, high earners effectively loaned money to low earners, mediated through the financial system, which allowed aggregate demand to be maintained. At the same time, low interest rates also encouraged investment in highly risky assets, from commercial property to financial derivatives. As asset prices rose, initially feeding the boom, this facilitated access to even more credit, leading to steadily rising indebtedness. The collapse finally came when the financial crisis struck.

The deterioration in the debt situation of households in the period up to the crisis is clearly evident in the data on the gross debt-to-income ratio of households (Chart 42). Apart from Germany, this ratio increased in all Member States between 2000 and 2008, most notably in Denmark, Estonia, Latvia, the Netherlands, Spain, the UK, and above all Ireland (between 2002 and 2008). The time series for the latter countries indicates that the build-up of debt had been fairly gradual from the beginning of the 2000s (Chart 43), but followed a much steeper gradient than for the euro area as a whole.

Chart 42: Change in the gross debt-to-income ratio of households in EU Member States between 2000 and 2008



Source: Eurostat, National Accounts.
Note: *Figures for IE and SI are for the period 2002 to 2008.

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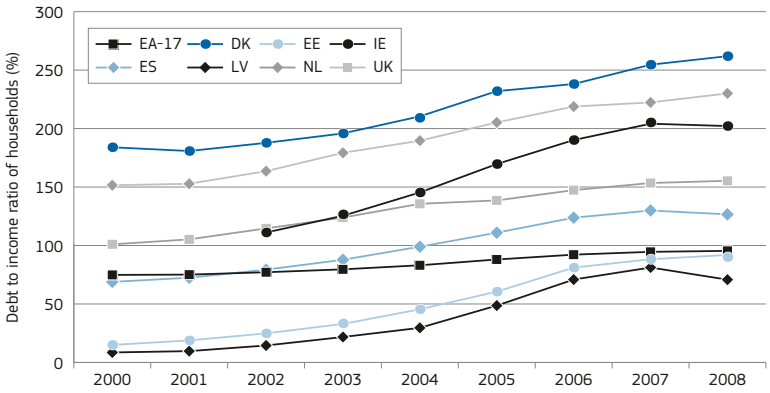
Chart 43: Trends in the gross debt-to-income ratio of households in selected EU Member States, 2000-2008



Source: Eurostat, National Accounts.

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All this suggests that monitoring developments in household private debt or borrowing may be as necessary for ensuring the sustainability of economic growth as it is for monitoring the material well-being of households.

4.3. Inequality and the broader sustainability agenda

If our economies make us richer in the short-term but poorer in the long-term, or breach environmental limits, this is clearly unsustainable. Likewise, if rising inequality threatens the longer term cohesion of society, this is equally unsustainable. This section therefore reviews what measures are being used to inform the broader sustainability agenda (Box 8), and in particular what role addressing (income) inequality can play.

For example, increasing attention is being paid to the link between social exclusion and environmental deprivation. Clean air and water, unspoiled landscapes and rich biodiversity on the one hand and pollution and noise on the other are not evenly distributed. A study 'Addressing the Social Dimensions of Environmental Policy' (Pye *et al.* (2008)) has shown that, in Europe, poorer people, while polluting less, live in areas of lower environmental quality, which contributes to poorer health, stress and vulnerability to natural disasters.

Box 8: Towards a Global Sustainability Agenda

The United Nations have been evaluating progress and renewing their commitments to meet, by 2015, the eight 'Millennium Development Goals', which range from halving extreme poverty, to halting the spread of HIV, to providing universal primary education (United Nations (2013)). Simultaneously, a discussion is underway to create a new post-2015 framework for sustainable development. The European Commission proposes that such a framework should cover basic living standards (including social protection, productive employment and decent work for all, including youth, women and people with disabilities) ([1]). It should also look to the drivers for sustainable and inclusive growth so as to ensure that the benefits of growth and employment are widely shared, noting that the sustainable management of natural resources would also require actions and training for the specific skill sets needed. Goals would help stimulate opportunities for more inclusive and sustainable growth, supported by indicators looking beyond GDP including on social cohesion.

To strengthen its political mandate ahead of the international negotiations, the Commission launched a public consultation on 'Rio+20 follow up' ([2]). Over 125 responses came in from individuals, public authorities, businesses and business associations, NGOs, trade unions and consumer protection groups. A large number of replies highlighted issues related to the inclusive green economy, in particular pointing to the need for indicators beyond GDP, while others pointed to the need for a favourable trade environment, eliminating environmentally harmful subsidies and environmental taxes (European Commission (2013a)).

The UN Open Working Group on Sustainable Development Goals (OWG) highlighted a need for disaggregated data regarding reaching vulnerable populations and addressing inequalities. In their concluding remarks on employment and decent work for all, social protection, youth and education, the Open Working Group stressed that economic growth must be inclusive and job-creating and that the problems of youth unemployment, working poor, workers' rights and access to basic social protection and skills for productive employment should be addressed. Basic social protection does not need to await prosperity. The Issues Brief ([3]) for the OWG's upcoming discussion on sustained and inclusive economic growth proposes a goal for sustained economic growth, social inclusion and environmental protection with targets covering the Gini coefficient, increases in employment, improvements in the quality of jobs and decent work. It is suggested that measurable indicators could be designed for all countries taking into consideration their individual realities.

The High Level Panel of Eminent Persons on the Post-2015 Development Agenda proposes targets related to reducing the share of people living below their country's 2015 national poverty line, increasing the number of people with skills needed for work, and decreasing the number of young people not in education, employment or training. The proposed illustrative goals also address decent jobs and social protection.

The World Bank (2013), besides its commitment to ending extreme poverty, favours tracking income growth among a nation's bottom 40% of the income distribution as part of their initiative: 'Shared Prosperity: A New Global Goal for a Changing World'. According to the World Bank's Acting Vice President for Poverty Reduction and Economic Management, Jaime Saavedra-Shanduvi, the new indicator captures two key elements, economic growth and equity, and it will seek to foster income growth among the bottom 40% of a country's population. Improvement of this shared prosperity indicator requires growth to be inclusive of the less well-off.

The International Labour Organisation, on the other hand, has proposed a conceptual framework for the measurement of decent work and suggests shifting the policy attention and public discourse from the quantity to the quality of growth, focusing on a type of growth that is inclusive, generates decent jobs and reduces income inequalities. The ILO framework puts forward indicators which cover the substantive elements corresponding to the four strategic pillars of the Decent Work Agenda (full and productive employment, rights at work, social protection and the promotion of social dialogue), among which are the elements of adequate earnings and social security. Examples of indicators under this approach include in-work poverty rates, low pay rates and some indicators demonstrating coverage and level of social protection floors ([4]).

The United Nations Sustainable Development Solutions Network (UNSDSN) has proposed to reduce by half the proportion of households with incomes less than half of the national median income. The UNSDSN also proposes universal access to primary healthcare and reduced youth unemployment. Universal healthcare coverage was also proposed by the UN Secretary General Ban Ki-moon, who has called for tackling exclusion and inequality by building inclusive economies with access to decent employment, legal identification, financial services, infrastructure and social protection ([5]).

The UN Global Sustainable Development Knowledge Platform ([6]) includes the following in the list of potential future goals/targets for eliminating poverty worldwide by 2030: universal health coverage; creating 63 million decent new jobs per year; achieving full, productive and decent employment for all; and GDP per capita above USD 10000 PPP in all countries by 2050.

Beyond 2015 ([7]) recommends ensuring that inequality be an explicit focus of economic policies and strategies (including encouraging the use of systems of progressive taxation and equitable redistribution, committing to a focus on employment, youth employment, skills and job matching, and implementing social safety nets and protection floor systems). Considering combining economic growth with the creation of decent jobs for the poor and most vulnerable is a prerequisite for sustained inclusive growth.

([1]) At the same time equality, equity, justice, peace and security would be promoted.

([2]) http://ec.europa.eu/europeaid/how/public-consultations/towards_post-2015-development-framework_en.htm

([3]) http://sustainabledevelopment.un.org/content/documents/2078Draft%20Issue%20Brief_Sustained%20and%20Inclusive%20Economic%20Growth_Final_16Oct.pdf

([4]) http://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/documents/genericdocument/wcms_213309.pdf

([5]) http://www.un.org/millenniumgoals/pdf/A%20Life%20of%20Dignity%20for%20All.pdf

([6]) http://sustainabledevelopment.un.org/content/documents/975GSDR%20Executive%20Summary.pdf

([7]) Global campaign aiming to influence the creation of a post-2015 development framework. Beyond 2015 brings together some 800 civil society organisations in over 100 countries around the world.

At present the European Union uses a set of 155 indicators to monitor progress toward the targets of the Sustainable Development Strategy. The social sustainability indicators within the strategy overlap with the indicators used to monitor progress towards the poverty reduction target in the Europe 2020 strategy. While income inequality as such does not yet enter directly into policy targets, the at-risk-of-poverty indicator included in the Europe 2020 strategy target to lift 20 million people out of poverty or social exclusion does capture a key element of income inequality.

5. Conclusions

This chapter has explored the kinds of measures that might be used to complement GDP in order to highlight the issue of inclusive growth. Taking into account the recommendations of the Stiglitz *et al.* (2009) report, the relevant literature and related developments in international organisations such as the United Nations, the OECD, the ILO and the World Bank, it has reviewed potential indicators that could be used to complement GDP growth in order to capture inclusive income growth and other distributional aspects key to societal progress such as wealth and quality of life.

Prosperity is strengthened when everyone has the capacity to participate effectively in the economy, and the benefits of growth are widely shared. The global recession, however, demonstrates that the previous period of economic growth had not necessarily produced all the results desired, including that many of the jobs created were of poor quality and often precarious. Moreover, in so far as part of that growth was based on shaky financial foundations and environmental degradation, it offered neither sustainable economic prospects nor equal opportunities for people. This underlines the need to create more inclusive growth as envisaged in the Europe 2020 strategy, and more recently in the Commission's Social Investment Package. The poverty and social exclusion target in the Europe 2020 strategy was introduced to signal what kind of growth we envisage to ensure inclusiveness.

This chapter has discussed measures that encompass in particular the need to integrate distributional aspects for assessing inclusive growth. It has considered a range of potential measures as listed in Table 3 and analysed how taking account of distributional aspects (of income) modifies growth outcomes. It has also analysed how they relate to measures of quality of life/well-being and how they inform the broader sustainability agenda.

Among these indicators, those which could be given greater emphasis (highlighted in bold in the table), broadly reflecting the recommendations of the Stiglitz *et al.* (2013) report and the current debate among the major international organisations on this subject as well as practical issues ([37]), are the following:

1. The **growth in real median income** (i.e. adjusted for inflation). The income figure would be the median equivalised disposable income derived from EU-SILC and/or nowcasting techniques. Focusing on individuals' income provides a better way of capturing what people actually receive out of national income, while the median is better than the mean since it reflects progress in the middle of the income distribution. This indicator would give an immediate impression of real income growth for a typical citizen, taking into account the impact of price changes. This proposal is very much in line with the recommendations of the Stiglitz *et al.* (2009) report and of the LSE Growth Commission (2013).

2. While the above would provide a view of average progress for society, it could be accompanied by some measure(s) of **the inequality in income distribution**. The measures worth considering are:

   a. An overall indicator of the level of income inequality across the population. Several well established measures are available (for example the Gini coefficient, S80/S20 ratio, Palma ratio) and some of these are in regular use across international fora to monitor inequality. The EU has an established tradition in using the Gini and S80/S20 measures as part of the portfolio of indicators on social protection and social inclusion agreed between the European Commission and

Table 3: Potential measures which could be used to complement GDP growth to highlight the issue of inclusive growth

Domain	Broad measures of progress of society as a whole	Distributional measures showing how progress is distributed
Economic growth	Real GDP (per capita) growth	**Inequality adjusted growth in real GDP (per capita)**
Income	**Real median income growth** Growth in adjusted gross household disposable income Change in gross debt-to-income ratio of households	• **Income inequality (as measured by Gini, S80/S20, Palma or other accepted indicators)** • **Real median income growth within specific quintiles (e.g. top & bottom)**
Wealth	Median net wealth	Wealth inequality as measured by the divergence between mean and median income or an appropriate standard inequality measure (e.g. the Palma ratio)
Quality of life/ Well-being	**Median life satisfaction**	**Gap in life satisfaction between top and bottom income groups, and between top and bottom life satisfaction groups in itself**

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([37]) The list is quite extensive, and some potential indicators are more developed, and more widely used and accepted, than others. Some are still in the early stages of development, or may have limitations in terms of lack of timeliness or irregular availability.

the EU Member States within the Open Method of Coordination. The Palma ratio has some affinity with the World Bank's indicator of shared prosperity measuring the income growth of the bottom 40% of the distribution.

b. Indicators of how median incomes for different parts of the income distribution change over the reference period — for example, the annual growth rate in real median income for the lowest income quintile and for the top income quintile. This would be more readily understandable by the general public than the more specialised indicators above, since it would show in plain terms how incomes have developed for the less well-off and for the comparatively rich. The OECD, for example, gave an account of the long-term income growth of the bottom and top decile in OECD (2011a).

3. **Adjusted growth in GDP using Sen index of 'real national income'**: Inequality adjusted growth in real GDP (per capita), with mean income adjusted downwards if inequality measured by Gini is high ([mean income] × [1-Gini]). Taking into account information on disparities in outcomes requires directly adjusting GDP per capita, or other income variables, for distributional variations, making use of an index of income equality to produce an adjusted time series of growth. Such 'distributionally sensitive' measures of national income growth would highlight the real impact of economic growth on the majority of the population. The Sen index also gained attention in the research of the LSE Growth Commission as mentioned by Jenkins (2012).

4. It would also be important to include **some overall measure for life satisfaction and the associated gaps within the population**. Alongside median life satisfaction, options which could be considered include:

   a. The ratio of life satisfaction scores between top and bottom income groups. For example, surveys by the OECD show a sizable difference in life satisfaction between top and bottom income groups. Yet this difference varies markedly between countries, suggesting that policy may mitigate life satisfaction by influencing, not only the level and distribution of household income, but access to services, training, jobs, etc.

   b. Since satisfaction is not solely a function of income but related to a range of other possible influences including health, environment, family situation etc., it could also be relevant to include a measure for the distribution of life satisfaction in itself. For this reason it would seem appropriate to include a measure of the ratio or gap between the median life satisfaction of, say, the 20% of the population with the highest satisfaction versus that of the bottom 20%. For an example of such analysis see: Eurofound 2013. The OECD publishes data on inequality in life satisfaction as part of their 'Better Life' initiative in the 'How's Life?' report (OECD (2011b)). Several Member States now publish updates about the trends and the distribution of life satisfaction among their citizens, e.g. National Statistics UK (2013), Amiel *et al.* (2013) for France, and ISTAT (2013) for Italy.

This chapter has focused mainly on inequalities in income but has also explored the issue of inequalities in wealth, where appropriate indicators could also be considered for the measurement of inclusive growth once the available data has been explored and further developed. An exploratory analysis of the results of the first wave of the European Central Bank's Household Finance and Consumption Survey has highlighted that levels of wealth, household sizes and composition, and patterns of property ownership and values, all vary enormously within as well as between Member States, and this evidence is, in some respects, even more revealing about the extent of inequalities in our societies than the evidence on incomes.

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