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The Great Recession and the Distribution of Household Income

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THE GREAT RECESSION AND THE DISTRIBUTION OF HOUSEHOLD INCOME[1]

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Contents

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1. Introduction

The financial crisis of 2007–08 triggered the first contraction in the global economy since the Second World War (Keeley and Love 2010: 11). The economy of the OECD area as a whole reduced in size by over 5 per cent between the first quarter of 2008 and second quarter of 2009, when the 'Great Recession' (GR) reached its bottom point. This contraction was smaller and briefer than occurred during the Great Depression of the 1930s (Crafts and Fearon 2010), but was the worst macroeconomic downturn since the 1930s in most OECD countries. In many economies, subsequent recovery has been sluggish, and has turned into a new recession towards the end of 2011.

The Great Depression had wide-ranging and long-lasting impacts on household incomes that are embedded in the popular consciousness. One might therefore expect the GR to be associated with impacts on poverty and inequality on a scale not seen for almost 80 years. However, the role of governments and the extent of welfare states have developed enormously since the Great Depression, and partly in response to it. Rich nations now have social safety nets that ameliorate the impact of economic and financial crisis on the poorest and social insurance programmes to offset the effects of risks such as unemployment. The instruments of economic and social policy that have been developed since the 1930s mean that we are better equipped to deal with a deep downturn. What then are the GR effects on the distribution of economic welfare? Answering this question is our central concern in this paper.

While the origins of the financial crisis preceding the GR were in the USA, the US experience has not been universally shared: even among countries where macroeconomic changes were similar, there are variations in distributional impact reflecting differences in socioeconomic institutions, social programmes, and policy responses. The diversity of the GR across rich nations suggests the importance of adopting a cross-national perspective. Here, we focus on 21 rich countries members of the Organisation for Economic Co-operation and Development (OECD): Australia, Austria, Belgium, Canada, Denmark, Germany, Greece, Finland, France, Ireland, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, the UK, and the USA. By not including emerging or developing economies, this panel of countries strikes a balance between homogeneity of economic and social development and diversity of institutions and experience during the GR.[2]

Among the possible indicators of economic welfare, we focus on household income, which is commonly used and estimated in a reasonably consistent manner across countries. In general, we consider 'net' or 'disposable' household income which is derived by aggregating all income sources over all the individuals within each household, after the deduction of payments of direct taxes. This definition allows us to account for the circumstances of all household members, including those with no labour market earnings, and in all sources of income: investment income, social security benefits and other forms of non-labour income, as well as earnings. On the other hand, this definition does not included realised capital gains and losses, the value of non-cash social benefits and indirect taxes, due to lack of data. This omission may be important in the assessment of people's economic wellbeing, as asset prices

[2] China, Brazil, and India 'weathered the economic storm relatively well', while GDP fell in only six African countries in 2009 (Keeley and Love 2010: 38–9). The nature of the crisis around the world is summarised by Lane and Milesi-Ferretti (2011).

plunged during the GR, and cuts in public services and increases in indirect taxation were often included in fiscal consolidation packages adopted in its aftermath.[3]

To assess the distributive effects of the GR we need to define the reference situation against which these effects are measured. One possibility would be to estimate the distribution that would have prevailed if neither the boom nor the bust had happened, so 'potential GDP' had been on and had remained on a sustainable path. This and other possible 'counterfactuals' depend on a number of arbitrary choices and are difficult to estimate with confidence. Hence we follow the less satisfactory but feasible and easily intelligible alternative of measuring the actual changes in 2009, the bottom of the recession, relative to a baseline distribution for 2007. Wherever possible, we look at a period extending before 2007 and after 2009. The information on later years helps us to distinguish between the immediate and medium-term consequences of the GR, accounting for instance not only for the impact of increased government expenditure during 2008–9, but also for the impact of subsequent fiscal consolidation. Data on earlier years help us to put changes during the GR in the context of the previous trends. Note, however, that we study the impact of the GR on income distribution, not the opposite question of whether earlier changes in the distribution of income helped cause the GR, a hypothesis that has received great attention in the recent literature (Fitoussi and Saraceno 2010; Rajan, 2010; Stiglitz 2011; Kumhof and Ranciere 2011; see also the discussion in Atkinson and Morelli, 2011).

The paper is organised as follows. In section 2 we discuss the potential routes by which changes in the macroeconomy, including severe recessions, affect the distribution of household income, and summarise various frameworks for analysing the relationship between changes in macroeconomic variables and changes in household incomes. In section 3 we review empirical research about past recessions, and we consider whether economies have been changing in ways such that the impact on household incomes of the GR is likely to differ from the impact of previous recessions. In section 4 we review the nature of the macroeconomic changes, and how these have worked through to household incomes in our panel of OECD countries. We highlight how the characteristics of the GR have varied across countries in terms of output and employment changes, banking sector condition, real estate and other asset price dynamics: the diverse nature of the GR gives rise to different expectations about its distributional consequences in different countries. We report the evidence available to date about how the GR has affected household incomes on average and in total, household income inequality, and poverty. This evidence is limited because the GR began in late 2007 and household survey or administrative record data about the distribution of household incomes emerges with a significant lag, but the initial effects through to 2009, and in some cases into 2010, are observed. Timeliness of data availability is an important constraint to our analysis.[4] In Section 5 we qualify our analysis and discuss some of its limitations. In the final Section, we summarise the main evidence about the distributional

[3] We also do not pay much attention to the distributions of household wealth or debt, nor to that of consumption expenditure. There is evidence that consumption inequality has not changed as much as income inequality in the course of past recessions (Krueger et al. 2010). The standard explanation is that households' spending depends on their permanent income and to the extent that income changes in economic downturns (e.g. due to unemployment) are transitory rather than permanent, many households can smooth their consumption by borrowing, drawing on savings, or postponing durable purchases (Blundell, Pistaferri, and Preston 2008, Krueger et al. 2010). Establishing whether this also describes the case of the GR must await the availability of suitable data. Some preliminary calculations are provided for working-age households in the USA by Heathcote et al. (2010). A more extensive study using data for the UK through to the end of 2009 by Crossley, Low, and O'Dea (2011) demonstrates that, relative to previous recessions, there has been a greater prevalence of cuts in households' non-durable expenditure than their durable expenditure.

[4] The latest data update refers to no later than mid-February 2012.

impact of the GR and we draw tentative conclusions about the factors associated with having a relatively 'soft landing' in terms of the distributional outcomes.

2. Macroeconomic change and the distribution of income

The distributional impact of a major recession is not straightforwardly predictable. Many ambiguities in predictions stem from the fact that household income, our measure of economic well-being, combines multiple income sources and multiple income recipients (going from individual receipt to a household total). The review of existing analytical frameworks underscores the point that clear cut conclusions about the GR's likely impact on income distribution rarely drop out and, hence, empirical analysis is required. None the less, the formal economic models and the decomposition frameworks – breakdowns by type of person ('population subgroup') and by type of income received ('income source') – discussed in the discussion that follows highlights a number of key elements that are later tracked in the empirical analysis.

Stochastic neoclassical growth models and dynamic stochastic general equilibrium (DSGE) models are widely used to summarize macroeconomic trends and to assess the consequences of macroeconomic policy. The models by Castañeda, Díaz-Giménez, and Ríos-Rull (1998), Maliar, Maliar, and Mora (2005) and Heer (2007) incorporate distributional features, but are concerned with cyclical variation rather than major recessions like the GR. They highlight the economic mechanisms (e.g. labour market attachment) that explain observed covariations between changes in the income distribution over time and the business cycle but are of little help to understand the impact of a major economic downturn on the income distribution. Moreover, their (arguable) analytical advantage of 'micro-founding' macroeconomic dynamics is obtained at the cost of suppressing many demographic complexities: although they refer to the household as the unit, they model the behaviour of individuals devoid of household context.

The complexities involved with assessing the impact of recessions can be appreciated by considering the model developed by Atkinson and Brandolini (2006) to illustrate the distributional impact of globalisation. For a stylised population comprising four classes of workers (insured and uninsured unemployed workers, and skilled and unskilled employed workers), the relationship between inequality (the Gini coefficient) and macroeconomic and institutional parameters, such as the skilled wage premium, the unemployment rate, the benefits-earnings replacement rate, and the tax rate on earnings, is computed. Even in this relatively simple characterisation of the economy, the relationship between changes in unemployment and changes in income distribution is not clear cut. It depends on how much welfare states replace the income of unemployed workers, the tax rates required to finance this, and the extent to which globalisation – that is the recession in our case – hits skilled rather than unskilled workers.[5]

One way to deal with these complexities is to decompose the overall income distribution into a relatively small number of constituent elements. One possibility is to partition the total population into homogenous groups according to some socio-demographic characteristic and then examine the distributions within and between groups; alternatively, one can break down total income into its sources and look at the distributions of each type of income and the relationships between them. To some extent, these two approaches can be combined by associating different sources of income with different groups of individuals within the population. Moving along these lines, in their analysis of the distributional impact

[5] Barlevy and Tsiddon (2006) provide theoretical arguments and empirical evidence (for the USA) that recessions tend to amplify the underlying longer-run trend in earnings inequality, regardless of its direction.

of UK recessions, Muriel and Sibieta '… expect to see strong effects of recessions on the incomes of working-age individuals, but weaker effects on individuals who are retired or who are not strongly attached to the labour force' (2009: 14).

Suppose that individuals can be classified into: (*a*) 'rentier households' whose main income is from financial assets (including self-employed professionals; rich individuals living off income from the stock market; rich pensioners living off occupational and private pensions); (*b*) working households whose income is from employment income; and (*c*) non-working households whose income is largely from the state (unemployed working-age people; pensioners with income only from a state retirement pension). There is an income distribution $f_i(y)$ for each class $i=a,b,c$, with mean income highest for rentier households and lowest for non-working households, so that the density function for the incomes of the population overall is the weighted average $f(y)=p_a f_a(y)+p_b f_b(y)+p_c f_c(y)$, where p_i is the fraction of the population in group i, and $p_a+p_b+p_c=1$. Recessions may impact on the overall distribution through changes in the population shares of each group (e.g., a rise in unemployment corresponds to an increase in p_c and a fall in p_b) as well as in the location and shape of the income distribution for each group. It is clear that the final outcome is difficult to predict because of the many potential simultaneous changes in p_i and $f_i(y)$. Things are further complicated by moving from individuals to households: the distributional impact of a general rise in the unemployment rate depends on the extent to which job loss is correlated within multi-adult households – is there a rise in the share of households with no work at all or simply a change in the shares of single- and dual-earner households? Also living arrangements can change as a consequence of the recession. Greater unemployment may lead more young people to return to live with their parents, and unrelated adults may be more likely to share accommodation to benefit from economies of scale – the 'doubling-up' recently observed in the USA (see below).

The alternative decomposition by income source characterises the channels by which a recession has effects on income inequality in terms of changes in three sets of elements: the share of each type of income in total income, the inequality of each income type, and the correlations between the income sources. The distribution of household income is typically much more equal than the inequality of any one of its constituent sources (e.g. Jenkins 1995, Table 6, for UK examples). As employment income typically makes a larger contribution to household income inequality than does every other source, the distributional impact of a recession is largely driven by what happens to the contribution of income from the labour market, but this is not the only relevant channel. On the one hand, the share of labour income typically falls in macroeconomic downturns, because of greater unemployment. This may have an equalising impact because less weight is given to an income source that comprises a relatively large share of total household income. But, on the other hand, the combined share of all other income sources must rise, which increases inequality if sources with increased shares are those that are more unequally distributed than employment income (e.g. income from investments and savings). The inequalities of each income source may also change: for example, if there are reductions in work hours for middle- and lower-paid workers but no changes for the higher-paid salariat, the inequality of employment income will increase, and this has a disequalising impact on the household income distribution. The net effect on overall household income inequality depends on the precise nature of the recession, and the policy responses to it (which may change the cash transfers received and taxes paid).

In sum, analysis of the distributional impact of recessions using decomposition approaches (whether by population subgroup or income source) shows that it is possible for a macroeconomic downturn to lead to either a decrease or an increase in overall income inequality. There are multiple elements that may change in offsetting directions, so the net effect is unclear in principle. There is some descriptive evidence that, in practice, recessions

are associated with greater inequality, but that evidence mainly refers to working-age households rather than the whole population, and what happens to other groups in the population can affect the distributional outcome for the population as a whole.

3. Evidence about the distributional impact of macroeconomic change

The empirical evidence about the distributional impacts of macroeconomic change is diverse, ranging from econometric analysis of the relationship between summary measures of inequality (and poverty) and macroeconomic aggregates, to studies relating changes in the macroeconomy in general with changes in the fortunes of the richest or the poorest individuals within a nation.

There is a long history of studying the relationship between unemployment (and inflation) and income inequality and poverty in the USA. An early set of papers addressed the topic by fitting parametric models of the income distribution year by year and relating changes in model parameters to macro-economic factors (Metcalf 1969; Thurow 1970). A later strand of research has used regression analyses to relate time-series data about income shares to macroeconomic variables (Beach 1977 and Blinder and Esaki 1978 for the USA; Beach and McWatters 1991 for Canada; Björklund 1991 for Sweden; Nolan 1988–89 for the UK; see Parker 1998–99 for a review). These studies typically find a regressive impact of greater unemployment rates, but such definitive conclusion has disappeared from more recent analyses using longer run of data and more robust econometric techniques (see e.g. Jäntti and Jenkins 2010 for the UK and Parker 2000 for a methodological discussion). Rather than modelling distributional summary statistics as in the Blinder-Esaki approach, Farré and Vella (2008) estimate a semi-parametric regression model on individual incomes to calculate counterfactual densities conditional on different macroeconomic scenarios. They conclude that the high unemployment rates of the early 1990s in Spain were partly responsible for the greater income inequality at that time.

Other studies focus on the impact of recessions and other macroeconomic phenomena on specific parts of income distribution. The burgeoning, recent literature on 'top incomes' has used administrative tax records to estimate, for many countries, long historical series about the shares of total pre-tax income held by the richest fractions of tax units (say 10, 1, or 0.1 per cent). Atkinson, Piketty, and Saez (2011) summarise the distributional consequences of the Great Depression that are suggested by these studies as follows:

> Among the thirteen countries for which we have data, the period 1928–31(2) saw a rise in top shares in Canada (top 1 percent), India, Indonesia, and Ireland, and no change in Finland and Germany. The remaining seven all saw top shares reduced. The top 0.1 percent lost a fifth or more of their income share in Australia, France, the Netherlands, New Zealand, the United Kingdom, and the United States. In many countries, therefore, the depression reduced inequality at the top (2011: 64).

As measured on top income shares, [6] changes in inequality during the Great Depression then differ across countries. In their econometric study of the long-run determinants of trends in top income shares in 16 countries over the 20th century, Roine, Vlachos, and Waldenström (2009) observe that 'periods of high economic growth disproportionately increases the top percentile income share at the expense of the rest of the top decile' (2009: 974); by implication, a reduction in economic growth (as in a recession) is associated with a decline in

[6] Leigh (2007) argues from country panel regression evidence that trends in top income shares are correlated with more comprehensive inequality measures such as the Gini coefficient.

the share of the richest 1 per cent. They also find that financial development is pro-rich and the onset of banking crises reduces the income share of the rich. In summary, recessions appear to have been associated with decreases in income shares for the richest groups on average, but there is heterogeneity in the experience around that average none the less.

The alternative literature that has investigated the fortunes of the poorest individuals in a society over the business cycle has originally found, for the USA, a strong association between aggregate economic growth and poverty reduction. This association appears to have become much weaker in the 1980s (Blank and Blinder 1986; Cutler and Katz 1991). Cutler and Katz remark that 'the experience of the 1990–91 recession reinforces the perception that the poor bear a disproportionate share of the losses from a recession' (1991: 4), but draw attention to factors other than the aggregate macroeconomy that affect the living standards of the disadvantaged, such as the changes in relative labour demand against the less skilled. Nevertheless, asking what lessons can be drawn for anti-poverty policy from the 1990s, Blank's 'Lesson 1' is that 'A strong macroeconomy matters more than anything else' (2000: 6). Changes in social protection are a reason why the relationship between poverty rates and the macroeconomy can vary over time. For households with children in the USA, Bitler and Hoynes (2010) provide some evidence that the counter-cyclical pattern of the poverty rate (higher when unemployment rates are higher) was reinforced by the mid-1990s welfare reforms. In Europe, there is concern that poverty did not fall as fast as hoped during the years of economic growth prior to the GR even though average incomes and employment increased: as discussed by de Beer (2007), Cantillon (2011), and Vandenbroucke and Vleminckx (2011), this may stem from the fact that rising employment has benefited less workless and low work-intensity households, and has been often accompanied by a reduction in benefit generosity.

Further evidence comes from case studies. We summarise some of them here (see Jenkins et al. eds 2013 for details).

- Atkinson and Morelli (2010) review the available evidence for the Great Depression in the USA, and find that the Gini coefficient fell between the year of the crash, 1929, and 1935–6, although they warn that this comparison could 'mask a rise in inequality followed by an immediate fall' (2010: 26). Using family survey data, Mendershausen (1946) provides some evidence of substantially higher inequality in 1993 than in 1929 in 33 large and middle-sized US cities. This increase was attributed to a growth in inequality within the lower part of the distribution and also within the top of the distribution, combined within a growing gap between the average incomes of the bottom and top groups. Among possible explanations, Mendershausen stresses a fall in unearned income impacting most at the top of the distribution, and a rise in unemployment hitting in particular the low-skilled at the bottom of the distribution. Poverty must have risen sharply when judged in absolute terms given the changes at the bottom of the distribution and the drop in real incomes generally.
- As shown by Denavas-Walt, Proctor, and Smith (2011), during the seven US recessions between 1970 and 2008–9 (the GR), real median household income fell, though in most cases the decline began before the recession and continued after it officially ended. The declines in real income were experienced across the income range from poorest to richest groups. Absolute poverty rates rose though, as for the changes in the median, these trends occur within longer-run rises in poverty. Indeed, the prolonged negative effects of the last three US recessions are shown by the further fall of median income and rise of poverty rates in the first calendar year following the end of the recessions.
- During the most prolonged recession since World War II of New Zealand's economy (Statistics New Zealand 1999), the unemployment rate more than doubled from 4 per cent in 1986 to around 10 per cent in 1991, and median real equivalised household

income fell by almost 4 per cent. Despite the major recession, the proportion of persons with an income below 60 per cent of the 'contemporary' median stayed at 14 per cent, as the real income value of this 'relative' poverty line fell at the same pace as the median. With a threshold fixed in real terms at the 20th percentile in 1996, the poverty rate rose instead from around 15 per cent to 20 per cent. These different pictures reflect differences in income growth in different parts of the income distribution, favouring the top relative to the bottom of the distribution: overall inequality rose substantially, with the Gini coefficient rising from 0.25 in 1986 to 0.31 in 1991.

- In Ireland, at the time of the Celtic Tiger boom, median household income almost doubled between 1994 and 2001, and yet the proportion of persons counted as poor using a 60-per-cent-of-median threshold increased from 16 per cent to 22 per cent (Layte, Nolan, and Whelan 2004). If the poverty line is instead anchored at its 1994 value in real terms, then the proportion of persons counted as poor more than halved between 1994 and 2000 (Nolan, Munzi, and Smeeding 2005). Although everybody's real income grew, incomes grew more for recipients of labour and capital income (concentrated towards the top) than for recipients of state support such as pensioners (concentrated towards the bottom).
- As with the GR, the Nordic crisis of the late 1980s and early 1990s was initially a financial crisis (following rapid economic growth and financial market liberalization) which turned quickly into a more general and major recession in Denmark, Finland, Norway, and Sweden. Unemployment rates increased substantially from relatively low levels to rates that had not occurred since the 1930s. Yet, the impact on poverty ratios was 'more or less neutralised by compensations from unemployment insurance or social welfare systems' (Gustafsson and Pedersen 2000: 11). The poverty picture looks somewhat worse with a fixed real income cut-off than with a relative line in Sweden (Gustafsson 2000), but not in Denmark (Pedersen and Smith 2000). Also the impact on the inequality of household disposable income (among individuals aged 20–64) was surprisingly low, although the mitigating effect of unemployment benefit is only part of the story according to Aaberge et al. (2000). Conclusions about cyclical sensitivity of incomes and the stabilising role of welfare states depend in part on which groups are considered, in particular whether the population as a whole is included or only people of working age (see also Jäntti and Ritakallio 2000 on Finland and Aaberge, Andersen, and Wennemo 2000 on Norway).
- Muriel and Sibieta (2009) comprehensively review evidence about how the UK distribution of real equivalised net household income among individuals changed in three recessions prior to the GR: 1973–5, 1979–81, and 1990–2. They show that median real income levels fell in the first two recessions and remained roughly constant in the third. Sensitivity of average incomes to the cycle was markedly greater among family types dependent on the labour market for income by comparison with groups such as pensioners and lone parents who are much more reliant on benefit income. The income loss across the middle of the income range was broadly similar across the three recessions, but the experience of those at the top and bottom of the distribution differed. As a result, 'income inequality did not evolve uniformly over each recession. During the mid-1970s recession, it fell slightly, having been constant beforehand. Then during the early 1980s recession it rose, though this seems to be part of a rising trend throughout the 1980s. During the early 1990s recession, income inequality was flat, having risen substantially during the late 1980s. Having fallen, risen and stayed constant during these recessions, income inequality has clearly not moved in one single direction during recessions in the past' (Muriel and Sibieta 2009: 23). Relative poverty slightly fell,

largely because pensioner poverty fell substantially; absolute poverty remained constant or rose, particularly among children.

The last set of evidence can be drawn from simulating the impact of the GR by means of tax-benefit microsimulation models. These exercises can either be used to 'stress test' welfare states, that is to calculate the extent to which different institutional arrangements 'automatically' protect household incomes, or to study the distributive implications of the fiscal packages adopted in response to the GR. They can hence help disentangling the direct from indirect effects of the GR.

For the first type of exercises, the crucial issue is how to model the shock to the income distribution. For instance, Dolls, Fuest, and Peichl (2011, 2012) compare an across-the-board decline in gross household income by five per cent ('income shock') with an equal aggregate fall in household income arising through an increase in the unemployment rate among working households ('unemployment shock'), keeping all socio-demographic characteristics unchanged. Figari, Salvatori, and Sutherland (2011) model instead the unemployment shock in a more realistic fashion by estimating the risk of becoming unemployed from the European Labour Force Survey, hence allowing for the characteristics of unemployed people to differ before and after the GR onset. According to Dolls, Fuest, and Peichl (2011), the income shock leads to a fall in inequality in all 19 EU countries they consider, whereas the unemployment shock increases the Gini coefficient in 15 out of the 19 countries and decreases it in the other four; both shocks raise the proportion of persons who are poor (relative to a poverty line that is not defined in the paper). Extending the exercise to the USA, Dolls, Fuest, and Peichl (2012) show that the degree of 'automatic stabilisation' through taxes and benefits is broadly similar in the Euro area countries to that estimated for the USA in the case of the income shock, but is higher in the case of the unemployment shock. Figari, Salvatori, and Sutherland (2011) conclude that, in Belgium, Spain, Italy, Lithuania and the United Kingdom, the main protection for individuals who become unemployed is provided by being in a household where other people have earnings. A general lesson of these exercises is that there is large heterogeneity even across EU countries, and that there is a need to look at the social protection system as a whole, and how its various elements interact with each other: focusing on unemployment benefits alone is going to provide a partial picture.

An example of microsimulation focusing on the indirect effects of the GR, is provided by Callan, Nolan, and Walsh's (2011) study of the public sector pay cuts introduced in Ireland in 2009/10 to reduce post-GR public deficit. As public sector workers in Ireland are drawn from the middle of the income distribution (being relatively high-skilled and enjoying a positive public sector wage premium as compared to private sector workers), their pay cut is estimated to reduce inequality relative to a counterfactual package where all public and private sector pay rates are uniformly cut by 4 per cent.

To sum up, what do we expect the distributional impact of the GR to be from surveying empirical evidence on past recessions and simulation exercises? It is clear that no unambiguous conclusions can be drawn, but three main lessons emerge.

First, recessions tend to hit incomes throughout the distribution range, but the incidence of income falls depends on which sorts of income are most affected, e.g. employment income vìs-a-vìs income from savings and investments. 'Absolute' poverty rates, that is measured using a threshold fixed in real terms, tend to rise because of the income falls for those at the bottom of the household income distribution. 'Relative' poverty rates may also increase, depending on how a poverty line defined as a fraction of contemporary median or mean income changes; marked declines in middle incomes can lead to relative poverty rates remaining the same or even decreasing. Finally, whether inequality of household income rises or falls in a recession is unclear: it depends on the specific pattern

of income changes at different points across the distribution, e.g. the extent to which the incomes of the richest groups fall relative to the middle and the middle relative to the poorest.

Second, there is likely to be a great diversity of experience across countries, both in the short and the longer run. The impact of the GR depends on its specific nature in each country, on differences in the systems of social protection, of labour market institutions and so on, and on the set of policy measures introduced as a consequence of the GR. For instance, the pattern of income changes across the distribution associated with a recession depends on the progressivity of the income tax system and the nature and extent of income maintenance provided to working and non-working families throughout the income range.

Third, the evidence from past recessions may be an unreliable guide to the impact of the GR. Recessions differ from each other not only in their causes and intensities but also in the experience of the period preceding the downturn. For instance, the OECD regards as exceptional the 'revenue buoyancy prior to the crisis' and 'the sustained increases in asset prices, corporate profits and government revenue during the great moderation' (OECD 2010c: 45 and 228).[7] From this perspective, countries were relatively better placed to counter the GR's effects than in previous downturns in terms of the finances of both governments and firms. On the other hand, there have been important pre-GR changes in labour markets and social protection, leading to greater labour market 'flexibility' and to more work-orientated welfare benefit systems. According to OECD, in the two decades prior to the GR, for working-age households 'redistributive systems were generally effective at slowing trends towards widening income gaps which were due to falling incomes at the bottom. Tax-benefit systems, however, were less successful at offsetting growing inequality in the upper parts of the distribution, which became a more powerful driver of inequality trends in some countries' (OECD 2011f: 293). As the redistributive capacity of tax-benefit systems has been falling over time, one might expect less stabilisation of the incomes of working-age households in the face of a major economic downturn such as the GR – although the overall picture would need to account also for redistribution among households headed by an elderly person. Whenever the GR is viewed as a structural break in a series, the relationship between inequality, or poverty, and macroeconomy cannot be reasonably inferred from econometric models fitted to past data.

4. The Great Recession and its Consequences for Household Incomes in 21 Countries

The historical record concerning the distributional impact of previous recessions has shown that outcomes have been diverse across countries. To see whether this is also true for the GR requires up-to-date and cross-nationally comparable household survey data covering the period before, during, and after the recession. Such data are not yet available and so we adopt here an eclectic approach. We examine changes in the elements comprising household income drawing on a number of different sources. We consider the 21 OECD countries listed in the introduction, but we focus on six countries in particular: Germany, Ireland, Italy, Sweden, the UK, and the USA.

We first consider the macroeconomic characteristics of the GR and the implications for the household sector using national accounts data. We then provide the backdrop to our subsequent analysis, by documenting for 12 European countries plus the USA the contribution to overall inequality of household income and mean income in 2007 of four income sources: labour income, income from benefits and other cash transfers, property and other cash income, and direct taxes). We subsequently move to analyse changes in the

[7] The Great Moderation is the label given to the period of macroeconomic stability experienced by many countries between the early 1990s and the GR.

distribution of work, which is of fundamental importance for household finances, and the distribution of the four main income sources. Lastly, we summarise the implications of the analysis by income source and draw on published statistics based on household surveys to assess the short-term impact of the GR on average household incomes, on poverty rates and on inequality in incomes. We conclude by briefly discussing the directions in which countries are heading in the years after 2009 – the medium-term impact of the GR.

4.1 How the Great Recession developed

The decline in GDP in real terms during the GR is shown in Figure 1. The peak-to-trough fall in quarterly figures, as measured by the OECD in data covering to end-2009, is compared with the average change in recessions over the previous 50 years. (In one or two cases the actual trough came later.) Almost everywhere, and in line with the 'Great Recession' label, the fall was substantially larger than the historical average. A second feature of Figure 1 is the cross-country heterogeneity in the size of the contraction in GDP: it ranges from none in Australia and little more than 2 per cent in New Zealand to 9 per cent in Finland and nearly 13 per cent in Ireland. Nine countries experienced a fall of 5 per cent or more while nine had a fall of 4 per cent or less. Figure 1 also shows the average annual growth rates in real GDP over the 10 years before the GR (these are the numbers given in parentheses after each country's name). These estimates show the extent of the boom that preceded the bust. Austria, with an average growth rate of 2.7 per cent is the median country. Ireland, with a striking pre-GR growth of 6.2 per cent a year is the most extreme case of rise and fall. Finland and Sweden are other examples of higher than average growth followed by a larger than average fall.

The types of macroeconomic shock that provoked the falls in output varied across the 21 countries, from the bursting of a housing bubble in e.g. Ireland and Spain to a collapse in trade in e.g. Germany and Italy, with consequences for household incomes that can be expected to vary depending on the sector of economic activity that suffered the most, e.g. construction or manufacturing.

The recovery in output from the trough also varied substantially. Figure 2 shows quarterly changes in real GDP until late 2011 in our six selected countries. Most of them were among the most severely hit by the GR of the 21 countries we consider here in terms of fall in GDP, but subsequently they displayed a wide range of different experiences. Sweden had a sharp and robust recovery. Germany recovered quite strongly too with the USA not far behind. Recovery was notably weak in the UK and in Italy, and had still not started properly in Ireland by late 2011. If changes in real GDP were our only guide to distributional impact, then we would expect distributional changes between 2007 and 2011 to be smallest in Germany, Sweden, and the USA, and greatest in Ireland. Also the other 15 countries differed considerably in their patterns of recovery. In Denmark, Greece, Japan, Portugal and Spain, output in late 2011 had still not reached the level of the first quarter of 2007, as in the UK, Italy and Ireland. Following an initial output fall that was relatively modest (Figure 1), Greece experienced a continuous decline during 2010 with GDP by the end of the year over 9 per cent below its early 2008 peak. Portugal saw frail growth in 2010 followed by renewed contraction in 2011. Output struggled to grow in Spain throughout 2010–11. Among the remaining 10 countries, annual growth in 2010 averaged 2.3 per cent, ranging from 0.4 per cent in Norway and 1.4 per cent in France to just over 3 per cent in Canada and Finland (OECD 2011*a*, Annex Table 1). At end 2011, the prospects for growth were uncertain in many of the 21 countries, partly as a result of the European sovereign debt crisis that gathered pace during the year, with the OECD commenting that 'advanced economies are slowing down and the euro area appears to be in a mild recession' (OECD 2011*b*: 7).

4.2 The implications for the household sector

GDP measures the size of the economy in terms of the value of goods and services produced. As such, it differs from the revenues eventually available to resident households to sustain their living standards. On one side, there are incomes that are paid to and received from foreigners, a distinction which is particularly relevant in some countries. In Ireland, in particular, GDP fell by 15.4 per cent at current prices between 2007 and 2009, but 'gross national disposable income', which is the amount of resources available for resident units after netting all international payments, fell by 19.3 per cent, i.e. 4 percentage points more. On the other side, national income is divided among the 'institutional' sectors comprising the economy. Businesses may retain profits, which coincide with their share of disposable income in national accounts, to sustain investment plans, while government uses its disposable income to provide for services in kind and collective goods. Thus, the same GDP fall may have rather different implications for current living standards between a country where the decline in income is buffered by the government through a rise in the public deficit, and a country where it is entirely transferred to household finances. The national accounts allow us to disentangle these changes, by providing information for the household sector alone (which also includes small sole proprietorship enterprises and non-profit institutions serving households), as distinct from businesses and government bodies.

The importance of this distinction is illustrated in Figure 3, which compares the evolution of real GDP with that of real Gross Household Disposable Income (GHDI) in the Euro area (left panel) and the USA (right panel). (Real GHDI is obtained using the deflator of the final consumption expenditure of households and non-profit institutions serving households.) Household income appears to be less variable than GDP. During the GR, it stopped rising but did not fall significantly in the Euro area; in the USA, it declined by a smaller extent than GDP and with a lag. The panel for the Euro area also shows that a measure of GHDI augmented by the value of social transfers in kind – 'Gross Household Adjusted Disposable Income', GHADI (not available for the USA) – grew more than GHDI during and after the GR. This evidence suggests that public services did not suffer any cut in real value before the end of 2011, although the situation might change subsequently as a result of the fiscal consolidation packages adopted in many countries of the monetary union. These data warn us that it is misleading to make inferences about the short-term impact of the GR on living standards from looking at GHDI change alone, although on distributive issues they are as silent as GDP data are.

For 18 of the 21 countries in our sample, for which we can decompose GHDI (data are missing for Australia, Japan and New Zealand), we plot the percentage change in real GHDI between 2007 and 2009 against the corresponding change in real GDP in Figure 4. The most striking feature is the prevalent pattern of increases in GHDI despite the almost universal falls in output. Were GHDI to have fallen as GDP did, the data points would be found in the bottom left hand part of the graph below the dashed horizontal line that indicates no change in GHDI. Instead, they lie mostly above this line.

There are increases in GHDI in 12 countries and in seven of these the rise is by more than two per cent. Only in Austria, Denmark, Greece, Italy and the Netherlands did GHDI fall. Notable cases are Ireland, where the 10 per cent contraction in GDP was accompanied by stable total household income, and Sweden and Finland, where household income rose by between 4 per cent and 5 per cent despite a drop in GDP by between 6 per cent and 7 per cent. In contrast, Italy suffered a loss in GDP similar in size to that of the two Nordic countries and a fall of household income by 4 per cent. In part the different dynamics of real GDP and real GHDI during the GR can be explained by the behaviour of their respective deflators. In Belgium, the Netherlands, Denmark, Italy, Portugal, and Greece, the deflator of

household final consumption expenditure, used with GHDI, increased less than that of GDP, by between 1 and 2 percentage points. In these countries, the terms of trade, which drive the difference between the two deflators, moved in a manner that was favourable to households' purchasing power. The opposite happened in Finland, Norway, and Ireland. The overall picture, however, would not change were we to divide both GDP and GHDI by the same deflator. In general, the household sector appears to have been protected from the impact of the severe downturn of 2007–9, and this is the result of genuinely better trends in households' revenues relative to GDP in nominal terms rather than of a different price index.

Why the household sector did relatively well can be explored by looking at changes in the main components of GHDI. We break down GHDI into six components: (a) 'compensation of employees' (wages and salaries before taxation and social contributions); (b) 'mixed income' (income from self-employment); (c) 'operating surplus' (imputed income from rent for owner occupiers); (d) 'property income' (received dividends and other distributed income of corporations, interest from bank accounts, government bonds and private securities, rents and other current private transfers, all net of the amounts paid); (e) 'current taxes on income and wealth' plus 'social contributions' (social insurance contributions, including those directly paid by employers); and (f) 'social benefits' (all public transfers other than those in kind). Social contributions in the national accounts, unlike in most household surveys, include those levied on employers in respect of their workers as well as contributions paid by employees. Countries use different combinations of social contributions and taxes and it is therefore appropriate to combine them for our purposes, although whether it is firms or individuals who really bear the burden of employer contributions is open to debate.

The top panel of Table 1 shows the percentage real change in each component, while the bottom panel shows the contribution of each component to the total change in GHDI. For example, of the 4.0 per cent fall in GHDI in Italy (final row), 5.2 percentage points were due to a fall in the property income (column 3). By definition, the sum by row of values from column 1 to column 6 equals the value in column 7. The values in the bottom panel are obtained by multiplying those in the top panel by the component's share in total income (not shown). Countries are ranked by the change in total GHDI (column 7).

Compensation of employees (column 1) forms the largest share of GHDI in every country (more than 80 per cent in 2007, on average), although its importance varies considerably. (The variation across countries in shares is a feature of the other income sources too.) It is notable that this component of GHDI fell in real terms in only six countries between 2007 and 2009: Spain, Italy, the UK, Sweden, the USA, and Ireland (in increasing order of magnitude). Given its importance in GHDI, the percentage changes in all countries in the top panel of the table are reflected in the figures in the bottom panel, despite being relatively small in magnitude compared to the percentage changes in some other components of income. As we might expect in a recession, self-employment income ('mixed income', column 2) fell much more generally: there are falls in all but three countries.

The change in rental income imputed for owner-occupied dwellings ('operating surplus', column 3) varied greatly across countries: the biggest declines occurred in the UK, Greece, Spain and Ireland, all of which are countries in which residential property prices fell considerably between 2007 and 2009. However, the relationship is weak as, in the USA, the operating surplus increased significantly despite a large decrease in house prices (OECD 2011*e*, ECB 2012). Capital incomes, i.e. the profits distributed by corporations and quasi-corporations to their owners and interests received on financial assets net of those paid on debts ('property income and other transfers', column 4) also generally fell, although there are some very large differences between countries in the percentages changes. Except for Germany, all countries at the bottom of the table – those experiencing the worst dynamics of

GHDI – show negative values large enough to contribute to a reduction in GHDI of about two points or more (see panel b). On the other hand, in the UK, Belgium, Spain, and Sweden property incomes rose by between 4 per cent and 10 per cent, and by as much as 41 per cent in Norway.

Taxes and social contributions (column 5) represent a substantial share of GHDI (the mean value was about –45 per cent in 2007) and the changes over 2007–9 often made a significant contribution to the change in GHDI. In 11 countries, these direct taxes and contributions fell or increased less than the total of all other income sources, thus sustaining incomes during the recession. The marked falls in Sweden, Ireland, and the USA accounted for between 4 and 7 per cent of the GHDI growth. In the remaining countries the average tax burden increased instead: in Germany, Switzerland and the Netherlands it led to an erosion of income growth by as much as 2 or 3 percentage points. Finally, and unsurprisingly, the increase of social benefits (column 6) was very substantial, especially in the traditionally low-spending English-speaking countries but also in Southern European countries, except for Italy. The bottom panel shows that the support to GHDI from social benefits was at least 2 percentage points, with few exceptions, and exceeded 4 percentage points in Greece, the UK, Spain and Ireland. The additional support from public benefits reflects the impact both of automatic stabilisers, e.g. unemployment benefits, and of discretionary spending undertaken as part of economic stimulus packages (e.g. see OECD 2009: chapter 1) although much of this spending may have come through channels other than the benefit system.

These observations suggest that the protection of household incomes against the collapse of economic activity during the GR was largely provided by the government. Figure 5 compares, for each country, the change in total GHDI (top bar) with the change in GHDI if we exclude the change in social benefits (middle bar) and the change in GHDI when we exclude the change in both social benefits and taxes and social contributions (bottom bar). (These values can be obtained by subtracting column 6, and column 5 and 6, respectively, from column 7 in Table 1.) In accounting terms, these values show the change in total household income between 2007 and 2009 that would have occurred had total government benefits and direct personal taxes remained at their 2007 values. The nature of this counterfactual exercise needs to be emphasised. On the one hand, the variation of taxes and benefits reflects the government's counter-cyclical action to sustain household income: the aim of the exercise is precisely that of quantifying these effects. On the other hand, by taking the whole variation of taxes and benefits, it is implicitly assumed that it is entirely attributable to the recession. That means that income would not have varied otherwise and that no other factors would have affected taxes and benefits, which is generally not the case (e.g. public transfers could have increased because of a rise in the number of retirees associated with population ageing). Moreover, other aspects of state support that have affected households during the GR are also not removed from the calculations e.g. changes to indirect taxation or spending on employment creation. In short, the calculations should be seen only as an accounting exercise.

The exercise is revealing nonetheless. As already noted, the support from benefits was everywhere positive: holding just this element of GHDI at the 2007 value (middle bars) results in the change in household incomes always being less positive or, as is typically the case, negative or more negative than it actually was (top bars). When we also include taxes, we observe that changes in GHDI with social benefits and taxes held at the 2007 level (bottom bars) are negative in the majority of cases. In many countries total household sector incomes would have fallen, or would have fallen more, without the support of governments through the tax and benefit system. The difference between the top and bottom bars shows the extent of that support, measured as a percentage of the 2007 value of GHDI. It is a huge 10 percentage points in Ireland and more than four percentage points in six other countries –

Greece, Finland, UK, Spain, USA and Sweden (in order of increasing size). At the other extreme, in Norway, the Netherlands and Germany the support was nil, and even slightly negative in Switzerland. Government responses to the downturn have depended on various factors, including the extent of the problem faced and their fiscal positions prior to the crisis and hence their ability to spend (OECD 2010*b*: 308). Thus, Ireland could afford to use public resources extensively, as it had been in fiscal surplus, whereas Italy had to be more restrained, because of the worst situation of its public finances before the GR.

In short, national accounts show that in most countries public budgets played a crucial role to cushion the negative consequences of the recession for household finances, in the short term. The longer-term implications of the government support to incomes are another story: by and large, the consolidation of public accounts must be paid for eventually by households. Moreover, this observation holds in aggregate. National accounts data only provide a picture about changes in the total but not about changes in its distribution among households. For more concrete information about the distributional impact of the GR beyond the changes in total incomes, we need to look in more detail at changes in different elements of household income packages using household-level data sources.[8]

4.3 The distributional baseline at the time of GR onset

Before embarking on analysis of each component comprising household income in the sections that follow, we document the contribution of each of the different components to mean income and income inequality in a baseline year, 2007. We are able to do this on a comparable basis for 13 countries, 12 European countries and the USA. We use data from the European Union Statistics on Incomes and Living Conditions (EU-SILC) database and the Current Population Survey (CPS) in the case of the USA. Income is equivalised household net income and refers to annual income for 2007, with two exceptions: for Ireland, income refers to that in the 12 months preceding the survey interview in 2007; for the UK, income refers to that in the period around the time of the survey interview in this year, expressed as an annual amount pro rata.

Figure 6 first illustrates the variation across the 13 countries in the degree of income inequality in 2007 using the coefficient of variation (*CV*), calculated consistently using the data just described.[9] Viewed on its own as a summary measure of income inequality, the *CV* is not ideal as it may lack robustness to high income outliers. But, broadly speaking, the country ordering by inequality on the *CV* is what we might expect. For example, Sweden and Finland are among the lower inequality countries and the USA and the UK among those with higher income inequality, although it is surprising that the value for the USA is not higher given other rankings of income inequality across countries. The estimates in Figure 6 relate to a single year but as shown below there was no clear trend upwards or downwards in inequality or relative poverty for most of the EU countries around the time of GR onset. This stability gives us a little more confidence in attributing distributional changes that occur in the period after 2007 to the GR and associated policies.

In order to maximise the comparability of the data across countries in our analysis of income components, we distinguish only four household income sources: labour income

[8] Changes in total household income derived from household-level data may differ from those derived from national accounts for at least two reasons. First, household survey data will be studied in terms of 'per equivalent person', while the analysis so far has considered totals unadjusted for population size. Second, definitions of income, coverage and methods differ between national accounts and household surveys. For a reconciliation, see e.g. Atkinson and Micklewright (1983) for the UK and Brandolini (1999) for Italy.

[9] This inequality index is used because it links with the source decomposition analysis that follows.

(income from employment and self-employment), cash transfers (all cash benefits from the government plus transfers such as state retirement pensions), other income (largely income from investments and savings), and direct taxes (income taxes and employee social insurance contributions; treated as negative income). The sum of these four components equals total household net income. Both total income and each of the components is equivalised (by the square root of household size), and we examine distributions of these household income variables among individuals. (Analysis of distributions of unequivalised household incomes among households yields similar conclusions.)

The average income of any particular income group depends on the group-average values of each of the four income sources. Normalising by overall average income, the 'importance' of each income source for a given income group is given by the share of the group's household income total. In Figure 7, we show income shares by component for the richest fifth (panel a) and the poorest fifth (panel b). Observe that income shares for direct taxes have negative values, by construction. (Receipts of refundable tax credits such as the working tax credit and child tax credit in the UK, and the Earned Income Tax Credit and child tax credit in the USA, are counted as cash transfers rather than as offsetting tax payments.) Countries are ranked in ascending order of the share of employment income in total income. Countries with longer bars tend to have larger shares in total income of cash transfers (positive shares) and of direct taxes (negative shares). For each country, the sum of the four shares is 100 per cent.

For the richest fifth, it is clear that the most important component in household income packages is employment income. Its share varies from 105 per cent of the total in Spain to 138 per cent in Denmark. There is also a general tendency for larger (more negative) shares of direct taxes to be associated with larger employment income shares in this income group (the share is –22 per cent in Spain and –65 per cent in Denmark). The share of cash transfers is rather small in every country for this richest fifth, which is unsurprising. Perhaps more unexpected is the relatively small share of other income in all of the countries: the shares range from 3½ per cent in Portugal to around 11 per cent in Sweden, and 15 per cent in Denmark, Finland and the USA. To some extent, these estimates may reflect the relatively poor coverage of this component in the EU-SILC household surveys; income data for the three Nordic countries are derived from administrative registers which may have better coverage of top incomes (especially from capital). It may also reflect the fact that the 80th percentile, which is the income cut-off between the richest fifth and the poorest four-fifths, is not the top of the distribution. The 'top incomes' literature uses much higher cut-offs (typically the 90th percentile and above).

For the poorest fifth, the picture is quite different and there is greater cross-country heterogeneity. At one extreme are the three Southern European countries with relatively large employment income shares (ranging between 61 per cent in Spain and 88 per cent in Greece) and relatively small cash transfer shares (ranging between 50 per cent in Spain and 43 per cent in Greece). The USA is also an outlier, with notably small shares for cash transfers and for taxes (but note the earlier remark about comparability). At the other extreme are the Nordic countries with below-average employment shares but large shares for cash transfers and also direct taxes. Western European countries such as Germany and Belgium lie broadly in between, having smaller shares for cash transfers and direct taxes than the Nordic countries. The shares of other income in total household income are very small in all 13 countries, less than 5 per cent in each case.

Assessing the contribution of income sources to overall inequality is a trickier issue than assessing their contributions to mean income because there are many potential ways of doing this. Various formulae for source contributions have been developed. Here we use the decomposition rule proposed by Shorrocks (1982*a*, *b*). That is, the contribution of a given

income source, *k*, to total inequality is given by the covariance of *k* with total income divided by the variance of total income (which is the same expression as the 'beta coefficient' used in finance to assess the riskiness of an asset held in a portfolio). More intuitively, the contribution of each source can be written as $s_k=\rho_k(\mu_k/\mu)(CV_k/CV)$. This expression states that source *k*'s contribution to total inequality is given by the product of the correlation between k and total income (ρ_k), the share of *k* in total income (the ratio of the source mean to the overall mean, μ_k/μ), and the inequality of each income source relative to total inequality where inequality is measured by the coefficient of variation (CV_k/CV). The formula has the attraction that the contributions sum to 100 per cent and there is a clear interpretation: positive values correspond to sources with a disequalising contribution to total inequality, and negative values correspond to sources with an equalising contribution. The greater the magnitude of s_k, the larger the contribution.[10]

Source contributions to total inequality in each of the 13 countries are shown in Figure 8. The countries are ranked in ascending order of the contributions of employment income, the source which accounts for most of the income inequality in every country, with s_k values ranging from around 80 per cent (Denmark) to nearly 150 per cent (the UK). This is perhaps unsurprising given the generally large shares of employment income in household income, though remember that income shares are not the only factors determining inequality contributions. In all the countries, direct taxes make an equalising contribution though there is substantial variation in its magnitude. Cash transfers account for virtually none of the observed inequality, and are disequalising in five countries. In contrast, other income has a relatively large disequalising contribution, especially in the four Nordic countries and the USA. These large contributions partly arise from the large shares of other income in total income in these countries but this is not the full story. In additional analysis (not shown), we find that the inequality of other income relative to overall inequality (CV_k/CV) is substantially larger in the Nordic countries than other countries, especially in Denmark.

In sum, the decomposition analysis emphasises the importance of income from work for the distribution of household income and accounting for its inequality. For other dimensions of the distributions such as income levels (and hence poverty rates), other income sources play a more important role. Although these are common features across the countries we have analysed, the analysis also suggests that there are important baseline differences across countries in terms of the different income components, as well as the different levels of overall inequality on which we commented earlier. For example, there is a suggestion that income from savings and investments may play a much more important role in household income in the Nordic countries than in other countries and so, to the extent that these sources are especially affected by the GR relative to (say) employment income, these countries may exhibit different distributional trends after GR onset.

4.4 Changes in the distribution of work

The labour market is the main source of income for the household sector, at least for households of working age. The change in the employment rate between 2007 and 2009 among people of working age varied a great deal across the 21 countries: see Table 2. At one extreme there are six countries with virtually no change in employment rates or even a modest increase: (in order of increasing magnitude) Greece, France, Austria, Switzerland, Netherlands and Germany. At the other extreme, there are four countries for which the employment rate fell by more than 3 percentage points: Sweden (–3.5), the USA (–4.2),

[10] OECD (2011*f*) uses a Gini decomposition rule and report estimates for the mid-2000s for the different income sources broadly consistent with what we report here for 2007 using the Shorrocks approach.

Spain (–6.0), and Ireland (–6.7). These are large falls relative to historical trends in a span of only two years.

In most countries the response of employment to the fall in GDP was smaller than in previous recessions (OECD 2010*a*: 34), although there are clear exceptions. Moreover, much of the variation across countries in the change in employment is not well explained by the differences in the GDP changes – the correlation between the employment rate changes in Table 2 and changes in GDP for the same period is just under 0.5. Commenting on the relationship, the OECD notes that: 'Job losses were unusually large compared with the fall in output in a few countries where a boom-bust pattern in the housing market played an important role in causing the recession, notably Spain, the United States and, to a lesser extent, Ireland (where the fall in output was also especially large). By contrast, the employment response to declining output has been unusually muted in a larger number of countries, including Germany, Japan…[and] the Netherlands… where a sharp decline in exports was a major driver of the downturn' (OECD 2010*a*: 17).

Changes in employment between 2007 and 2011 are shown in Figure 9 for our six selected countries. Values in each quarter are indexed relative to the values for the first quarter of 2007. It should be noted that the data refer to total employment and to people of all ages, rather than to the employment rates for people of working age that are the subject of Table 2, and this may account for any differences in the picture obtained for 2007–9 for particular countries, for example Sweden. The period covered and the vertical scale of Figure 9 is the same as for the changes in GDP shown earlier in Figure 2.

Comparison of the two graphs tells us more about the relationship between changes in GDP and employment. On the one hand there are similar features, in particular the wide variation across countries. Total employment rose by about 5 per cent in Germany and Sweden, the two countries that also show the largest net increases in output across the same period in Figure 2. At the other extreme, the continued downward trend in employment in Ireland through 2010 and into 2011 stands out, with employment in late 2011 some 13 percent below the level at the start of 2007. On the other hand, there are some notable differences in the trends shown in the two graphs. For example, there was no sharp fall in total employment in several countries where output fell, reflecting the weak relationship between changes in employment and in output discussed above, and no clear upswing in employment as the economy recovered in other countries, for example Italy but most notably in the USA. The large fall in employment in the USA (much larger than in the four previous recessions) was associated with a much larger rise in unemployment than would have been expected on the basis of the change in GDP and the relationship between unemployment and output in past recessions (see OECD 2010*a*: Box 1.1.)

As with employment, the typical pattern in other countries was for unemployment to change less than would have been expected given the past relationship with changes in GDP, although this was not the pattern everywhere. Spain is another exception, like the USA, where unemployment rose and employment fell much more than one would expect (OECD 2010*a*, Figure 1.10) with the employment rate for working age people falling by another 1.2 percentage points between 2009 and 2010 and an unemployment rate in 2010 of 20 per cent. These differences from past recessions in the extent of change in employment (resulting in loss of earnings) and unemployment (leading possibly to unemployment benefit) mean that the distributional impact associated with a given change in GDP may differ from that experienced in the past.

Employment changes varied a great deal by sex and by age: see Figures 2.10(a) and 2.10(b) which show changes between 2007 and 2009 in employment rates. In all 21 countries, employment rates fell more for men than for women. In 10 countries, employment rates for women actually rose over this period. A small rise in participation rates for women

for the OECD as a whole was one contributory factor, which could reflect an added-worker effect from the male employment losses (OECD 2011*c*: 25). The changes for men in Ireland and Spain are striking: a 10 percentage point decrease in employment rates, with the next largest change being for the USA with a decrease of nearly 6 percentage points. Figure 11 gives the quarterly changes in the employment totals for each sex for 2007–11 for our six selected countries and their comparison again underlines starkly the differences in the impact of the GR for men and women.

Employment fell between 2007 and 2009 by much more for people aged 15–24 than for people of older ages, and this occurred almost everywhere: see Figure 10(b). Those persons both young and male experienced massive falls in employment rates in Ireland and in Spain: by 24 and 20 percentage points respectively between 2007 and 2010 (OECD 2011*c*: 246–7). Notably, employment rates for persons aged 55+ rose slightly over 2007–9 in more than half of the 21 countries.

The OECD has noted that the concentration during the GR of employment loss on men was unusual compared to earlier recessions and 'probably reflects the sectoral composition of the negative shock to aggregate demand' (OECD 2010*a*: 21–2), especially the impact of the trade shock to manufacturing and of the bursting of housing price bubbles on construction. The greater impact on the young has followed the pattern of earlier recessions while increases in employment rates among older people is a new pattern, which the OECD suggests may reflect a labour supply response to losses in retirement savings and/or lower availability of early retirement options compared to previous recessions. Attention has also been drawn to the greater impact on the less skilled (OECD 2010*a*: Figure 1.3).

Changes in hours worked were another form of reaction to change in aggregate demand during the GR; and fewer hours worked for the same hourly pay means that labour income falls. In countries where reductions in total labour input during the GR took place more through reductions in hours worked than through lay-offs or reductions in hiring, we might expect a more muted impact on the distribution of household incomes. With 'very few exceptions' (OECD 2010*a*: 35), there was a reduction in both employment and in hours during the GR. The exceptions among our 21 countries are Spain (average hours slightly up) and Germany (employment up: see Table 2). The precise combination across the peak-to-trough changes in GDP varies substantially across countries, with the role played by lower hours ranging from 'under 20 per cent in Denmark, Portugal and Spain to over 95 per cent in … Norway, Australia [and] Germany' (OECD 2010*a*: 35–6).[11]

Up to this point we have considered changes in the distribution of work across individuals rather than across households, but it is household incomes with which we are concerned in this paper. If you lose your job or are unable to find a new one, the effect on your household income is cushioned if you live with other persons who have work. On the other hand, if everyone in the household loses their job, then total household income falls more substantially, and the probability of this occurring is increased if people with similarly

[11] As well as reductions in overtime working, a shift from full-time to part-time work is one way that average hours of work may adjust. The part-time share of total employment rose in all 21 countries between 2007 and 2009 for men and in 13 countries for women and by an average of 0.5 and 0.8 percentage points respectively (OECD Employment and Labour Market Statistics database, accessed 29 March 2011). Much of this change was probably involuntary. The typical pattern was therefore for full-time employment to fall by more than total employment. Two of the largest rises in the part-time share between 2007 and 2009 were for the countries where total employment fell most: the USA (a rise in share of 1.6 percentage points for both sexes) and Ireland (a rise of 2 percentage points for men and 3.4 points for women). Another way in which average hours may fall is through an increase in short-time working schemes, which have been more widely used in a number of countries. The share of all employees participating in short-time working schemes rose over 2007–9 by more than 2 percentage points in Belgium, Germany, Italy and Japan (OECD 2010*a*: Figure 1.19). For a more wide-ranging discussion of short-time working schemes during the GR, see Boeri and Bruecker (2011).

high risks of non-employment live together. Thus, for example, the very large fall in employment rates among Spanish and Irish young people may have had rather different impacts in the two countries, since adult children are more likely to live with their parents in Spain than in Ireland.

A key issue, then, is what has been happening to the proportion of households without work. Prior to the GR, employment in some OECD countries was becoming more unevenly distributed across households with members of working age; and the prevalence of household worklessness is more highly correlated across countries with (working age) poverty rates than are individual employment rates (see e.g. Gregg and Wadsworth 1998, OECD 2001, Gregg, Scutella, and Wadsworth 2010).

We can examine household worklessness for all but one of our EU countries (Sweden). Panel (a) of Figure 12 shows for 2007 and 2009 the percentage of 18–59 year olds living in households in which nobody worked (when interviewed by the survey). The rates vary substantially across countries, reflecting differences in the strength of national labour markets and the propensity for young people to remain in the parental home (greater in countries such as Greece, Italy, and Spain). In general, the changes in the rates between 2007 and 2009 were modest, which is consistent with the relatively modest changes in individual employment rates in many countries over the same period shown in Table 2. In four countries there were small falls in the workless household rate and in only two countries are there increases of more than 1½ percentage points. The exceptions are Spain and Ireland where there were large rises of 4.6 percentage points and 5 percentage points respectively.

Changes in workless household rates are plotted against changes in individual employment rates in panel (b) of Figure 11. The figures are based on the same source, Labour Force Surveys, but there are slight differences in the age ranges covered. The increase in the percentage of people aged 18–59 in workless households in Spain and Ireland was less than the increase in each country's individual non-employment rate, but only by about 1½ percentage points in both cases. That is, the large falls in individual employment were also accompanied by significant rises in household worklessness in these two countries. The extent to which co-residence can play an income insurance role was limited when the GR increased job loss among older workers (parents) as well as younger workers (currently or potentially co-resident children) and among women as well as men. Labour income losses in the bottom half of the income distribution were therefore likely in Spain and Ireland. These two countries may be contrasted with Denmark and Finland for which there were also relatively large increases in the individual non-employment rate between 2007 and 2009 but the workless household rate fell. Children leave the parental home at younger ages in the Nordic countries than in southern Mediterranean countries; the changes shown in Figure 12 for Denmark and Finland may represent a return to the parental home by young people, i.e. household composition itself may be adjusting in response to the GR. If so, this is likely to mute the impact of greater individual unemployment on household incomes in these countries.

There is some evidence that the rate of household worklessness also rose in the USA, the country with the third largest fall in the employment rate between 2007 and 2009 (see Table 2). We draw on US Bureau of Labor Statistics estimates of the proportion of families with no one in work. (The data refer to families of all ages rather than just to those of working age and the US definition of a 'family' is somewhat narrower than the Eurostat definition of a household as it excludes unrelated individuals.) The fraction of all US families with nobody in work rose from 17.4 per cent in 2007 to 19.6 per cent in 2009, and to 20.0 per cent in 2010 (Bureau of Labor Statistics 2011*a*). The rise of 2.2 percentage points between 2007 and 2009 for families of all ages compares with the fall in the individual employment

rate among people of working age of 4.2 percentage points (Table 2). Among the one in eight families containing an unemployed person in 2010, one third had no employed member.

There is also some evidence for the USA that household formation has been changing as a result of financial pressures, with people moving into the same household as their relatives or friends or delaying forming their own household – referred to as 'doubling-up' in the USA. It has been estimated that between 2008 and 2010, the number of multifamily households rose by 11.4 per cent and the number of 25–34 year olds living with their parents rose by 8.4 per cent (US Census Bureau 2010; the size of the bases from which these increases occurred is unclear).[12] Doubling-up helps offset the impact of the GR on the distribution of household income but, again, the size of the effect is unclear. Also, the effect on household incomes must be distinguished from the effects on the distribution of a broader concept of well-being that took into account the changes in household formation that are forced by economic need. A young Finn or young American who used to live alone or with friends may not be happy to return to the parental home.

4.5 Changes in earnings from employment

Figure 13 compares the changes for 21 countries in (real) average gross annual earnings per full-time equivalent employee between 2007 and 2009 with changes over the same period in the employment rate shown earlier in Table 2. (There is a small non-comparability in the data: average earnings are adjusted for part-time working but employment rates are not.) In general, average earnings rose – there were small falls only in the USA and the UK, and in Australia in the context of a growing economy (see Figure 1). This is likely to have had a disequalising impact on the distribution of household incomes. This rise in average earnings probably reflects a 'selection' effect, with lower-paid workers being more likely to be laid off so that the average among those still in work is higher. That is, it 'may reflect composition effects, with the average… tending to rise in countries where large numbers of youth, low-paid and temporary workers have been laid off' (OECD 2010*a*: 43). This explanation may be particular relevant for Ireland and Spain, outlier countries with an increase in average earnings of between 7 per cent and 8 per cent. However, there is no simple relationship between the changes in average earnings and the changes in employment.

Using the same source, national accounts, Figure 14 sets these changes in average earnings over 2007–9 in the context of trends earlier in the decade and extends the analysis to 2010, a year when growth in output had returned in most countries. In a substantial number of countries there was strong real earnings growth in 2000–7, consistent with the widespread economic growth during this period although there are quite a few exceptions. Ireland is a clear example. Among the other 'Anglo' countries, the changes in average earnings during the GR in Canada were more or less in line with the earlier trends, while in the UK, the USA (where growth earlier in the decade had been weak) and in Australia, 2007–9 appears to have marked a change. Only the UK shows any fall in 2010 while the continued rise in average earnings in Ireland may have represented a continuation of a selection effect as employment continued to fall (see Figure 9). The Western European countries typically registered less earnings growth over 2000–7 than the Anglo countries, with Belgium and Germany flat-lining in much of the period. The Nordic countries show little evidence of having undergone a change in trend from substantial growth during the GR, although the pace of growth clearly

[12] The impact of the GR on household formation in the US is analysed in detail by Painter (2010), who sees the sharp increases in over-crowding in households in metropolitan areas between 2005 and 2008 as evidence of a substantial amount of doubling-up. Doubling-up in the Great Depression was noted by Mendershausen 1946. See also Dyrda, Kaplan, and Rios-Rull 2012 for analysis of US recessions since 1979.

slowed in Sweden and continued to do so in the aftermath in 2010. Greece is a clear outlier in terms of earlier growth among the Southern European countries. The sharp rise over 2007–9 that we have noted in Spain was notably against trend and there is a suggestion that the same is true of the changes in Portugal in 2009. Earnings fell sharply in 2010 in Greece at a time when, as we noted earlier, output also fell. There were also small falls in earnings in Portugal and Spain in 2010, in marked contrast to the changes in 2007–9.

We can also consider trends in the distribution of earnings as well as the average, although we can go beyond 2008 only for a small number of countries and then once again only to 2009: see Figure 15. The data all refer to gross earnings for full-time employees but are drawn from a variety of sources and relate to various time periods.[13] The source we use provides only ratios so we are unable to show changes in the real values of any quantile. Panel (a) shows the overall inequality of earnings as measured by the ratio of the 90th percentile to the 10th percentile. More detail is shown in panels (b) and (c): changes in top-half inequality (the ratio of the 90th percentile to the 50th percentile) and in bottom-half inequality (the ratio of the 50th percentile to the 10th percentile). The same vertical scale is used for each group of countries, which brings out the differences in earnings inequality across the 20 countries at the onset of the GR – highest in the USA followed by Portugal, higher on average in other Anglo countries and in Southern Europe (except Italy) than in Western Europe, lowest in the Nordic countries. The pre-GR trends differ somewhat between each group. Overall earnings inequality tended to increase among the Anglo countries and the Nordic ones (with the exception of Sweden), display little overall change in Western Europe (with the exception of a slight rise in Switzerland), and fall or remain unchanged in Southern Europe (where the data do not extend back beyond 2004).

We focus first on the Anglo countries since the data here extend to 2009, with the exception of Ireland. The patterns differ over the 2007–9 period with panel (a) showing a continuing increase in overall earnings inequality in the USA, no change in Australia, and a slight fall in Canada, New Zealand and the UK. (In the USA, the distribution continued to widen in both the top and bottom half: the ratios of the 90th to 50th percentiles and the 50th to 10th percentiles, shown in panels (b) and (c), were both at their highest values for a decade by 2009.) The experience of the Anglo countries is therefore mixed, but the most striking feature of the graphs is that in no country do we see a sharp change during the GR in overall inequality or in either half of the distribution by comparison with the trends over earlier years of the decade. The data for other countries extend only to 2008, so we can comment just on changes in the first year of the GR. Again, in no country do we see a clear break with earlier trends or changes that are large by the standards of earlier years. We might have expected to see more change given the compositional effects that we surmised earlier to have impacted on average earnings (although note that Figure 14 shows that 2009 was the year of the sharp change in average earnings in several countries).

The main messages emerging from this analysis of the earnings of employees, the largest source of household income, are as follows: in general (i) real average earnings (as measured in national accounts) did not fall during the main period of the GR (2008–9) and often rose, and (ii) the immediate onset of the GR was accompanied by little apparent change in the distribution of earnings (as measured in other sources).

4.6 Changes in income from capital

The national accounts data discussed earlier show the changes in total (average) capital income for the household sector between 2007 and 2009. We do not have information

[13] See the notes to the Figure; we exclude Japan as the coverage of the data is not comparable.

for a range of countries about changes in the distribution of income from capital but, for some countries, we are able to use household survey data to show which income groups received most or least capital income at the start of the GR. We might then be able to predict the direction of the distributional impact of changes in this source of income – the working hypothesis is that the probability of receipt of capital income is unlikely to change much (by contrast with labour income); what will have changed most is the amount received.

How the probability of capital income receipt varies by income group in 2007 is summarised in Table 3 for 12 EU countries plus Norway. Income refers to the total equivalised household net income and the data come from EU-SILC. We distinguish between rental income from property (imputed income for owner occupiers is not included) in panel (a) and income from interest and dividends in panel (b). The results need to be treated with caution: as mentioned earlier, there may be under-coverage of this type of income in the EU-SILC surveys.

The concentration of capital income at the top of the income distribution is clear. The final columns of Table 3(a) and 2.3(b) shows the share of total capital income going to the richest tenth of households and is the basis by which countries are ranked. For rental income the share ranges between 28 per cent (Denmark) and 66 per cent (Austria); for interest and dividend income, the share ranges between 30 per cent (Italy) and 70 per cent in Greece and Finland, with Denmark a clear outlier at 103 per cent. (The explanation for this is not entirely clear to us.) Thus, although there is quite a lot of variation across countries, the median value of the richest tenth's share is relatively large. In contrast, households in the bottom half of the income distribution receive less than 20 per cent of the total income, for both capital income types, in all but two countries.

We do not have detailed information about changes in rental income during the GR. The 'net property incomes' in the national accounts data analysed before include interest from bank accounts and from government bonds as well as rental income. We found that the total of this form of capital income had often risen between 2007 and 2009, although we noted exceptions e.g. Ireland and Italy (Table 1). In contrast, our analysis also showed that distributed income from firms (dividends) received by the household sector typically fell over 2007–9, often by large percentages. We know too that interest rates fell substantially in all countries (other than in Japan where rates were low already): e.g. short-rate interest rates in the Euro area fell from 4.3 per cent in 2007 to 1.2 per cent in 2009 and in the USA from 5.3 per cent to 0.9 per cent (OECD 2010*c*: Annex Table 34). Therefore households with significant income from dividends and bank interest will usually have seen substantial falls in income received from these sources during the main period of the GR. So applying our working hypothesis in conjunction with the knowledge of the pro-rich distribution of incomes from interest and dividends, we expect these changes to have had an equalising impact in many countries. Conclusions about the likely impact of changes to rental incomes are less obvious.

4.7 Changes in social benefits and taxes

As far as total spending on social benefits is concerned, which includes spending on health (in contrast to our earlier analysis of national accounts data), the rises in 2007–9, expressed as a per cent of GDP, represented very sharp increases in relation to the trends in earlier year in many of our 21 countries (Adema, Fron, and Ladaique 2011: Chart I.1). For the OECD as a whole, the figure ranged by only 1.1 percentage points during the 16 years 1992–2007, from 19.0 per cent to 21.1 per cent, but jumped by 3.2 percentage points to 22.5 per cent in 2009 (Table A.I.1.3). The falls in GDP as well as the rises in social expenditure drove this abrupt change but the latter were more important.

The extent of support given to households during the GR was clearly large, but was it exceptional given the size of the drop in output? The conclusion in OECD (2011*c*) is that spending on benefits in most countries rose less strongly in response to the decline in output than it had in past recessions. This is explained by the relatively modest increases in unemployment, given the output falls, since unemployment is the principal driver of increased benefit expenditure in an economic downturn. And in general the increases in benefit expenditure were in line with the extent of the changes in unemployment, based on past patterns (OECD 2011*c*: 43). Countries with an exceptionally large rise in unemployment typically had the largest increases in benefit expenditure, notably the USA.

Although unemployment is an important driver, not all spells of unemployment generate receipt of unemployment benefits. Lack of work is only one of several criteria for receipt. For example, long periods out of work may result in exhaustion of limited-duration unemployment insurance benefit. Figure 16 shows estimates of the change in the numbers of recipients of unemployment benefit of all kinds (including both contributory limited-duration insurance benefit and means-tested assistance benefit) during the first and second years of the GR as a percentage of the change in the number of unemployed persons in the year in question. Double-counting of insurance and assistance benefit recipients – in some countries a person could receive both within a year – may explain why some figures exceed 100 per cent. Even allowing for any double-counting, the figures for most countries are well below this level in both years. (It is unclear why the figures for Sweden are quite so low.) There are some marked contrasts in the figures between the countries where unemployment rose most in the GR: Spain, USA and Ireland. In countries where the information is available, the figures are typically lower for young people aged less than 25 than for older age groups (OECD 2011*c*: 51).

What were the distributional consequences of the changes in benefit expenditure? In our analysis of capital income we established the incidence of that income source in 2007, and then adopted the working hypothesis that the probability of its receipt did not change thereafter. The analogous assumption for the incidence of benefit income during the GR would clearly be untenable, with the sharp rises in unemployment being the main reason. (For other types of benefit receipt, such as retirement pensions, there would be less of a problem.) As Marchal, Marx, and Van Mechelen show, for the working-age population in Europe, 'relative increases in social assistance caseloads did follow to a large extent changes in unemployment in the first crisis years' (2011: 5), though also '[l]arge increases occurred mainly in those countries where the minimum income scheme already played a larger role in the welfare state to begin with' (2011: 5).

The rise in benefit expenditure would have been most concentrated on the bottom half of the distribution – where unemployment will have hit hardest – helping to lessen the impact that the GR would otherwise have had in increasing income inequality and (absolute) poverty. In countries where the unemployment benefit system provided less complete coverage of the unemployed (see Figure 16), the impact of the GR can be expected to have been greater. In the case of the USA, we can be firmer in our conclusions about the distributional impacts, drawing on analysis undertaken by the OECD using household survey data (OECD 2011*c*: Figure 1.22). It should be noted that the results refer to persons living in households headed by working age individuals only, which is an important qualification. The research compared the total incomes of income quintile groups in 2007 and 2009. The share of market income lost between these two years by the poorest fifth that was replaced by increases in benefits (and reductions in taxes) was 89 per cent, falling to about 60 per cent for the top three fifths. However, average real incomes fell in all quintile groups (by between 1 per cent for the poorest fifth and nearly 4 per cent for the middle fifth).

One of the reasons why real incomes did not fall during the period of the GR is because, in most of the countries that we are considering, inflation rates were falling. For almost all of the 21 OECD countries, the consumer price index rose by more than 3 per cent between 2007 and 2008; the rise was 3.3 per cent for Euro area countries, 3.6 per cent for the UK and 3.8 per cent for the USA. However, the change between 2008 and 2009 was only 0.3 per cent for Euro area countries, 2.2 per cent in the UK, and –0.3 per cent in the USA. Prices rose again between 2009 and 2010, but not at the rate they had risen two years earlier. Inflation matters here because of the price-indexation of cash benefits and of income tax schedules (the latter is not considered here). In many countries, there are no automatic benefit uprating formulae; by contrast, the UK uses formulae that uprate most means-tested benefits automatically each year by an amount that depends on the increase in consumer prices in the previous year. Marchal, Marx, and Van Mechelen (2011), discussing EU countries, find that '[i]mmediately after the onset of the crisis, real benefits generally increased. ... The deceleration in nominal growth [of social assistance benefit levels] seen for 2009–2010 ... has led in some countries to a small loss in purchasing power. However, this decrease seems very much in line with trends in real benefits in pre-crisis years' (2011: 8). It points to not only the cushioning impact on real incomes of automatic but lagged uprating in times of falling inflation, but also the downward pressures on real benefit levels in times of rising inflation rates (post-2010).

4.8 Changes in household incomes in 21 countries: the short-term

The analysis conducted so far allows us to derive the following 'predictions' on the short-term distributional impacts of the GR:

- There will have been considerable heterogeneity in distributional changes across countries, if only because the magnitude and other features of the GR have varied across countries – whether the economic downturn is seen in terms of falls in GDP or reductions in employment. The worst hit countries over 2007–9 of the ones we have considered were Ireland and Spain, with the USA also according to employment decline. Greece has more recently joined the list. The Nordic countries (other than Norway) have also experienced some relatively large changes e.g. in household sector income composition and, in some cases, employment rate changes.
- Marked declines in incomes at the bottom of the income distribution relative to historical trend are unlikely (nor, correspondingly, will sharp increases in absolute poverty rates have emerged). This is because in general total household sector income did not fall between 2007 and 2009, largely due to state support (redistribution from the government sector). This support is concentrated on households in the bottom half of the income distribution, partly by design and partly since the incidence of unemployment is greatest there.
- There was a rise in average labour earnings among workers during the GR. This increases the income gap between working and non-working households, which is a factor likely to increase household income inequality, other things being equal. Earnings inequality did not change markedly over the initial GR period relative to trend (nor further into the GR in the few countries where we have data for 2009), which suggests that the GR effect per se will be relatively small.
- The share of capital income in GHDI, especially distributed income from corporations, generally declined. Since capital income receipt is concentrated among richer households, this will have an equalising impact on the household income distribution.

In sum, we predict there to have been relatively modest changes in the distribution of household income. Poverty rates may have risen, reflecting falls in real income at the bottom

of the distribution that are not fully cushioned by government support. Decreases in median income with the GR will also have reduced how much relative poverty rates may have increased. The change in overall income inequality will have depended on the net effect of offsetting factors such as reduced dispersion in the top half of the distribution (reflecting capital income changes) and increased dispersion in the bottom half (driven by the employment changes).

We are able to summarise the distribution of household income in terms of median incomes, income inequality, and both absolute and relative poverty in 15 of our 21 countries – 14 EU members plus Norway – using harmonised statistics provided by Eurostat and derived from the EU-SILC data. At the time of writing, the statistics on the Eurostat website cover 2005–9, extending to 2010 for the single case of the UK. We are thus able to analyse incomes in the main period of the GR, 2007–9, against the background of the immediately preceding years. When we consider inequality and absolute poverty we also draw on published statistics for the USA that extend to 2010, although in this case the definition of poverty and of household incomes is not the same as for the European countries. As before, income is equivalised (this time by the modified-OECD scale) and refers to the calendar year (with the exceptions for Ireland and the UK noted earlier). Table 4 provides a summary for the 15 European countries of the changes over 2007–9 for all of the measures and also includes a disaggregation by age, sex, and in one case employment status.

We begin by showing changes in real median incomes in Figure 17. Comparing 2009 with 2007, the broad message is similar to that obtained earlier in our analysis of total household incomes in the national accounts (Figure 4). In general, median incomes rose across the main period of the GR or displayed little change (e.g. Ireland and Italy). Only in the UK was there a clear fall comparing these two years (there was also a slight drop in Portugal), although even here if 2006 is taken as the base year there is little change. The fall in median income over 2007–9 implied by the EU-SILC data for the UK is at odds with both the rise shown in national accounts data and, perhaps more importantly (given the different income concept in the national accounts), the survey used in the UK for official estimates of the distribution of household income, which also shows a rise.

In many cases, increases in the median after 2007 followed earlier increases since 2005. The graph also shows that the changes over 2008–9 often were rather different from those right at the start of the GR over 2007–8. The Nordic countries provide a clear demonstration of this – in all four countries median income changed very little over the later period as the GR deepened after initial rises. The same is true in France, the Netherlands, Belgium (where the median in fact fell in 2009) and Greece. The falls over 2007–9 for both the UK and Spain were due to the reductions over 2008–9. Compared to 2008, 2009 seems often to have been a notably different year for median incomes.

Figure 18 disaggregates income levels by age, showing the median household income for elderly people (persons aged 60+) as a percentage of the median for individuals aged less than 60. Elderly people tend to have lower median incomes than younger people in all the countries considered, which is not surprising (France is an exception for 2007–9), but the most common pattern is for their relative position to have improved during the GR, in some cases continuing a trend over 2005–7. Older persons have been less exposed to the impact of unemployment on incomes. There are also differences by sex. In 11 out of the 15 countries, median household income over 2007–9 either rose more for women or fell less, although the differences are often small (Table 4). This may reflect the better employment experience of women during the GR (see Figure 10).

Estimates of the Gini coefficient are shown in Figure 19 while Table 4 also provides figures for the 'S80:S20 ratio', which is the ratio of the share of total income of the richest fifth to the share of the poorest fifth. The closer to zero the Gini coefficient is, the more equal

the distribution; the closer to 100 per cent it is, the more unequal is the distribution. As already seen in our own estimates using the same data of the coefficient of variation for 12 countries in 2007 (see Figure 6), broadly speaking, inequality at the start of the GR was lowest in the Nordic countries, and highest in the Anglo and Southern European ones, with inequality in Western European countries in between. But what of changes during the GR? If we compare 2009 with 2007, the most common trend is a small fall in the Gini coefficient, i.e. a slight reduction in inequality. This occurs in 10 countries and in 8 for the S80:S20 ratio (with no change in three other countries). In three countries – Ireland, the Netherlands, and Portugal – the fall in the Gini coefficient exceeds two percentage points, which is a reasonably large reduction over a short period. Among the few countries with an increase in the Gini coefficient between 2007 and 2009, the change for Spain stands out most: a rise of 2.5 percentage points. Spain and Ireland makes for an interesting contrast in view of similarities between the origin and depth of the subsequent downturn in the two countries.

These changes or lack of them between 2007 and 2009 can be put in the context of the changes in the preceding two years, for which the picture is also mixed. In three cases, Norway, France, and Germany, there are some very sharp changes between one year and the next, which may be large enough to call into question the reliability of the data. The large change between 2005 and 2006 for Germany is difficult to assess given inconsistencies between SILC and other sources (Hauser 2008, Frick and Krell 2010). In other cases the year to year changes are more modest, but on a par with what we see between 2007 and 2009. (This is especially the case if one were to make allowance for sampling variability: the changes in either period may not be statistically significant different from zero.) The fall in the Gini coefficient in Portugal during the GR continues the trend from 2005 to 2007.

We are also able to draw on information published by the US Census Bureau for inequality of incomes in the USA before, during, and just after the GR. Figure 20 shows the Gini coefficient for family income for 2005–10. It should be noted that the definition of income and of the equivalence scale used to adjust for household size and composition are not the same as for the Eurostat analysis of the EU-SILC data. Therefore the levels of the Gini coefficient between the European countries and the USA should not be compared; our focus is on the changes over time. These are only modest: the Gini rose by 1.1 percentage points over the main GR years, 2007–9, having fallen between 2006 and 2007 by almost the same amount (1.2 points). 2010 saw a slight fall, resulting in a Gini coefficient in that year at the same value as in 2005. The picture of a modest rise between 2007 and 2009 contrasts with the falls which were most common in Europe, but over the years 2005–2010 as a whole there was no change.

Changes in average incomes and in inequality of income combine to produce changes in absolute poverty. The estimates of absolute poverty rates that are produced by Eurostat measure the percentage of people beneath a line defined as 60 per cent of national median income in 2005. Table 4 shows that there were falls between 2007 and 2009 in 11 out of 14 countries (the information is missing for France). There are falls in all 14 countries for the elderly (defined now as those aged 65+) who everywhere improved their position relative to other age groups, especially adults aged 18–64 who tended not to fare as well as children (0-17 year olds). The movements, including the continuation of earlier trends (see Figure 21), in part reflect those already noted in median incomes, but they will also have been driven by changes in inequality in the bottom part of the distribution. The UK and Spain are exceptions, as for median income, registering rises in average poverty between 2008 and 2009, continuing in the case of the UK into 2010.

We can again draw on published information from the US Census Bureau for information about absolute poverty in the USA, measured as the percentage of persons below the official poverty line. As with the estimates of the Gini coefficient, the levels of poverty

cannot be compared with those in the European countries due to differences in definitions. Figure 22 shows changes in poverty rates for 2005 to 2010, both for all persons and distinguishing by age and sex. Overall poverty rose by 1.8 per cent points between 2007 and 2009 and rose again by a further 0.8 points in 2010, having changed little over the two years before the onset of the GR. One change in the USA repeats the pattern found for all the European countries – poverty fell between 2007 and 2009 (and also in 2010) for the elderly. There was little change in the (far higher) poverty rate for children, implying that, again as in Europe, adults aged 18–64 fared the least well of the three age groups – and that they experienced a rise in poverty that was larger than that shown for all persons.

Finally, Eurostat also provides information for the European countries about relative poverty rates, defined as the proportion of the population living in a household with an equivalised net household income less than 60 per cent of the contemporary national median income: see Figure 23 and Table 4. Echoing the patterns for inequality, the Nordic countries have comparatively low relative poverty rates and the Southern European and Anglo countries have comparatively high relative poverty rates, with the Western European countries in between. When we look at changes in relative poverty rates between 2007 and 2009, the picture is broadly similar to that for trends in the Gini coefficient: for most countries the direction of change is (slightly) downwards. The countries with increases are Denmark, Sweden, France, Germany, and Spain, although the rises are typically small (and Denmark had a fall in 2009). Spain (a rise of 1.1 percentage points) and Ireland (a fall of 2.2 percentage points) are again clear contrasts. The most striking change, taking 2005–9 as a whole, is the large decrease in the relative poverty rate for Ireland from nearly 20 per cent to around 15 per cent. The rate for the UK fell nearly two percentage points between 2005 and 2010 and for Italy by about 1.5 percentage points between 2005 and 2009. These perhaps counter-intuitive patterns are investigated in much greater detail in our country case studies.

To summarise for the 15 European countries: (i) the typical pattern was for median households incomes to rise across the main period of the GR, 2007 to 2009, or to change very little, with women and the elderly doing somewhat better than men and younger age groups respectively; (ii) income inequality in general fell slightly; (iii) absolute poverty rates tended to fall slightly, especially for the elderly; and (iv) there were usually small falls in relative poverty rates. In the USA, income inequality rose modestly between 2007 and 2009 but by 2010 was no higher than in 2005; and absolute poverty rose across 2007 to 2010, driven by the change for adults aged 18–64, the elderly experiencing a fall as in Europe.

4.9 Changes in household incomes in 21 countries: the medium-term

The distributional consequences of the GR will long outlast the main period of recession itself. Much of the analysis so far has focused on the years of the downturn for most countries, 2007–9, occasionally considering 2010. But what can we say at the time of writing (February 2012) about medium-term changes from 2010 onwards, for example in the years to 2015? To answer this question, we need also to take into account the impact of changes in government spending and taxation that are now in progress or are likely in the coming years and which can reasonably be viewed as a consequence of the GR.

We have noted the importance of government support for incomes of the household sector between 2007 and 2009. One consequence of this was a worsening of fiscal stance, measured by the government balance (a flow), and a rise in government debt (a stock) – although the direct support of household incomes through the benefit system was not the only, and typically not even the main, reason for these changes. The rise in spending on social benefits between 2007 and 2009 'represented, on average, about 40 per cent of the total rise in government spending' (OECD 2011*c*: 46); and our own calculations show that the fall

in revenues in real terms between these two years was on average almost as large as the rise in total expenditure.

The changes in fiscal stance are illustrated by Figure 24 which shows the government balance as a percentage of GDP in 2007 and 2009 for 20 of our 21 countries, sorted on the 2009 values. In 2007, at the start of the GR, only 9 countries were in deficit. All but one were in deficit by 2009. The country excluded from the graph is Norway, an exception due to its oil wealth, with a large government surplus of 17.5 per cent of GDP in 2007 and 10.7 per cent in 2009. Norway apart, the change in government balance averaged –6.7 percentage points of GDP. However, the change for individual countries varied widely from less than –1 per cent in Switzerland and about –3 per cent in Austria and Germany to –13 per cent of GDP in Spain and –14 per cent in Ireland, figures which indicate a massive worsening in fiscal stance.

In most cases, a substantial part of the government deficits that emerged in the GR is not explained by the usual fall in tax receipts and rise in automatic stabiliser spending that accompanies the downturn of a recessionary cycle – and it will not be removed by economic growth in the upswing. These 'structural' parts of the deficit are due to expenditure on stimulation measures following the crisis, expenditure on servicing the higher levels of debt brought about by the GR, and to the impact of the recession in reducing productive capacity (OECD 2010*c*: 45). To avoid an unsustainable further expansion in debt, many OECD governments at the time of writing are now reducing or planning to reduce their structural deficits. Estimates both of the size of the structural deficit and the extent of 'fiscal consolidation' required to remove it are subject to debate, and of course to changes in circumstances. (There is also debate on the appropriate speed of adjustment.) But as of May 2011, the OECD estimated that even to stabilise the level of government debt as a percentage of GDP by 2025, large improvements in the government balance of the order of between 6 per cent and 8 per cent of GDP would be needed in Greece, Ireland, Portugal, and the UK, and between 10 per cent and 11 per cent of GDP in the USA and Japan (OECD 2011*a*: 226), with smaller improvements elsewhere. At the other extreme, however, the OECD considered that little or no fiscal consolidation would be required in Sweden. So the extent of consolidation of government finances that the OECD believed to be required varies enormously.

What are the implications for the distribution of household income of governments' efforts to reduce their structural deficits resulting from the GR? This depends on how the consolidation of finances is achieved, as well as on the speed at which it takes place, besides of course the pace of economic recovery. Information on the form of planned consolidation to 2015 was collected from member countries by the OECD in Autumn 2010 (OECD 2011*d*). By no means all countries had clear plans at that time, but Table 5 shows the four expenditure and revenue measures most commonly mentioned among the 30 countries surveyed. (Changes expected as a result of the economic upswing, e.g. lower expenditure on unemployment benefit, were excluded.) On the expenditure side, the most frequent mention of 'welfare' (this appears to be a much broader concept than the term is often used to imply) and health reflect the importance of these areas in government expenditure. On the revenue side, the emphasis on increases in consumption taxes is notable. Some of these measures, and others not listed in the table such as public sector wage cuts or freezes (e.g. in Ireland and Italy) and reductions in public sector employment, will lead to direct changes in household incomes. Other measures will not, but may have a significant effect on the standard of living. Increases in consumption taxes are an obvious example: the purchasing power of money incomes will fall, but the incomes themselves will be unaffected in the first instance. (General equilibrium effects may eventually reduce incomes through changes in employment in industries affected by the tax increases.) This serves as a reminder of the limits of an

exclusive focus on household income as a measure of economic welfare when assessing the distributional impact of the GR.

What is the likely direction of impact of these measures? As far as average incomes and absolute poverty rates are concerned, all measures that lead to direct changes in money incomes will have a negative effect in the first instance, although the increase in absolute poverty might be limited by the precise nature of the change e.g. a public sector wage freeze might include exemptions for the most lowly paid jobs. As far as inequality of money incomes or of consumption and levels of relative poverty are concerned, it is virtually impossible to sign the direction of impact without the details of the policy change. For this reason, we do not attempt to summarise the effect of possible measures that could be used to consolidate public finances as in OECD (2011*d*: Table 4.8). Cuts in public transfers ('welfare' in Table 5, which appears to be a broad heading covering all public cash benefits including universal benefits) could be progressive if targeted on better-off households or regressive if undertaken across the board. The impact of a public wage freeze would depend on the concentration of public sector workers across the distribution of household incomes (possibly highest in middle-income households). The direction of effect of an increase in income tax on the inequality of after-tax incomes depends on a variety of factors including the combination of change in different marginal rates and the tax-free threshold. An impact of an increase in indirect taxation, for example Value-Added Taxation, will vary according to whether particular goods and services are exempted and may also depend on whether households are ranked by their income or their spending.

5. Caveats

Several qualifications are important to keep our findings in the right perspective. First, there is a need to broaden the focus of analysis beyond cash income. Second, we should recognise that the GR may have affected household formation. Third, our analysis has focused on cross-sectional differences, but the consequences of the GR may turn out to be important from a longitudinal perspective. Finally, the distributional impact of the GR may be expected to work through over many years, potentially long after economic activity picks up – these are the medium- and long-term impacts of the GR.

Measure of living standards – The measure that we have adopted throughout this paper is needs-adjusted household net income. It is a measure of money income that does not take account of 'non-cash' income from government services; nor does it take account of reductions in purchasing power arising from increases in indirect taxation. At the aggregate level, we have mentioned above that in the Euro area the dynamics of household disposable income was even better after including the value of social transfers in-kind, but we have not pursued this line of inquiry further for lack of suitable data. It would be important to disaggregate this result across households as well as to monitor the evolution in the coming years. Indeed, the effects of fiscal consolidation will manifest themselves not only in net household incomes but also in the services provided or funded by the state and in the indirect taxes that help to finance them. A comprehensive assessment of the distributional impact of the GR therefore needs to go beyond measures of household cash income.

Household formation – As noted, income loss (or its threat) during a recession may lead people to alter their living arrangements, thereby changing both their own equivalised household income and that of the persons they live with. Young people may remain with their parents or may move back in with them, an example of what has been called 'doubling-up' in the USA. This phenomenon has not been a feature of the impact of the GR to which we have devoted much attention, especially for countries other than the USA. Other aspects of household formation that have affected household incomes in the GR and which would be

worthy of attention are migration and homelessness. Ireland, for example, has once more become a country of net emigration, following sustained immigration during the boom years that preceded the crisis. There is anecdotal evidence of increased homelessness for a number of countries and yet, by design, the incomes of homeless persons are not measured in household surveys.

Longitudinal perspective – The (short-term) distributional stability over the GR period described in this paper has been based on an entirely cross-sectional perspective. A lack of change in a country's inequality or poverty rate between one year and the next is consistent with greater (or lower) volatility in the incomes of the individuals within that country. To investigate this aspect of the GR would require up-to-date longitudinal data and they were not available for our analysis. The GR may have major implications for intergenerational equity, especially if it continues to be the case that elderly people are relatively well-cushioned from its effects compared to younger people. The relative fortunes of the two groups, and hence intergenerational mobility, may be affected by the dramatic swings in the value of property and other assets in some countries, and sustained high unemployment may well result in long-term 'scarring' of those affected, with the risk that their disadvantage is transmitted to the next generation. The intergenerational implications of the GR will play out over a long period and, while difficult to predict at this relatively early stage, they merit serious consideration in future research.

Time dimension – Our analysis has focused on the short-term, the main years of the GR itself (2007–9), and the distributional picture is likely to look different after 2009. One reason for this is the impact of stabilisation policies on governments' fiscal positions, and there is wide heterogeneity across countries here too. For instance, Germany and Sweden, towards one end of the spectrum, emerged rapidly from recession with a relatively strong fiscal position. At the other end of the spectrum are the countries that must grapple with fiscal deficits that ballooned during the GR, such as Ireland, the UK and the USA, and those which had the need to consolidate public finances beforehand, such as Italy and Greece.[14] The UK case is one of pain delayed rather than pain avoided, with gloomy prospects for household incomes as fiscal consolidation sets in, and household incomes likely to decline to 2013–4, at which point they would be no higher than they were ten years earlier. In the Irish case, the scale of the fiscal adjustment required and the overhang of debt associated with the banking crisis make for an even gloomier picture. In those countries the financial crisis and GR look set to cast a very long shadow. In Greece and Italy the GR has worsened a situation that was already critical. The central role of fiscal adjustment in the prospects for these countries is a crucial reason why distributional effects can take many years to work their way through, long after GDP growth has resumed and the recession is considered to have ended from a purely macroeconomic perspective.

The longer-term consequences are difficult to assess more generally. They may emerge over generations, for instance if the young people entering the labour force during the GR experience a permanent weakening of their earnings capacity, as seems to have been the case during the Great Depression in the USA (Ruggles and Ruggles 1977). Using a large longitudinal dataset for Canadian men, Oreopoulos, von Wachter, and Heisz (2012: 26) find that 'the average worker graduating from college in a recession faces earnings losses that are very persistent but not permanent', but more importantly they show that 'the present discounted value of losses in annual earnings could be three to four times larger for the least advantaged as compared to the most advantaged workers – indicating that even within the group of college graduates, there is a large degree of heterogeneity in the costs of recessions'.

[14] For an assessment of the distributional impact of the crisis in Greece, see Matsaganis and Leventi (2011).

This evidence suggests that recessions may have long-lasting effects on the distribution of labour earnings, and hence household incomes, *across* as well as *within* cohorts. Longer-term distributional consequences depend on many other factors outside the labour market. One critically important aspect of the GR is the extent to which it originated in the financial sector, involving a property crash and banking crises and bail-outs in some countries but not in others. This is not only a significant factor in cross-country variation in the short-term, but may also be critical in the longer-term effects of the GR on asset-holdings and debt, and on the relative financial situation – encompassing income and wealth – of one type of household versus another. Long-term consequences also depend on the mix of policies that governments adopt to rebalance public budgets, as well as other factors such as the speed of adjustment. While measures to stimulate the economy and support personal incomes were implemented with relatively wide support from across the political spectrum at the time of GR onset, medium-term measures are more likely to reflect the different ideologies of ruling political parties (Vis, van Kersbergen, and Hylands 2011). This is already evident for the measures implemented in 2009–11 in six EU countries: in a microsimulation-based study, Callan et al. (2011) estimate that their effects were regressive in Portugal, substantially neutral in Estonia and Spain, mildly progressive in the UK and Ireland, and strongly progressive in Greece; incorporating also the estimated impact of VAT increases made the overall effect regressive in the UK, Spain, and especially Greece.

6. Conclusions

In this paper we have analysed the distributional impact of the Great Recession. Core features of our research are that we have focused on household income, we have considered all persons in the population, and we have taken a cross-national perspective though one that is limited to consideration of rich countries. Our main conclusion is that the changes between 2007 and 2009 in household incomes in total and on average, in income inequality, and in poverty rates, were modest in most of the countries that we study, in spite of the macroeconomic heterogeneity – in nature and size – of the GR across countries. This outcome is remarkably different from the far more dramatic experience of the Great Depression (to the extent that evidence of the same type is available), although not so different from some recent recessions such as the Nordic crisis of the early 1990s.
In this final section we summarize our findings and draw out some implications for policy.

The evidence from the past shows that neither existing analytical frameworks nor empirical studies of previous recessions provide clear cut conclusions about the distributional impacts of major recessions. Recessions typically reduce incomes and so raise poverty rates when these are measured using a poverty line that is fixed in real terms. However, the impact on relative poverty rates (as commonly calculated, using a threshold equal to a fraction of contemporary median income) is likely to be smaller, because recessions also reduce median income. Moreover, income inequality may increase or decrease in a recession, depending on precisely who are affected by it and where they are located in the distribution in the first place. The impact of a recession on household incomes works through a wide variety of channels, changing the prevalence of receipt of particular types of income, and the distribution of that income among recipients. The effect of a fall in a person's income from a particular source also depends on whom the person lives with and how the incomes of those other people are affected (because we assume incomes are pooled within households).

Cross-national differences in labour markets and socioeconomic institutions have the potential to produce significant variation in distributional impacts between nations, even if they experience the same macroeconomic shock. Moreover, relationships between the income distribution and macroeconomic aggregates such as the unemployment rate that are estimated

from time series data are not robust and, in any case, the GR might be viewed as an exceptional episode so that extrapolation from models fitted to past data may not be a reliable guide to the present.

When the GR began, inequality and relative poverty rates were generally neither trending upwards or downwards, according to evidence for the immediately preceding years, in the 21 OECD countries that we have considered here. The USA is a distinct exception with a long-lasting trend upwards in income inequality. Decompositions by income source underscored the importance of employment income in households' income packages, and its large contribution to inequality in every country considered. This was true even for people in the poorest fifth, although of course cash transfers were also important for this group. At the same time, the decomposition analysis also drew attention to a relatively large contribution to the inequality of income from savings and investments in the Nordic countries in particular, which suggests that the GR's impact may be heterogeneous.

Our examination of macroeconomic changes in the 21 OECD countries reveals that the nature of the GR itself varied substantially across countries. In some countries, there were major declines in economic activity and sharply rising unemployment; in others, there were more modest changes in growth and employment. Almost everywhere, the peak-to-trough fall in quarterly GDP was substantially larger than the average fall during recessions over the previous 50 years, but ranged nonetheless from zero in Australia to nearly 13 per cent in Ireland. Although GDP fell during the GR, the real disposable income of households, as measured in national accounts by Gross Household Disposable Income (GHDI), actually rose between 2007 and 2009 in 12 countries of the 18 for which we have data (there was no change for Ireland, despite the large fall in GDP). The household sector was protected from the impact of the downturn by both automatic stabilisers and additional support of governments through the tax and benefit system.

In many of the 21 countries, the response of employment to the fall in GDP was smaller than in previous recessions, though job losses were unusually large relative to the fall in output in countries such as Ireland, Spain, and the USA where a boom-bust pattern in the housing market played an important role in the recession. The concentration during the GR of employment loss among men has differed from earlier recessions (and probably reflects the sectoral composition of the aggregate demand shock), while the greater impact on the young followed the pattern of earlier recessions. Large falls in individual employment were accompanied by significant rises in household worklessness in countries such as Ireland, Spain and the USA, whereas in Denmark and Finland the workless household rate fell despite relatively large increases in the individual non-employment rate hence muting the impact on the household income distribution. Across the 21 countries, real average earnings typically rose between 2007 and 2009 (though not in the USA), largely because lower-paid workers were more likely to be laid off. Taken with the falls in employment, this is likely to have had a disequalising impact on the distribution of household incomes. However, earnings inequality among the employed did not change much in the initial part of the GR, relative to trend, nor by 2009 for the few countries for which we have data for this year.

The level of capital income in GHDI, especially distributed income from corporations, generally declined and, since this source is concentrated among richer households, this decline would be expected to have an equalising impact on the household income distribution. (That impact would be amplified further were we to have included in our household income measure the realised values of large capital losses on risky assets caused by the GR, as discussed in the case of Italy, for example.) The large increases in state support to the household sector through the tax and benefit system, especially the support coming through unemployment benefits, will have been concentrated on households in the bottom

half of the income distribution. This will have lessened the disequalising impacts of the changes in labour incomes.

Our predictions of different elements of household income packages are that the overall short-term distributional impact of the GR was likely to have been relatively modest in most of the countries considered. For 15 European countries and, to a lesser extent, for the USA, we are able to use published summary statistics derived from household survey and administrative record data to document changes in average real income levels, income inequality, and poverty rates between 2005 and 2009. The data on average income, as measured by the median, give a picture for the European countries that is broadly similar to that shown for total income in national accounts data – average incomes typically rose across the main period of the GR, 2007 to 2009, or changed very little. Women did somewhat better than men as did the elderly compared to other age groups. Income inequality in general fell slightly in the European countries between 2007 and 2009, while rising modestly in the USA. Absolute poverty rates tended to fall slightly in Europe while rising modestly in the USA (as measured with the US official poverty line) but, in both cases, rates fell for the elderly. Relative poverty rates typically fell in the European countries. The post-2009 distributional impacts of the GR are likely to have been considerably larger however, with greater differences across countries emerging.

With regard to policy in the macroeconomic domain or concerning the stabilisation of the household income distribution, a general lesson of our work is that 'one size does not fit all'. Policy-makers in one country should be careful in drawing on the experience and policies of other countries when designing their own policy measures. Taking a cross-national perspective as we have done brings out clearly the heterogeneity across countries in size and nature of economic downturns, their distributional consequences, and policy constraints such as fiscal position.

The findings of this paper indicate, none the less, that stabilisation of the household income distribution in the face of macroeconomic turbulence is an achievable goal, at least in the short-term. That policy can be effective is an important lesson. And yet, at the same time, the degree of distributional stabilisation may be associated with already having a relatively strong welfare state in general and social safety net in particular.[15] The overall picture suggests that the buffering capacity of social safety nets may however arise in the context of more than one type of welfare state regime in the Esping-Andersen (1990) sense. Moreover, the countries with stronger welfare states are those with greater 'automatic stabilisation' (Dolls, Fuest, and Peichl 2011, 2012). Of course, welfare state strength is not the only relevant factor, and its specific role is difficult to identify conclusively since it is correlated with other factors such as fiscal balance. (Relative to Italy, for example, Germany and Sweden have both stronger welfare states and healthier fiscal balances.) Countries have taken rather different approaches to the discretionary stabilisers available to them. Enhancing welfare effort beyond what would occur automatically as unemployment rises can help to lessen the distributional impact of recession. However, if utilisation of such measures also leads to a more severe fiscal correction, the gains may be short-term. In such a context, the pressure to increase the targeting of cash transfers is likely to intensify, although that can run the risk of worsening poverty and unemployment 'traps' and undermining the bases for social solidarity and political support for relatively generous provision.

Statements during the Great Moderation era of the decade starting in the mid-1990s that macroeconomic policy had in effect conquered the business cycle turn out to have been over-optimistic, and a safer conclusion is that there is an inherent cyclicality in the economies of rich countries. Welfare states provide important income insurance in this scenario. Put

[15] On the path-dependent nature of social policy reactions to the GR, see Chung and Thewissen (2011).

another way, if substantial cut-backs are made to welfare states as part of fiscal consolidation packages, then greater instability in household income distributional outcomes are a likely consequence in recession times. Whether this is seen to matter depends, of course, on the extent to which poverty reduction and prevention of rising inequality are given priority and public support. We are entering an era in which 'the question of who pays what, when, and how will likely give rise to sharp distributional conflicts' (Vis, van Kersbergen, and Hylands 2011: 338). The popular reactions in Greece to the proposed austerity measures are a ready reminder of this point.

There are also lessons for policy-makers regarding measurement and monitoring of income distribution. International agencies such as the OECD and Eurostat with their extensive databases play an important role in facilitating cross-national comparisons. Without such data, a project like ours would have been impossible. The maintenance and further development of cross-national data sources is vital. Evidence-based policy requires timely data, but information about the distribution of household incomes provided by household surveys and administrative records only appear with a lag of several years, and also databases containing summary data of the type provided by the OECD and Eurostat are not fully up-to-date. In this paper, we have shown how national accounts data about Gross Household Disposable Income and its components, which are available more quickly, can be usefully employed to investigate the distributional impacts of recessions. None the less, the data refer to household sector aggregates and are limited in effect to description of changes in average incomes – they cannot tell us about poverty rates and income inequality. We have also shown that other economic data such as unemployment rates or individual earnings inequality, which are made available more quickly than conventional household income survey data, can also be employed to investigate distributional outcomes. But they too are limited: although labour income forms a major component of household incomes for many households, it is not the only income source that matters, especially for non-working households reliant on other sources such as cash benefits and pensions. Given these data problems, one way to derive timely predictions of distributional outcomes is to make more systematic use of microsimulation modelling.

The Great Recession, although meriting the 'Great' label from a post-World War II perspective, was smaller in size in rich countries on average than was the Great Depression. This, together with the pronounced changes in welfare states, household structures, and patterns of labour force participation since the 1930s, explains the generally rather modest distributional effects of the GR in the short term. From this perspective, it seems that advanced economies have learned some lessons from the past about how to deal with the social consequences of major contractions of economic activity. The longer-term picture for household income is less clear, and depends on when economies return to steady growth, on the ways in which countries deal with the GR's legacy of fiscal deficits, and on how debt and financial market uncertainty work their way through to household incomes and broader living standards. The relatively modest distributional effects seen between 2007 and 2009 provide little reassurance about the medium- and long-term effects of prolonged recession or stagnation accompanied by sustained high unemployment. Whether governments in the rich countries live up to their responsibilities to successfully address the macroeconomic challenges facing the world economy is critical in determining the long-term consequences of the Great Recession.

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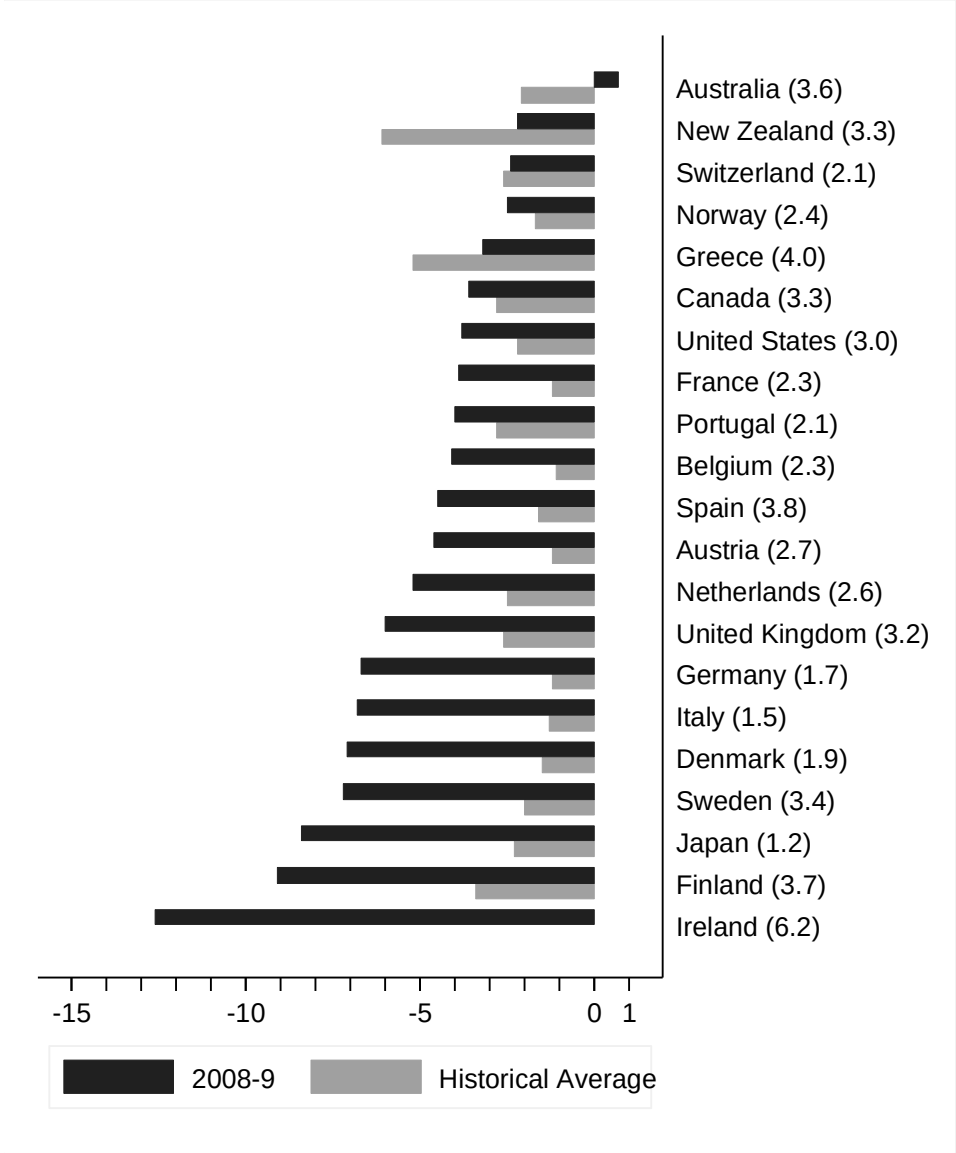
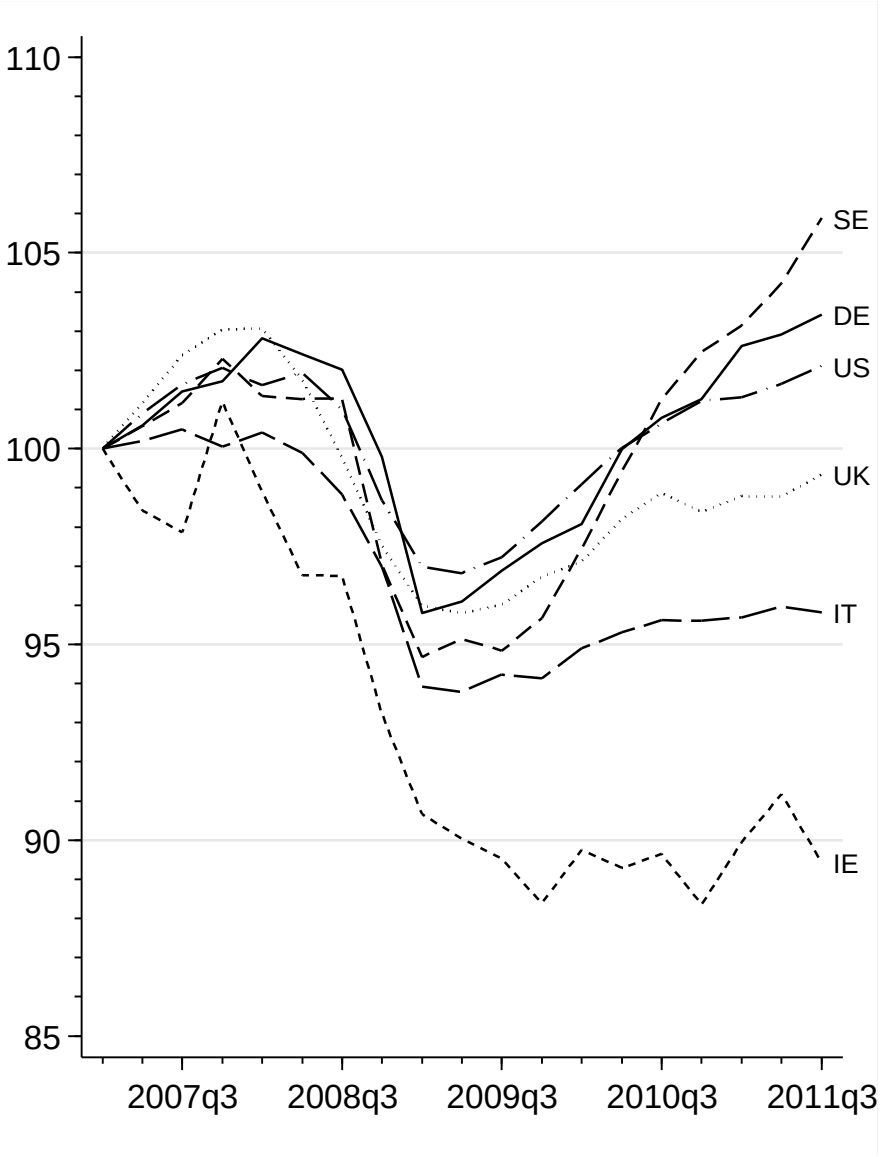
Figure 1. Change in national output in the GR in historical context: percentage decline in real GDP from peak to trough compared to the post-war historical average of peak-to-trough changes



Source: OECD (2010a, Figure 1.9). GDP growth rates over 1997–2007 are from OECD, 'Aggregate National Accounts: Gross domestic product', OECD National Accounts Statistics 2010 (database), http://dx.doi.org/10.1787/data-00001-en (accessed 30 January 2012).
Notes: Australia did not have a recession in 2008–9 but is shown for comparison purposes (its GDP change refers to the period from 2008 Q3 to 2009 Q2). The number of recessions used to calculate the historical average varies across countries depending on data availability and the frequency of recessions. Recessions that occur in the period from c. 1960 until 2006 are included. No historical average is available for Ireland. The figures in parentheses are the average annual growth rates in real GDP for 1998–2007 (calculated as the value g in the formula R = (1+g)10, where R is the ratio of the 2007 figure to the 1997 figure).

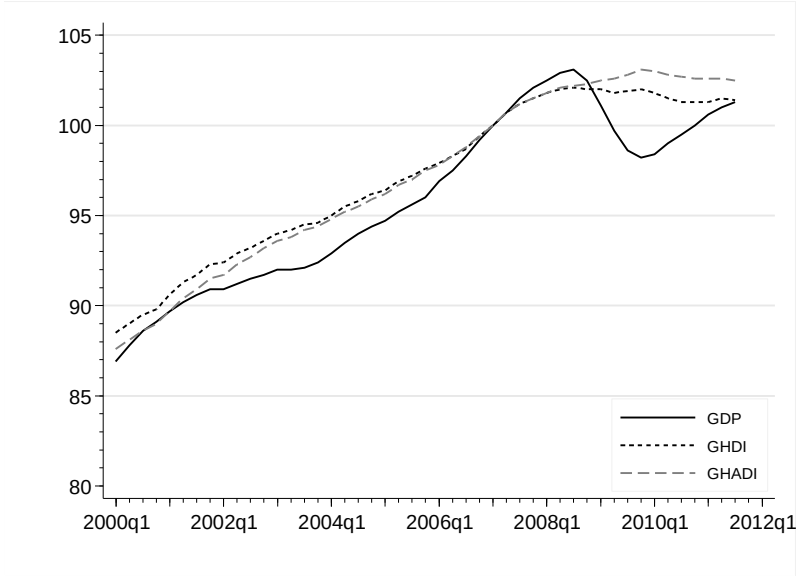
Figure 2. Real GDP in 6 countries, 2007Q1–2011Q3 (2007Q1 = 100)



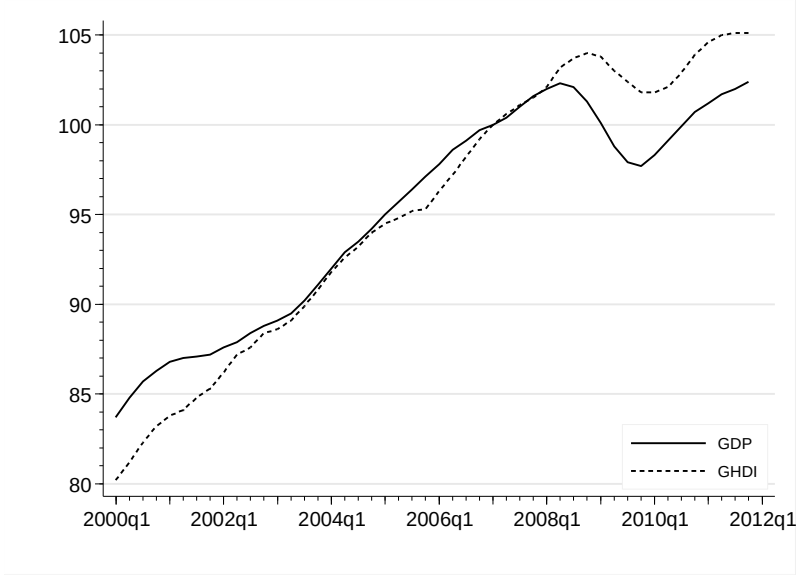
Source: OECD, series LNBQRSA (volume estimates, seasonally adjusted), 'Quarterly National Accounts', 2010, OECD National Accounts Statistics (database), http://dx.doi.org/10.1787/data-00017-en (accessed 8 January 2012).
Notes: The series refer to Germany ('DE'), Ireland ('IE'), Italy ('IT'), Sweden ('SE'), United Kingdom ('UK'), and the United States ('US')

Figure 3. Change in real Gross Domestic Product (GDP), real Gross Household Disposable Income (GHDI) and real Gross Household Adjusted Disposable Income (GHADI) in (a) the Euro area (17 countries) and (b) the USA, 2000Q1–2011Q4 (2007Q1 = 100)

(a) EU area (17 countries)



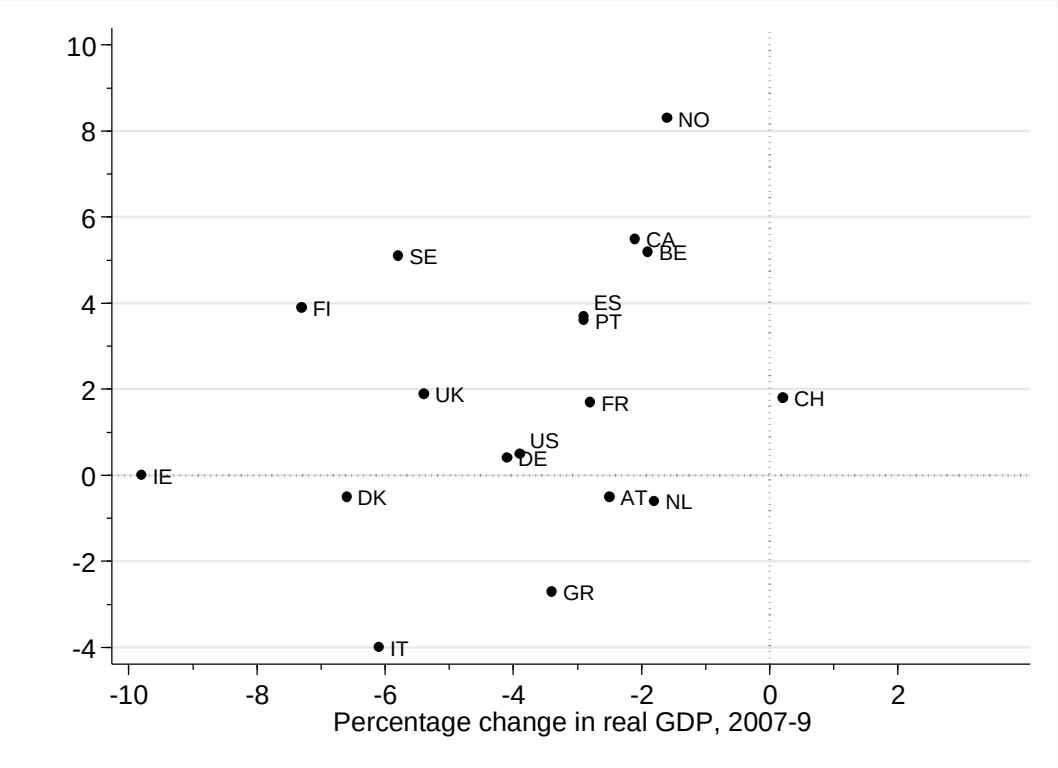
(b) USA



Source: Authors' calculations on data from Eurostat, 2012, 'Quarterly national accounts: GDP and main components – Current prices (namq_gdp_c)' and 'Quarterly national accounts: GDP and main components – volumes (namq_gdp_k)', http://epp.eurostat.ec.europa.eu/portal/page/portal/national_accounts/data/database, and Eurostat, 2012, 'Quarterly sector accounts: Non-financial transactions (nasq_nf_tr)', http://epp.eurostat.ec.europa.eu/portal/page/portal/sector_accounts/data/database, and from US Bureau of Economic Analysis, 2011, 'Integrated Macroeconomic Accounts for the United States: S.3.q Households and Nonprofit Institutions Serving Households (Q)', http://www.bea.gov/national/nipaweb/Ni_FedBeaSna/Index.asp (both accessed 1 February 2012).
Notes: For the USA, GHDI is calculated as 'Disposable personal income' minus 'Personal interest payments' and 'Personal current transfer payments'. Real GHDI and GHADI are

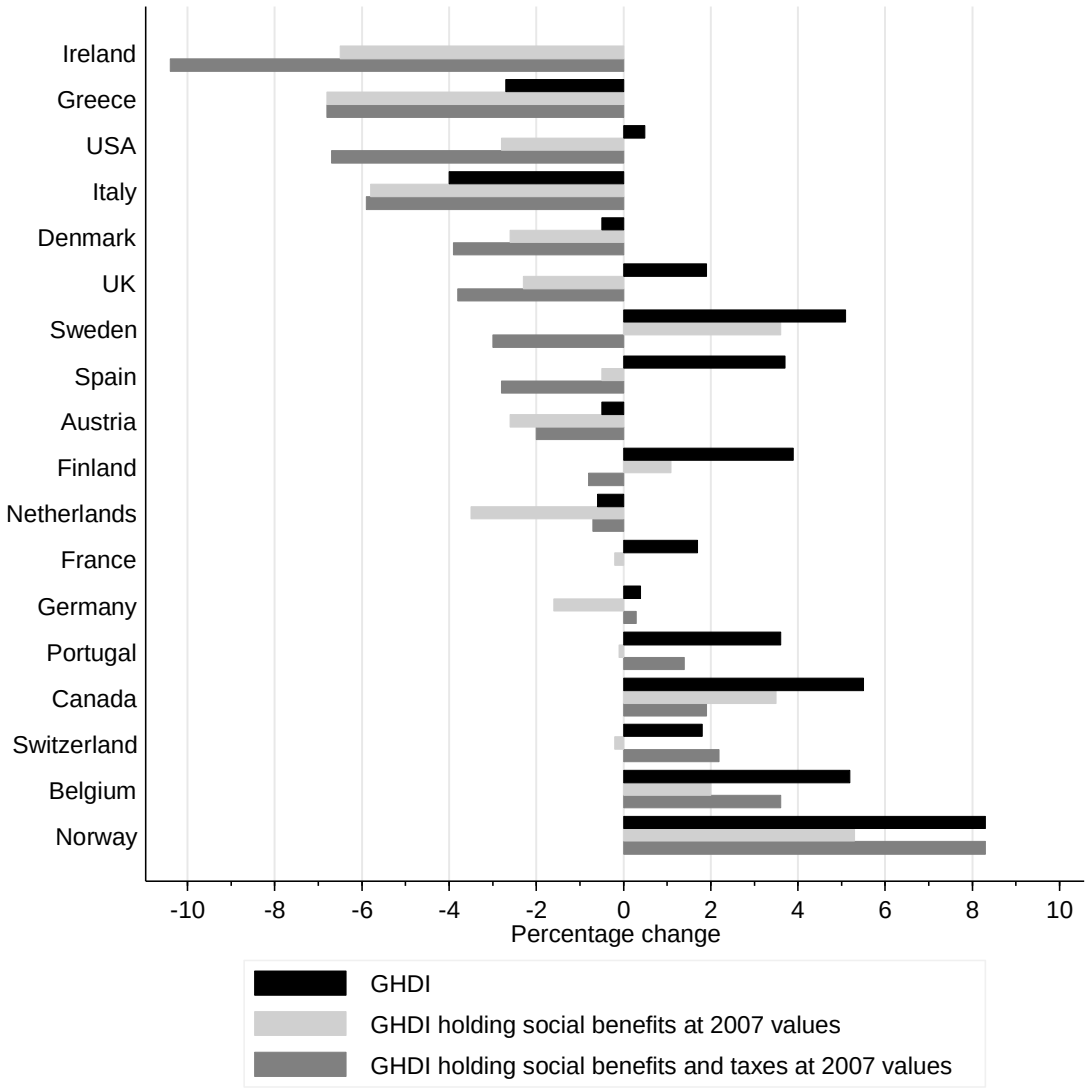
obtained by dividing nominal values by the deflator of the final consumption expenditure of households and non-profit institutions serving households. Households include non-profit institutions serving households. Plotted values are 4-term moving averages centred in the final quarter of the underlying values.

Figure 4. Percentage change in real Gross Household Disposable Income (GHDI) and in real Gross Domestic Product (GDP), 2007–9



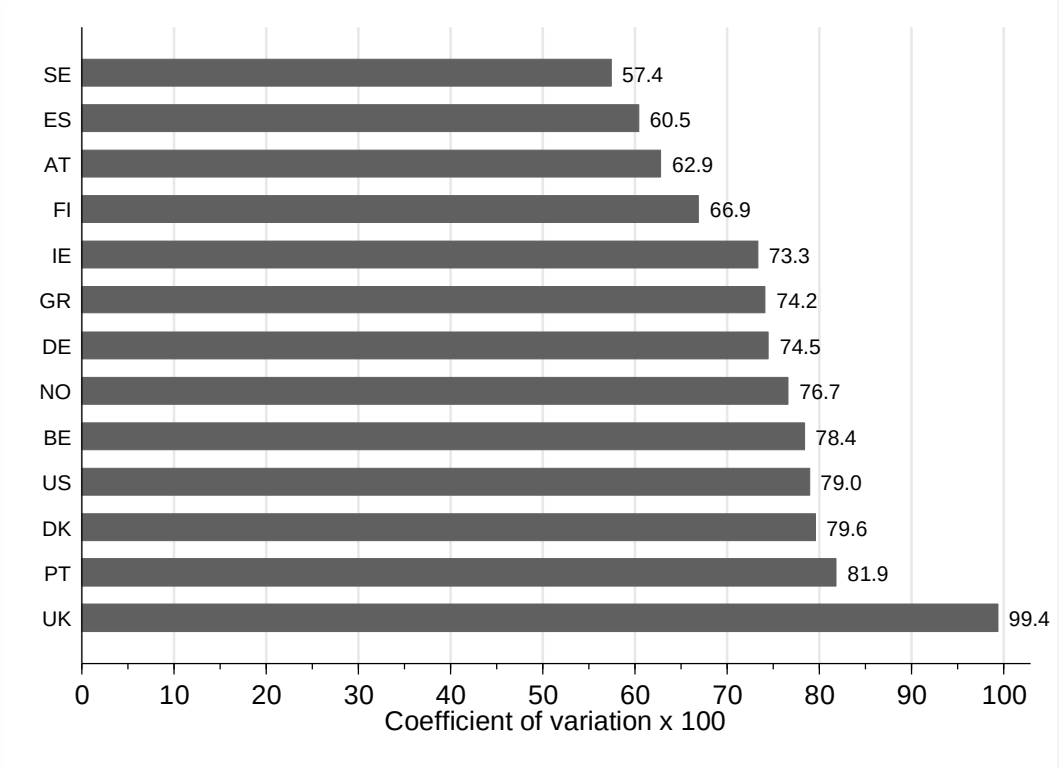
Source: OECD, 'Detailed National Accounts: Simplified non-financial accounts', 2010, OECD National Accounts Statistics (database), http://dx.doi.org/10.1787/data-00010-en, except for Greece and Spain, whose data are from Eurostat, 'Annual sector accounts: Non-financial flows and stocks, Non-financial transactions (nasa_nf_tr)', http://epp.eurostat.ec.europa.eu/portal/page/portal/sector_accounts/data /database (both accessed 30 January 2012).
Notes: Real values were derived using the deflator of household final consumption (source: OECD, 2010, 'Detailed National Accounts: Final consumption expenditure of households', OECD National Accounts Statistics (database), http://dx.doi.org/10.1787/data-00005-en (accessed on 28 January 2012)

Figure 5. Percentage change in real Gross Household Disposable Income (GHDI) and effect of taxes and benefits, 2007–9



Source: OECD, 'Detailed National Accounts: Simplified non-financial accounts", 2010, OECD National Accounts Statistics (database), http://dx.doi.org/10.1787/data-00010-en, except for Greece and Spain, whose data are from Eurostat, 'Annual sector accounts: Non-financial flows and stocks, Non-financial transactions (nasa_nf_tr)', http://epp.eurostat.ec.europa.eu/portal/page/portal/sector_accounts/data/database (both accessed 30 January 2012).
Notes: For each country, the top bar shows the percentage change in total gross household disposable income (GHDI) between 2007 and 2009 (the value is zero for Ireland); the other bars show the percentage change in GHDI when hold social benefits at the 2007 value (middle bar) and social benefits and taxes and social contributions at the 2007 values (bottom bar). Data are put into real terms using the same deflator as in Figure 3. The countries are ranked by the bottom bar values.

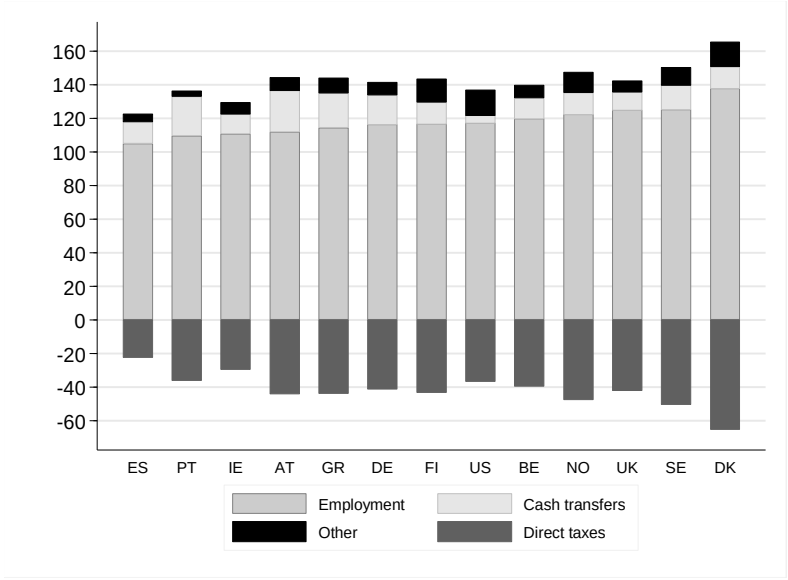
Figure 6. Inequality (coefficient of variation) of household incomes in 12 European countries and the USA, 2007



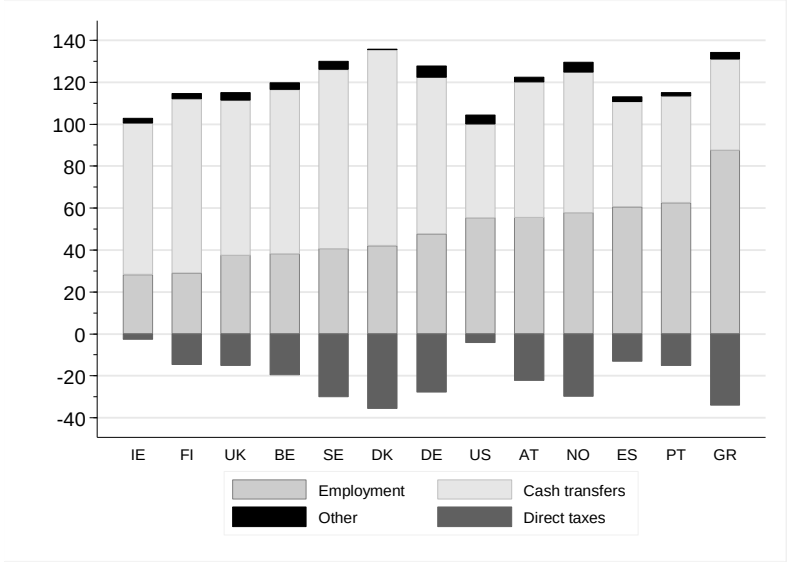
Source: European countries: authors' calculations from EU-SILC. Italy is not included because of data comparability problems. USA: calculations by Jeff Thompson from the Current Population Survey.
Notes: Income is total household net income, equivalised by the square root of household size, distributed among individuals. The data relate to incomes in the year 2007.

Figure 7. Shares of income sources (%) in total equivalised net household income, richest and poorest fifths, 12 European countries and the USA, 2007

Richest fifth

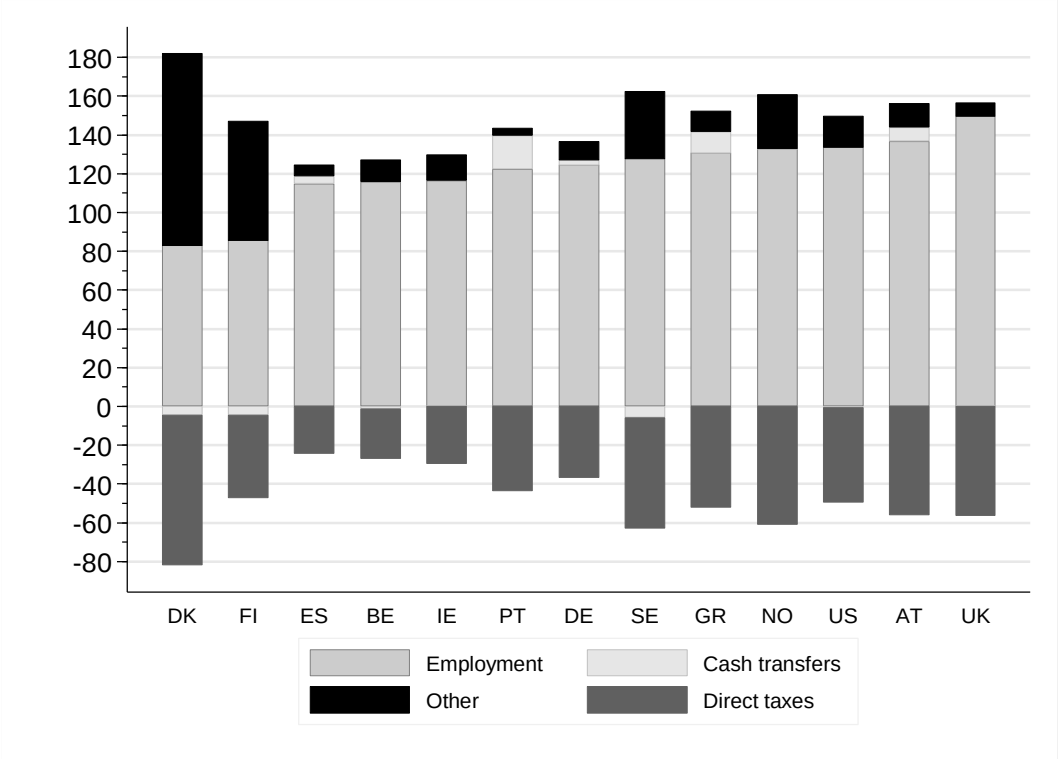


Poorest fifth



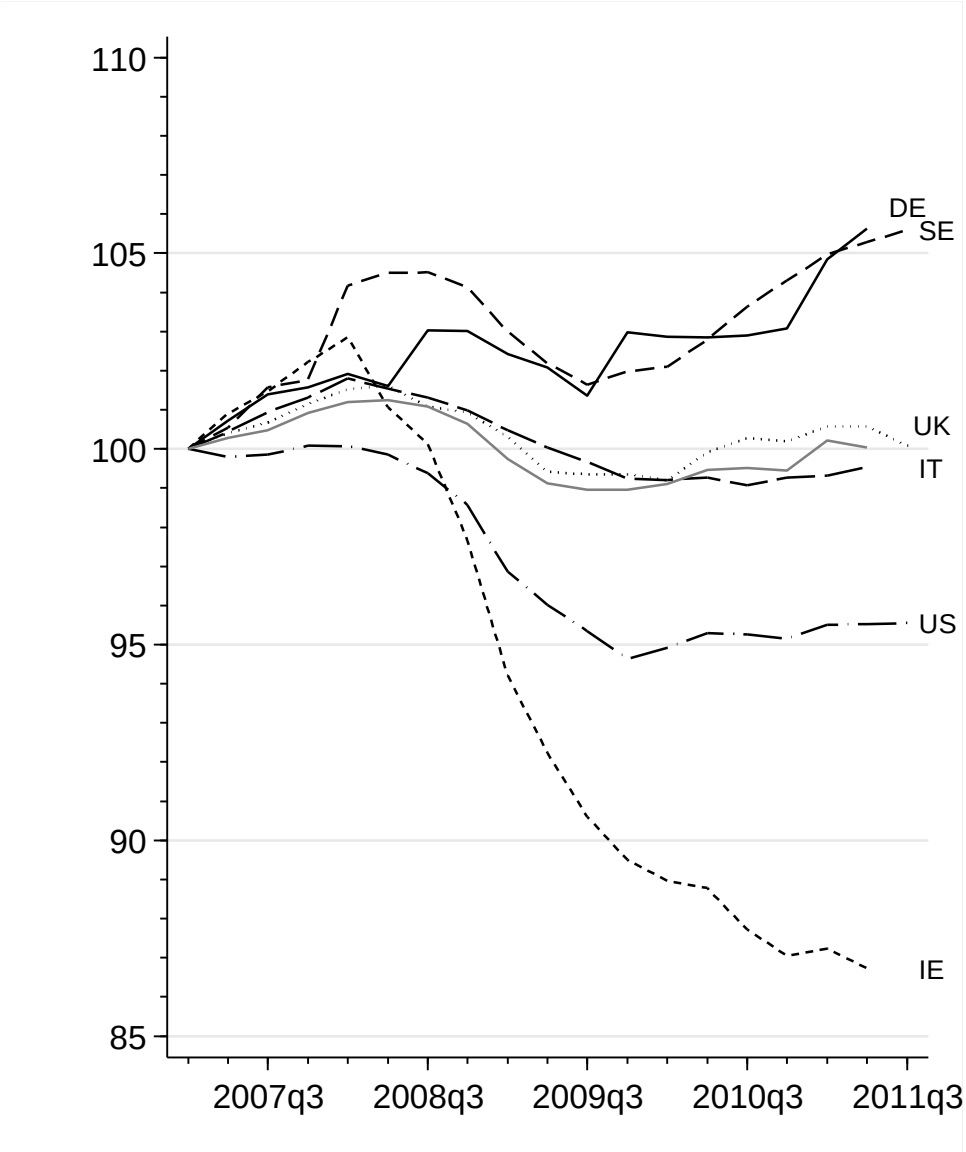
Sources: European countries: authors' calculations from EU-SILC. Italy is not included because of data comparability problems. USA: calculations by Jeff Thompson from the Current Population Survey. Receipts of refundable tax credits such as the working tax credit and child tax credit in the UK, and the Earned Income Tax Credit and child tax credit in the USA, are counted as cash transfers rather than as offsetting tax payments.
Notes: Income is total household net income, equivalised by the square root of household size, distributed among individuals: see text for details. Countries are ranked from left to right in ascending order of the share of employment income in total equivalised household net income. The income shares for each income group in each country sum to 100 per cent.

Figure 8. Contributions (%) of income sources to inequality of total household income, 12 EU countries and the USA, 2007



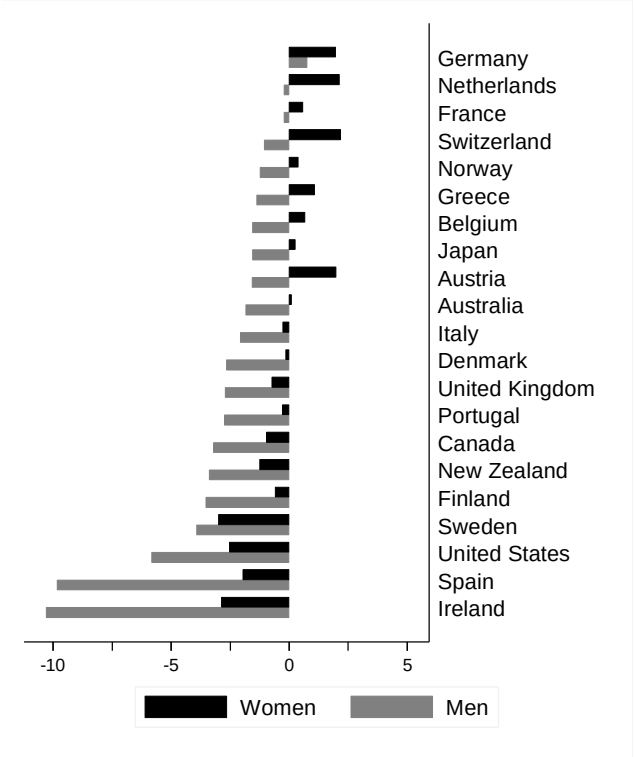
Sources: European countries: authors' calculations from EU-SILC. Italy is not included because of data comparability problems. USA: calculations by Jeff Thompson from the Current Population Survey. Receipts of refundable tax credits such as the working tax credit and child tax credit in the UK, and the Earned Income Tax Credit and child tax credit in the USA, are counted as cash transfers rather than as offsetting tax payments.
Notes: Income is total household net income, equivalised by the square root of household size, distributed among individuals: see text for details. The contribution for each country of each income source k is the sk statistic defined by Shorrocks (1982a, b). The sum of the source contributions for each country is 100 per cent. Countries are ranked from left to right in ascending order of the sk statistic for employment income.

Figure 9. Employment levels in 6 countries and all-OECD, 2007Q1–2011Q3 (2007Q1 = 100)

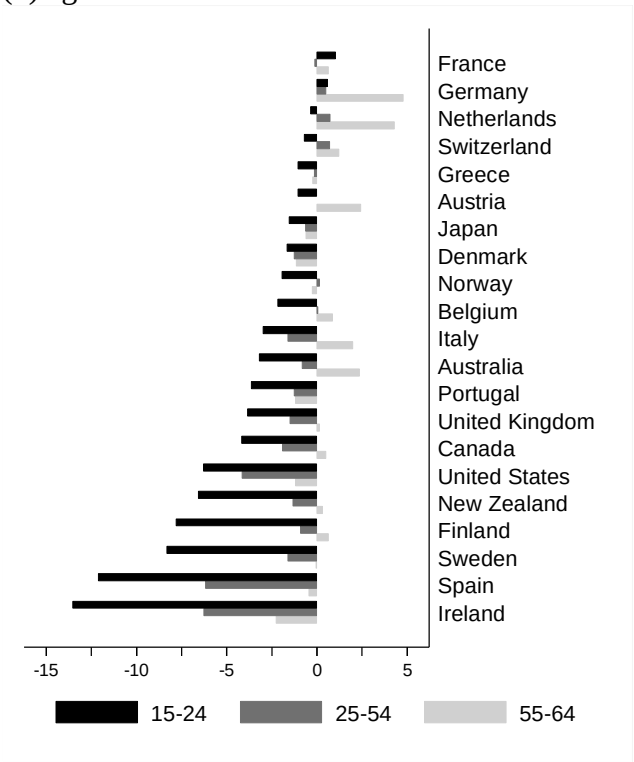


Source: OECD, Main Economic Indicators (database), 2011, 'Labour: Labour force statistics', quarterly employment – all ages, http://dx.doi.org/10.1787/data-00046-en (accessed 19 December 2011).
Notes: The series refer to Germany ('DE'), Ireland ('IE'), Italy ('IT'), Sweden ('SE'), United Kingdom ('UK'), the United States ('US'), and all OECD countries (the solid grey line).

Figure 10. Change in employment rates (percentage points), 2007–9
(a) sex



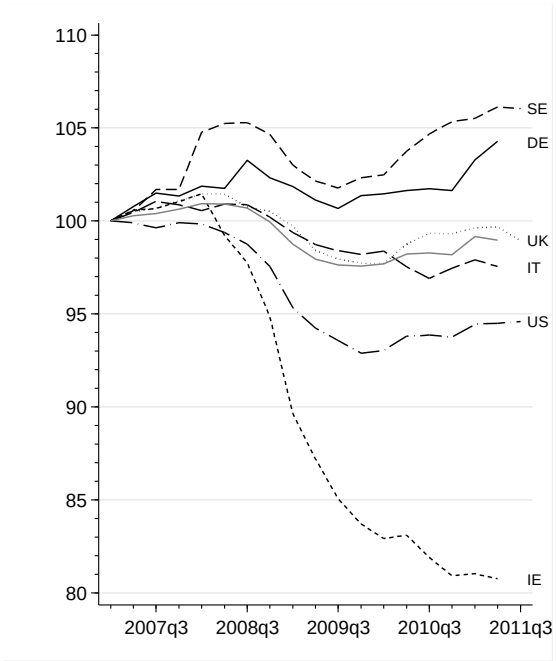
(b) age



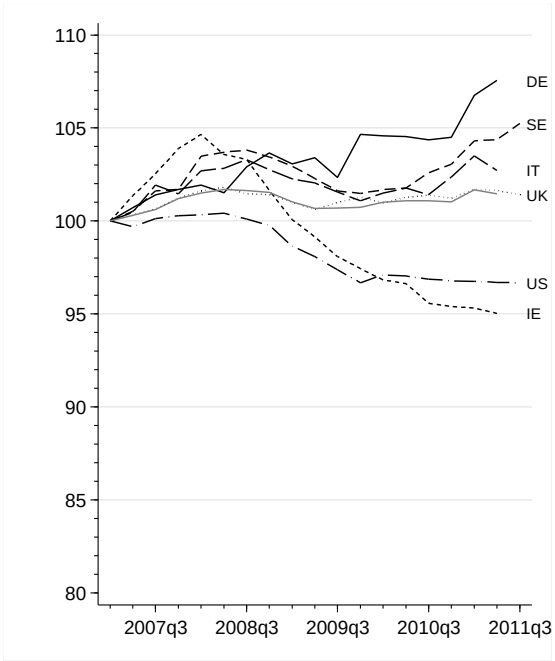
Source: OECD, 'Labour Market Statistics: Labour force statistics by sex and age: indicators', 2010, OECD Employment and Labour Market Statistics (database), http://dx.doi.org/10.1787/data-00310-en (accessed 23 February 2011).

Figure 11. Employment levels for men and women 2007–10, 6 countries and all-OECD (2007q1=100)

Men

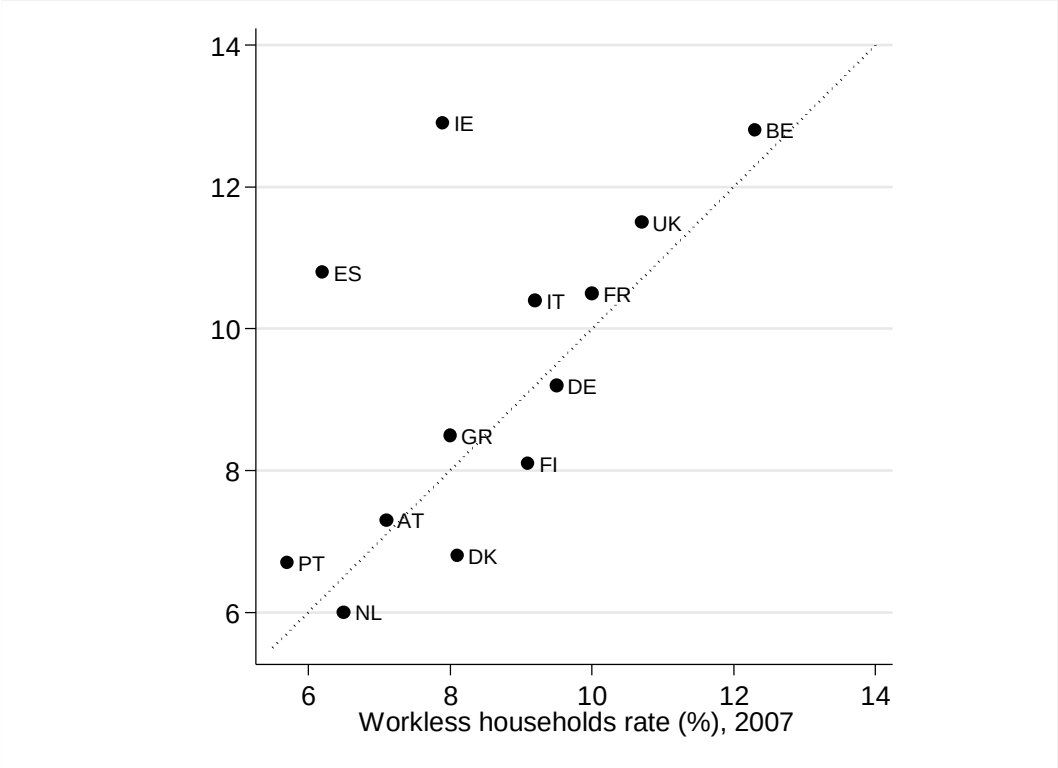


Women

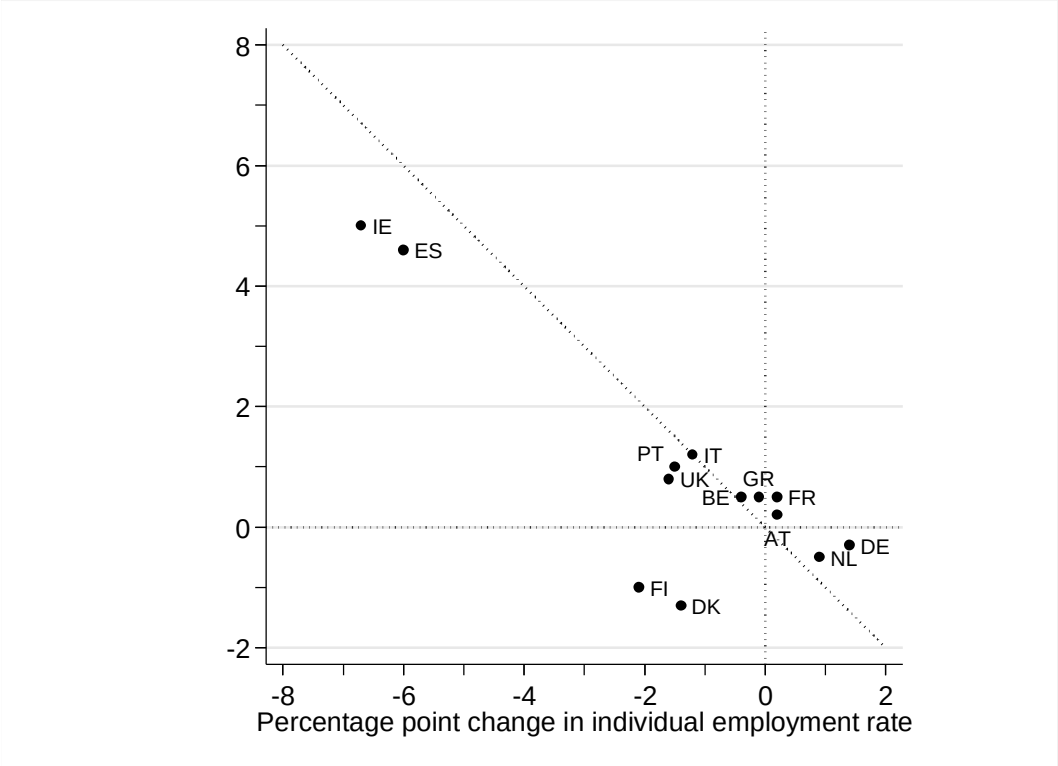


Source: As for Figure 9.
Notes: The series refer to Germany (‘DE’), Ireland (‘IE’), Italy (‘IT’), Sweden (‘SE’), United Kingdom (‘UK’), the United States (‘US’), and all OECD countries (the solid grey line).

Figure 12. Workless household rates in EU countries
(a) Percentage of 18–59 year olds in workless households, 2007 and 2009

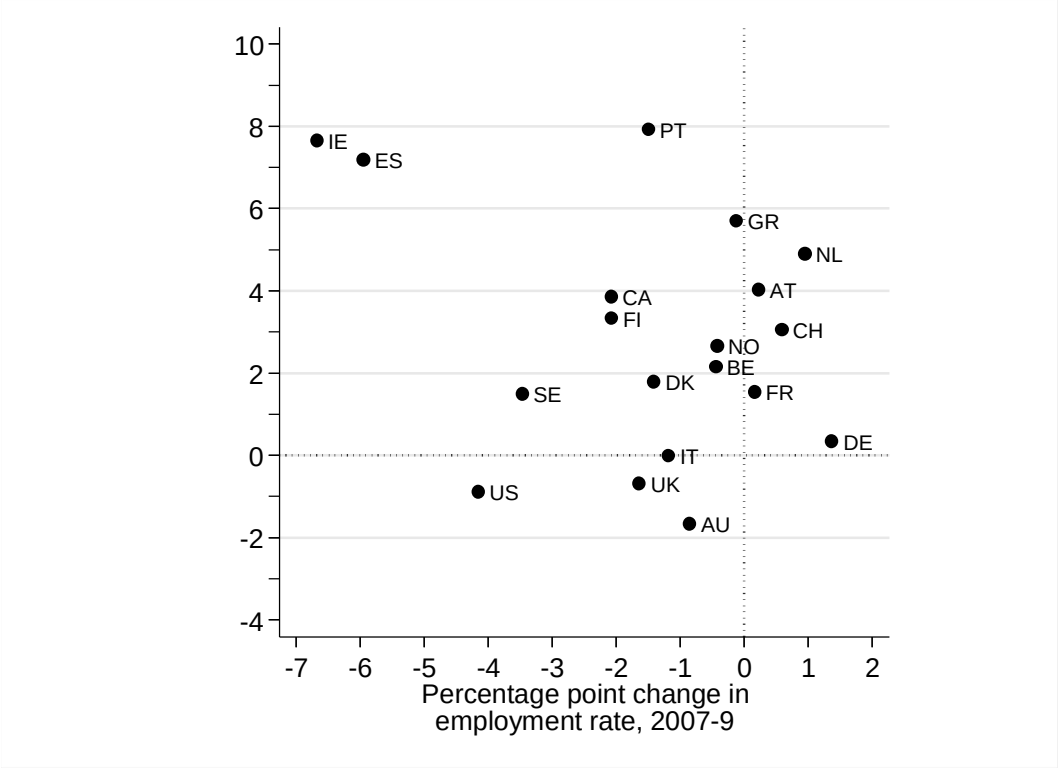


(b) Change in percentage of 18–59 year olds in workless households compared with the change in percentage of individuals non-employed (percentage point changes)



Sources: Graph (a) is derived from Eurostat Database 'Population in jobless households' annual data [lfsi_jhh_a], (accessed 24 February 2011). Graph (b) is constructed from numbers in graph (a) and in Table 2.

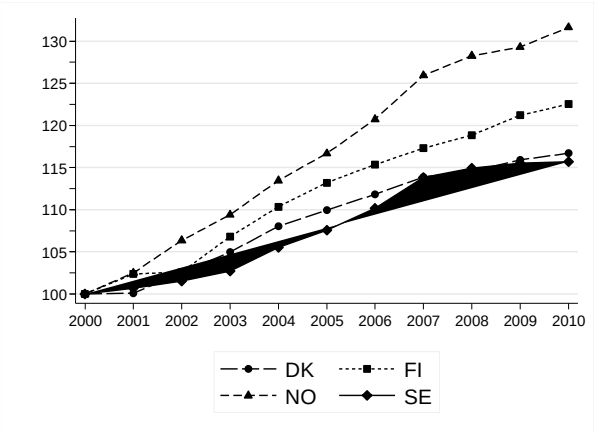
Figure 13. Changes in annual average earnings (%) and in employment rates (percentage points), 2007–9



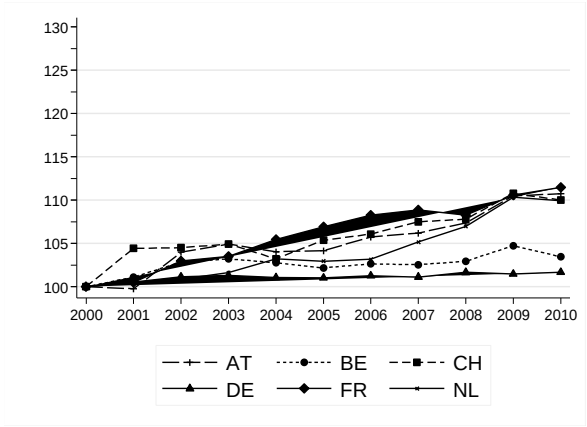
Source: OECD, 2010, OECD Stat Database accessed on March 29th, 2011. http://stats.oecd.org/index.php? >labour>earnings (the original source for these data is the National Accounts database: see note to Table 1). OECD, 2010, 'Labour Market Statistics: Labour force statistics by sex and age: indicators', OECD Employment and Labour Market Statistics (database), http://dx.doi.org/10.1787/data-00310-en (accessed 23 February 2011).
Notes: the change in employment rates is as for Table 2. Average earnings are obtained by dividing the total wage bill ('wages and salaries', in the terminology of National Accounts) by the average number of employees in the total economy, also multiplying by the ratio of average usual weekly hours worked for full-time dependent employee in their main job to average usual weekly hours worked for all dependent employee in their main job. The resulting estimates correspond to average annual wages per full-time equivalent dependent employee. The method of calculation produces figures that correspond to those for 2008 in OECD (2010a: Appendix Table J).

Figure 14. Average annual wages per full-time and full-year equivalent employee in the total economy: constant 2009 prices, series normalised to 2000 = 100

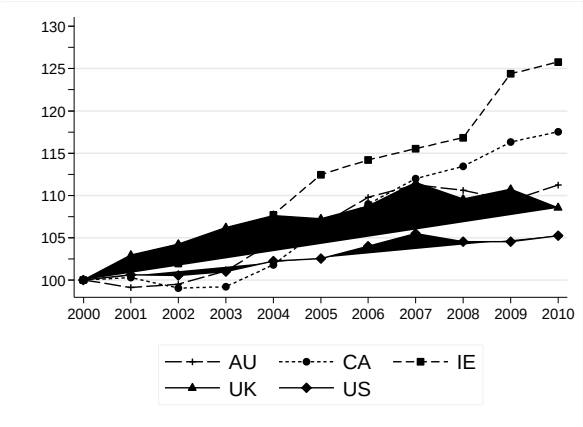
Nordic



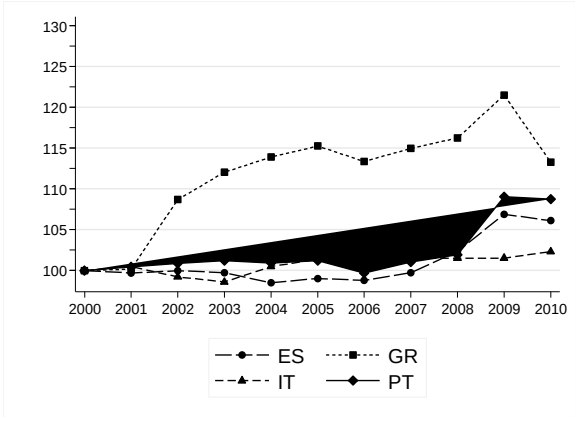
Western Europe



Anglo



Southern Europe

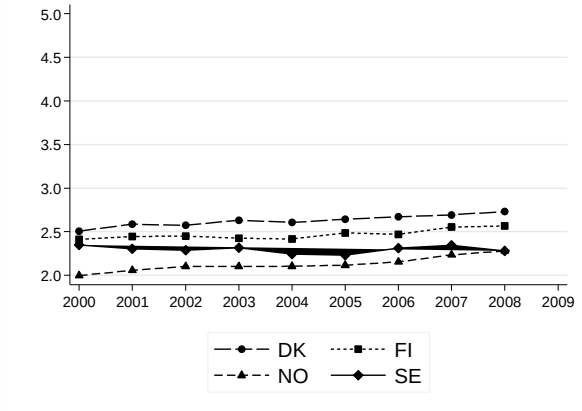


Source: http://stats.oecd.org/Index.aspx, 'Average annual wages', series CNPMCU (accessed 19 December 2011).

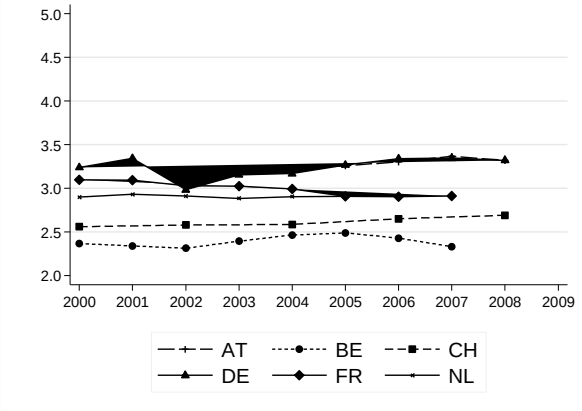
Figure 15. Inequality of gross earnings of full-time employees, 2000–9

(a) overall inequality: ratio of 90th percentile to 10th percentile

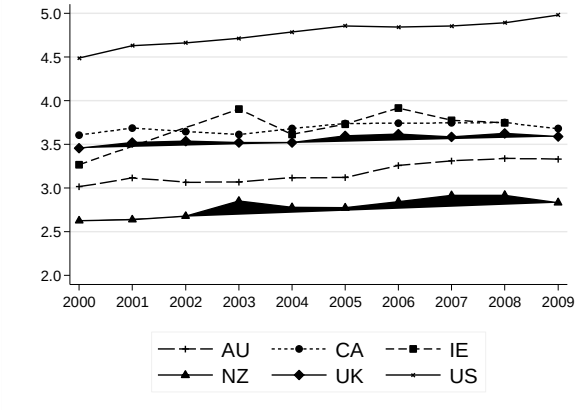
Nordic



Western Europe



Anglo



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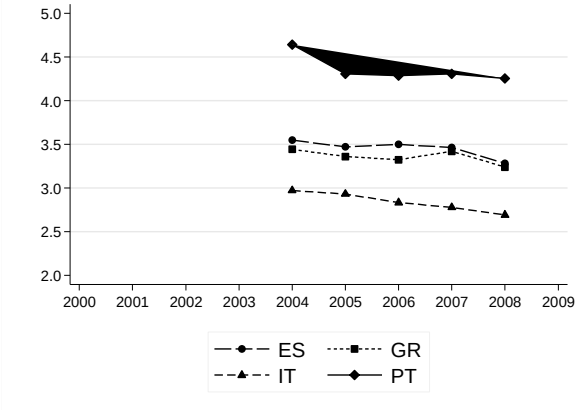
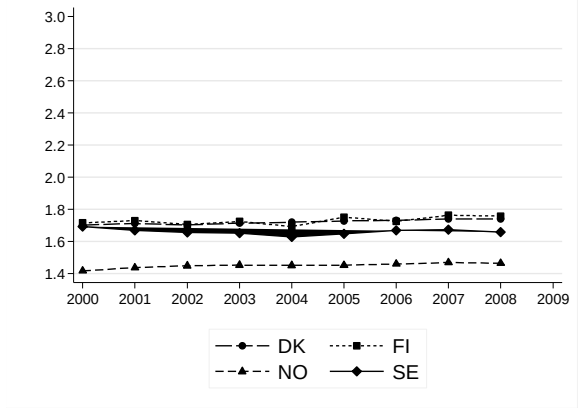


(b) top-half inequality: ratio of 90th percentile to 50th percentile

Nordic



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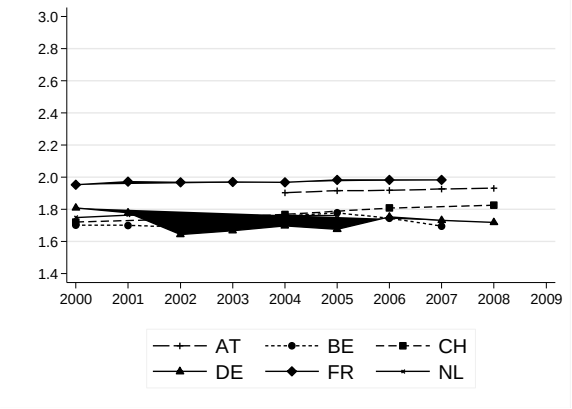
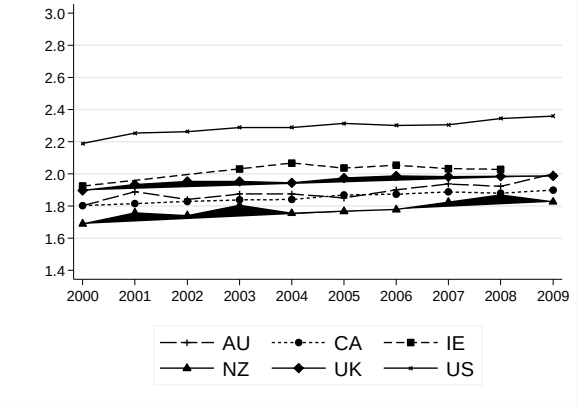


Anglo



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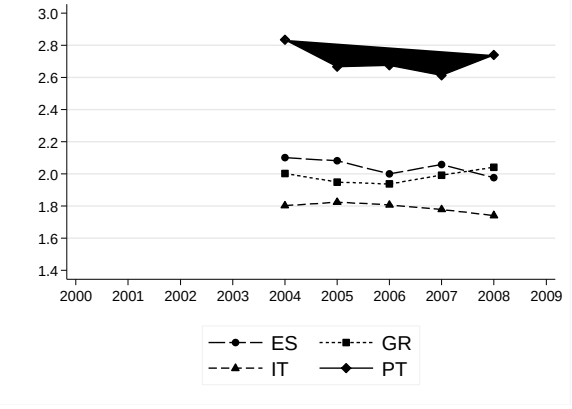
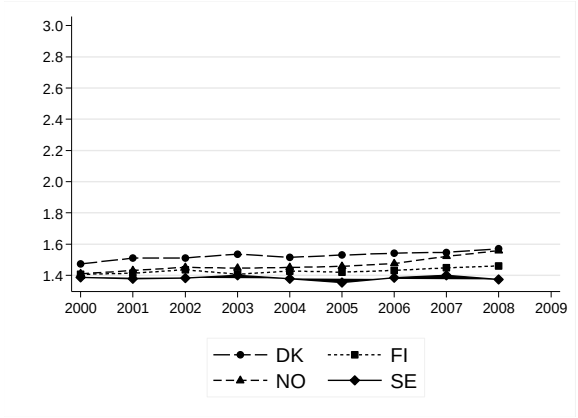
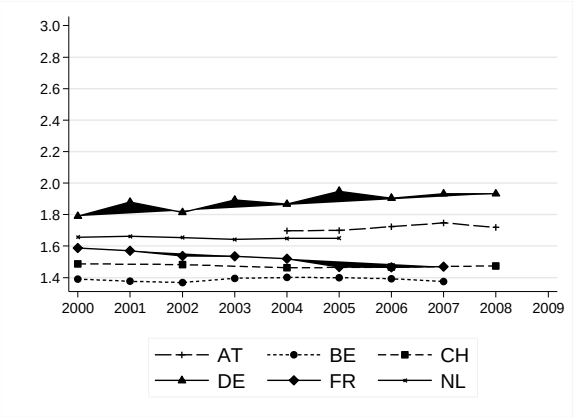


(c) bottom-half inequality: ratio of 50th percentile to 10th percentile

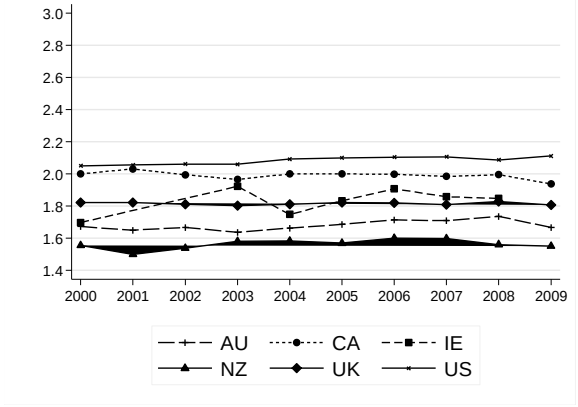
Nordic



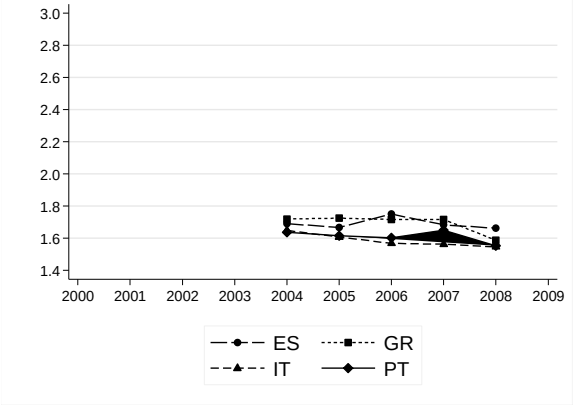
Western Europe



Anglo

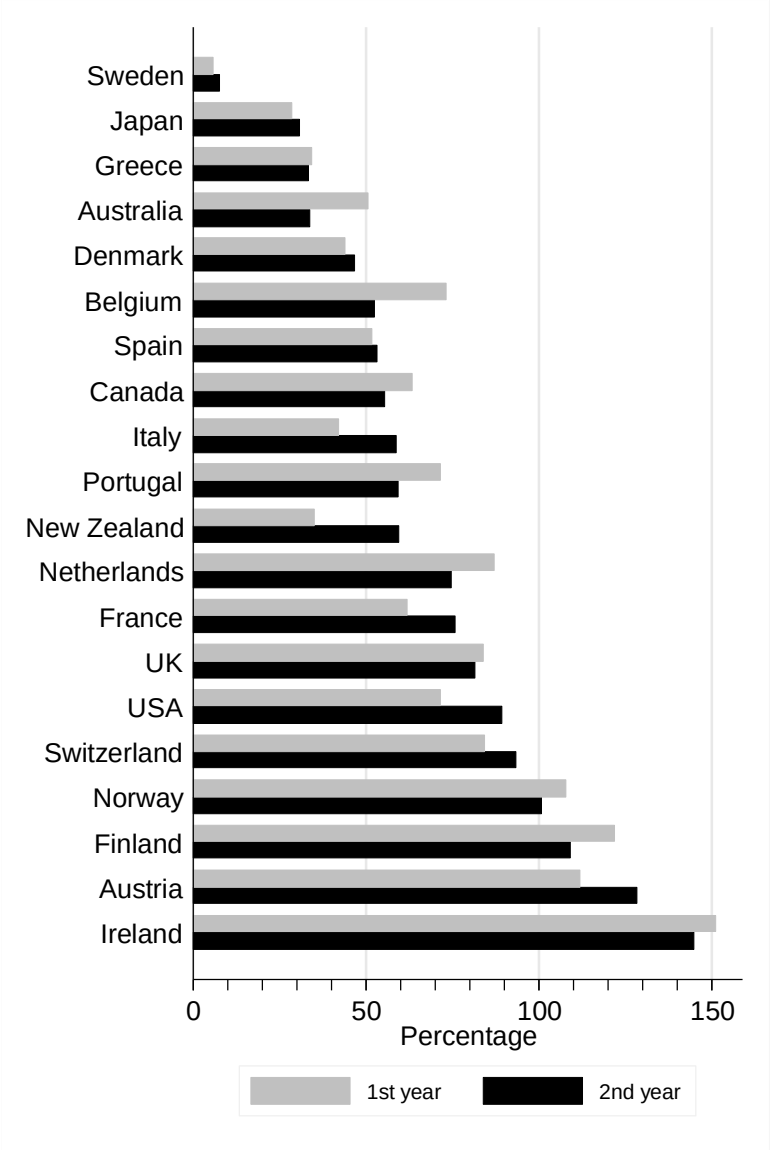


Southern Europe



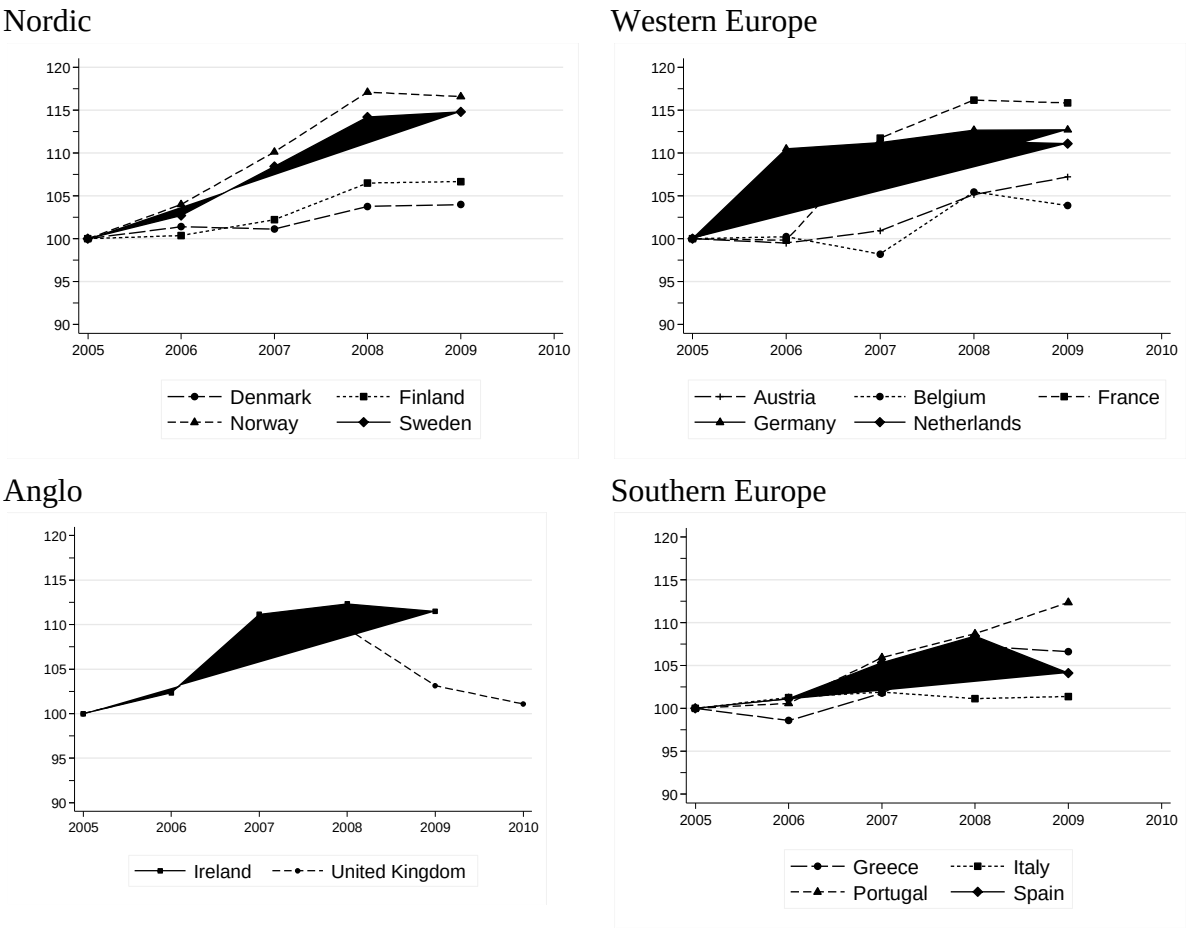
Source: http://stats.oecd.org/Index.aspx, 'decile ratios of gross earnings' (accessed 30 May 2011).
Notes: data are derived from household surveys, employer surveys, and administrative registers, and refer variously gross hourly, gross monthly and gross annual earnings. The data for France exclude agricultural workers and central government employees.

Figure 16. Change in number of unemployment benefit recipients as a percentage of the change in the number of unemployed persons by years since onset of GR



Source: OECD (2011c: Figure 1.17 panel B)
Notes: Unemployment benefit includes extended-duration benefits and unemployment assistance. Both changes are measured relative to pre-crisis levels.

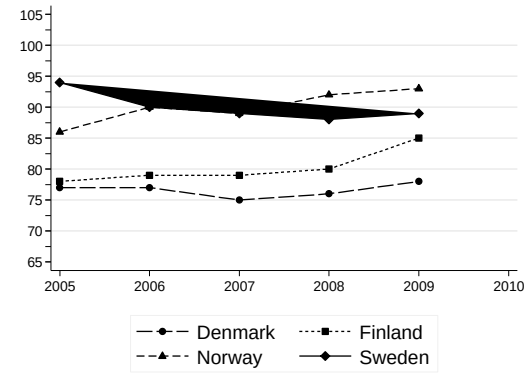
Figure 17. Real median equivalent net household income, 15 European countries, 2005–10 (2005 = 100)



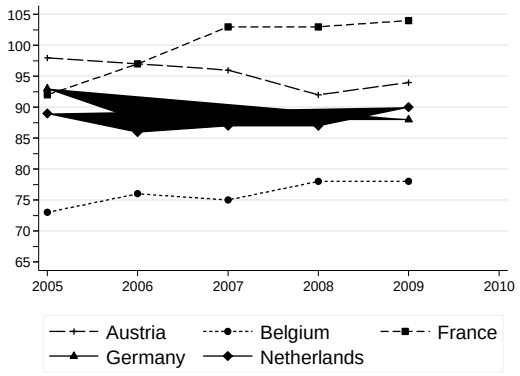
Source: EU-SILC data summaries at http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database (series ilc_di03 and prc_hicp_aind). (Accessed 19 December 2011.)
Notes: The data refer to national median equivalised household net income (the equivalence scale is the modified-OECD scale), expressed relative to the corresponding 2005 value. Nominal incomes are deflated to 2005 values using the national all-items consumer price index. Income refers to annual income for a calendar year, with two exceptions. For Ireland, income in year Y refers to income in the 12 months preceding the survey interview in year Y; for the UK, income refers to income in the period around the time of the survey interview in year Y, expressed in annual terms pro rata.

Figure 18. Ratio of median income of persons aged 60+ years to median of persons aged less than 60 years (%), 15 European countries, 2005–10

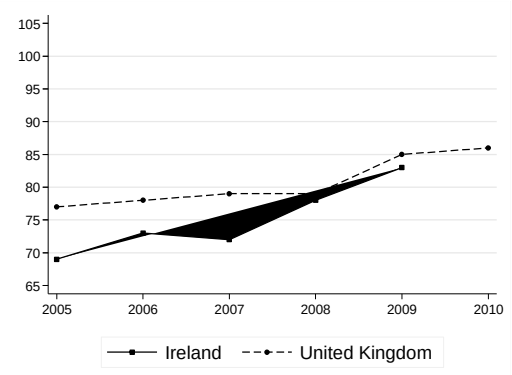
Nordic



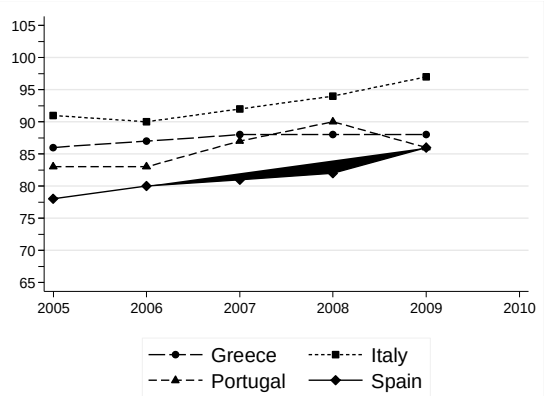
Western Europe



Anglo



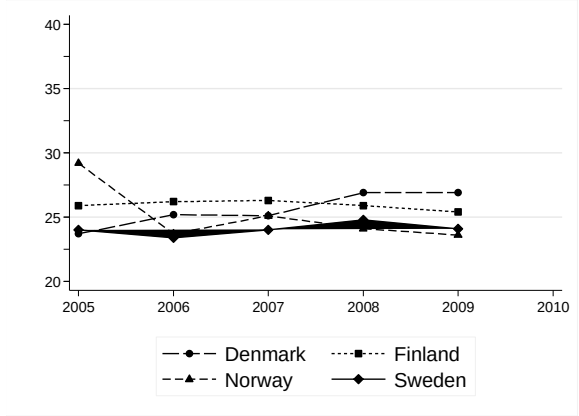
Southern Europe



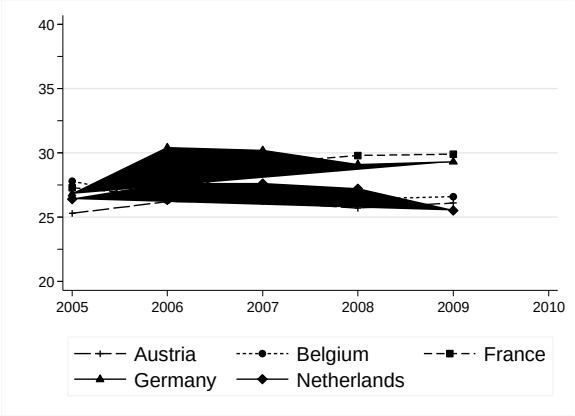
Source: EU-SILC data summaries at http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database (series ilc_pns2). (Accessed 19 December 2011.)
Notes: The data refer to national median equivalised household net income (the equivalence scale is the modified-OECD scale. For the definitions of the income reference period, see the note to Figure 17.

Figure 19. Inequality of household incomes, 15 European countries, 2005–10 (Gini coefficient, %)

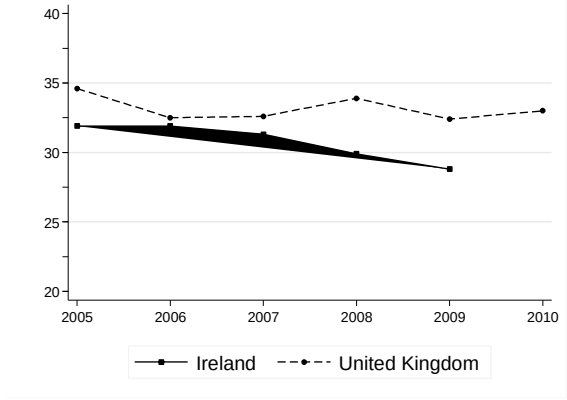
Nordic



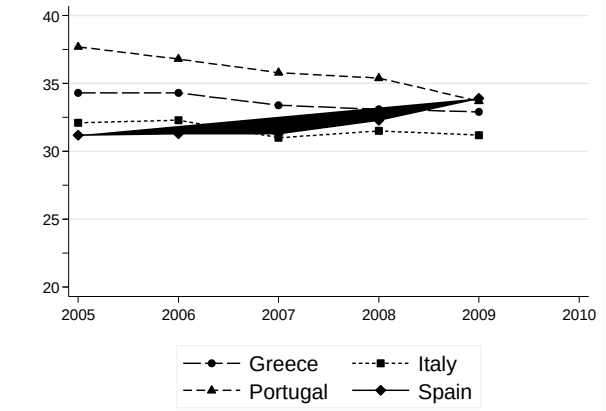
Western Europe



Anglo

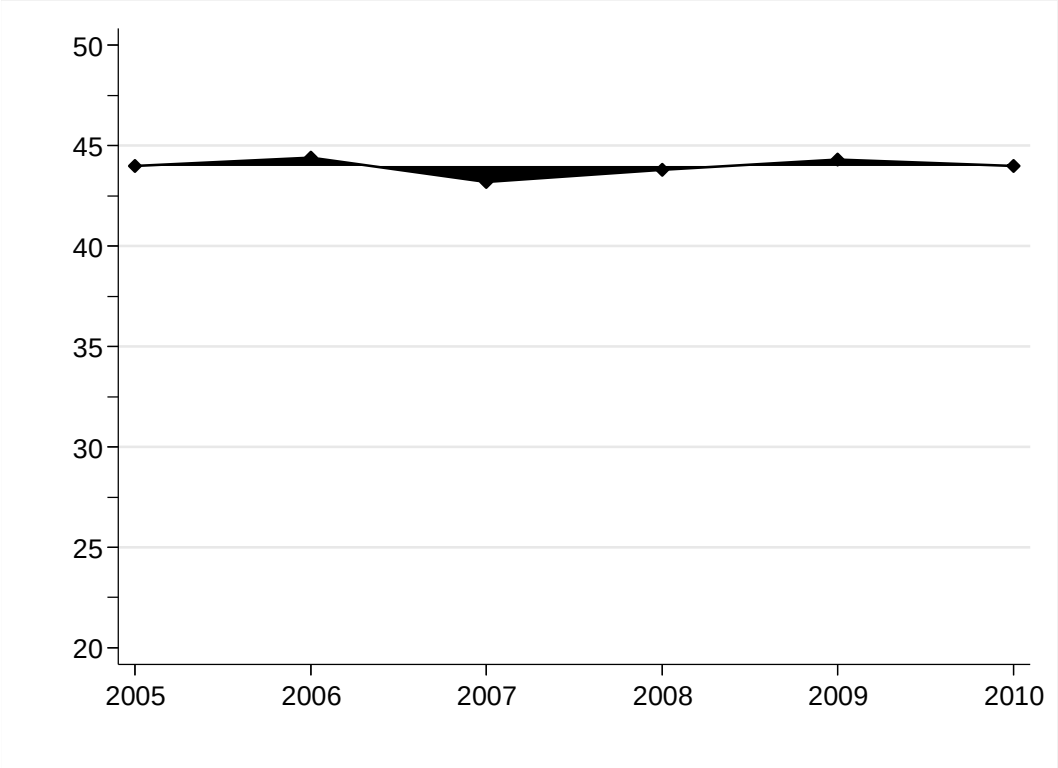


Southern Europe



Source: EU-SILC data summaries at http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database (series ilc_di12). (Accessed 19 December 2011.)
Notes: The data refer to distributions of equivalised net household income among individuals (the equivalence scale is the modified-OECD scale). For the definitions of the income reference period, see the note to Figure 17.

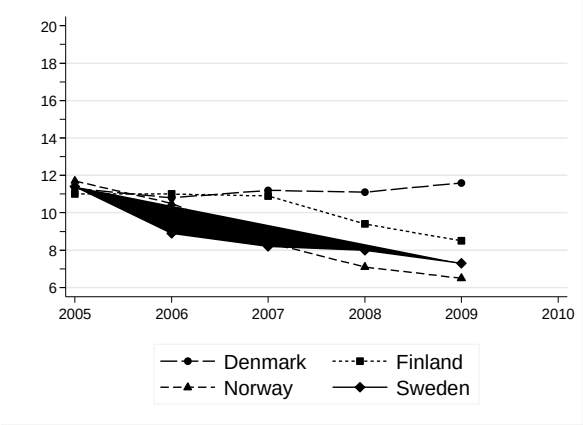
Figure 20. Inequality of household incomes, USA, 2005–10 (Gini coefficient, %)



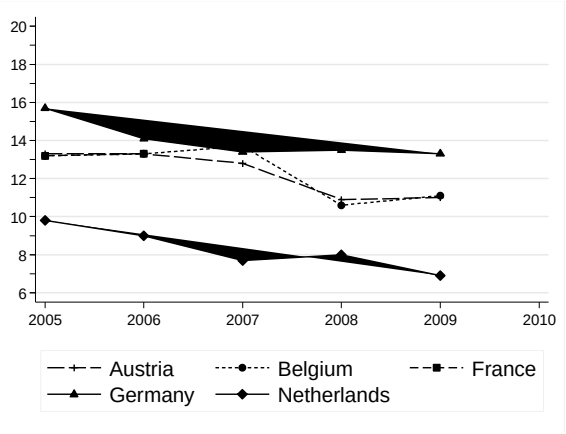
Source: US Census Bureau
http://www.census.gov/hhes/www/income/data/historical/inequality/ (F04_2010.xls)
Notes: Figure shows Gini coefficients calculated for the distribution of family money income among households.

Figure 21. Absolute poverty rates, 15 European countries, 2005–10 (percentage of population with a household income less than 60% of 2005 national median equivalent net household income)

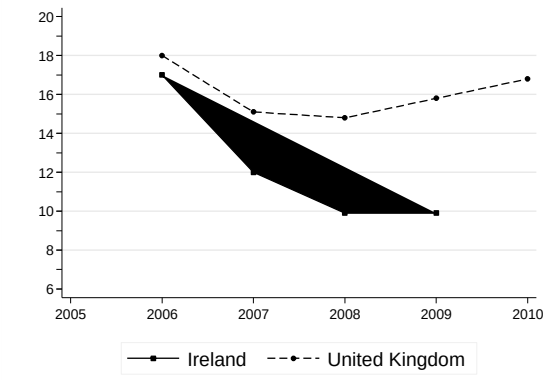
Nordic



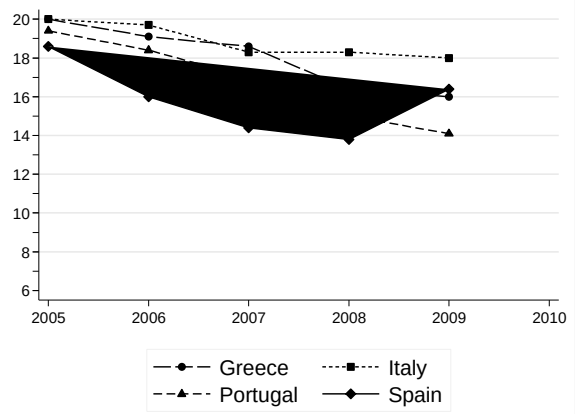
Western Europe



Anglo

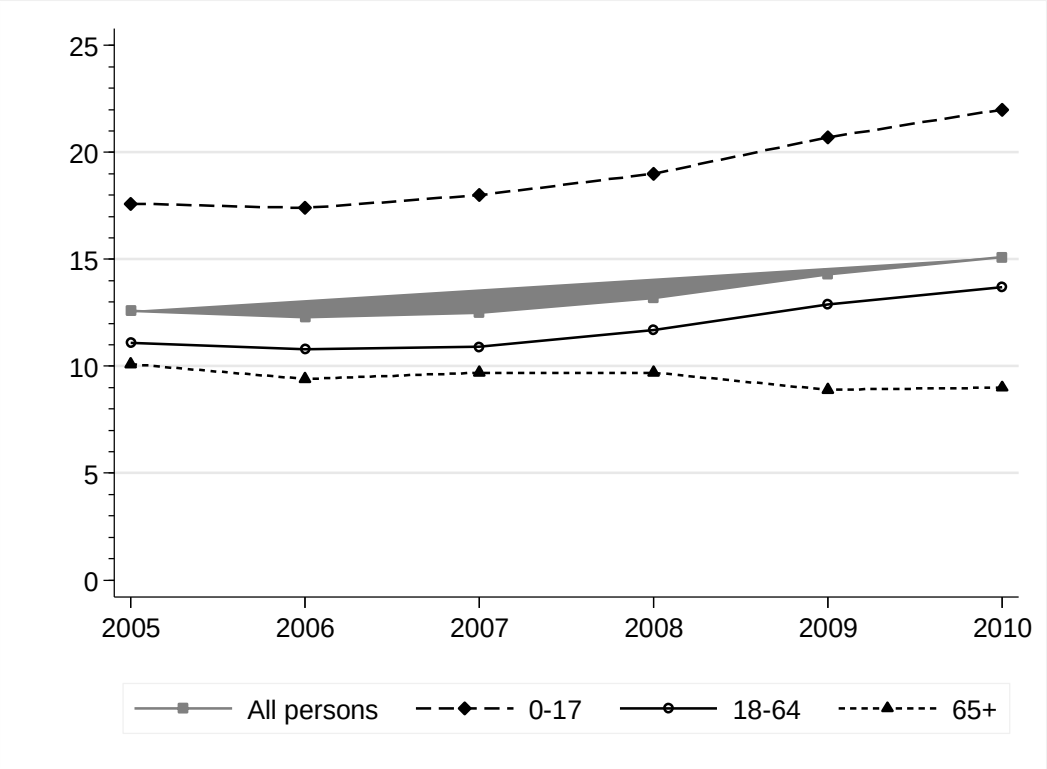


Southern Europe



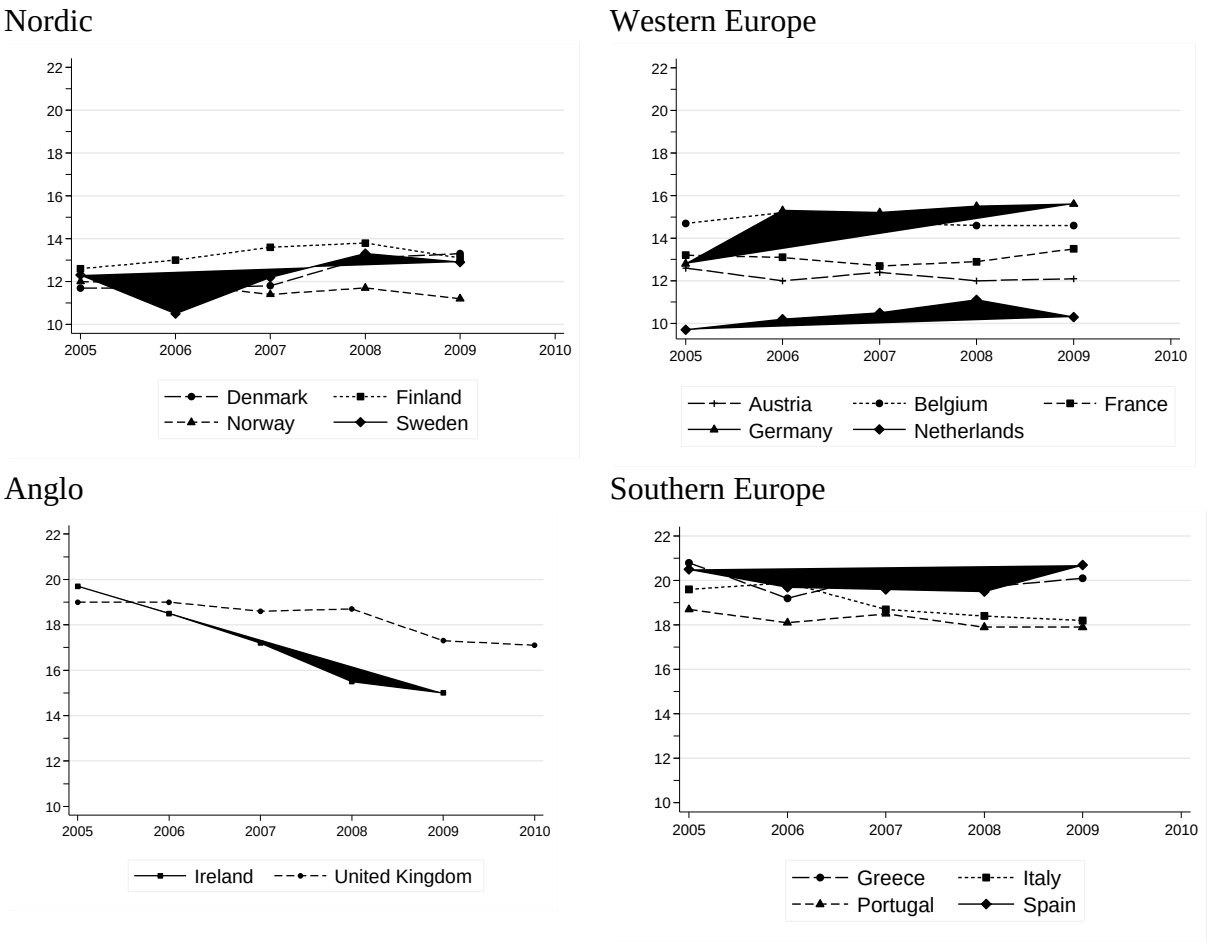
Source: EU-SILC data summaries at http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database (series ilc_li22). (Accessed 19 December 2011.)
Notes: The data refer to the percentage of the population 'at risk of poverty'. The poverty line for each country is 60 per cent of 2005 national median equivalised household net income (the equivalence scale is the modified-OECD scale). For the definitions of the income reference period, see the note to Figure 17.

Figure 22. Absolute poverty rates, USA, 2005–10 (percentage of persons below official poverty line)



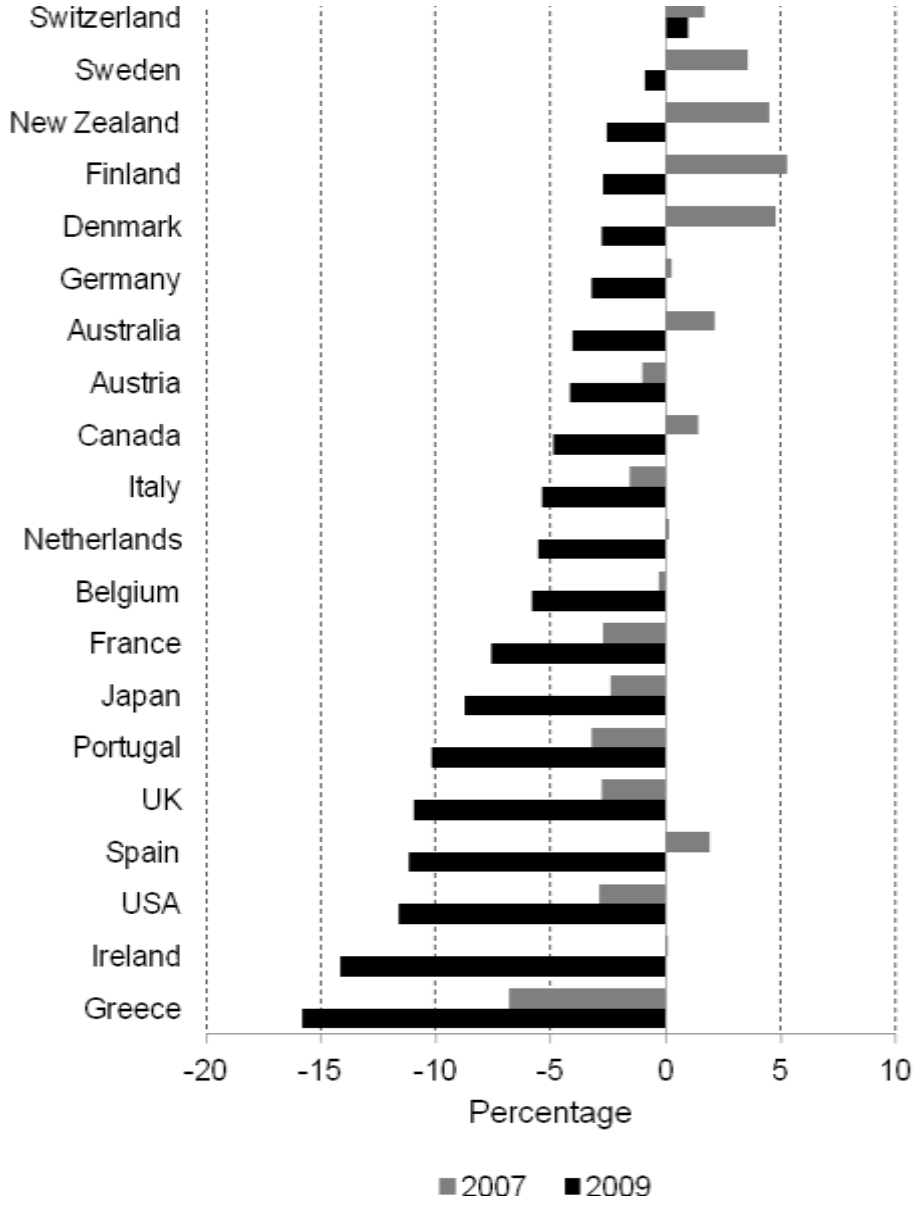
Source: US Census Bureau 'Historical Poverty Tables – People' http://www.census.gov/hhes/www/poverty/data/historical/people.html (tables hstpov2.xls, hstpov3.xls)
Notes: Figure shows percentages with a family money income that is less than the official poverty line.

Figure 23. Relative poverty rates, 15 European countries, 2005–10 (percentage of population with a household income less than 60% of national median equivalent net household income)



Source: EU-SILC data summaries at http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database (series ilc_li02). (Accessed 19 December 2011.)
Notes: The data refer to the percentage of the population 'at risk of poverty'. The poverty line for each country is 60 per cent of national contemporary median equivalised household net income (the equivalence scale is the modified-OECD scale). For the definitions of the income reference period, see the note to Figure 17.

Figure 24. General government balance expressed as a percentage of GDP, 2007 and 2009



Source: OECD (2011b) Annex Table 27.
Notes: The graph does not include Norway, for which the statistics are +17.5 per cent for 2007 and +10.7 per cent for 2009.

Table 1. Components of real Gross Household Disposable Income (GHDI), 2007–9

(a) Percentage change in each component of GHDI and in total GHDI

Country	Employee compensation	Mixed income	Operating surplus	Property income and other transfers	Taxes and Social contributions	Social benefits	GHDI
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Norway	6.4	3.1	–0.9	40.6	5.8	9.5	8.3
Canada	1.7	2.5	16.6	–6.3	–5.7	12.0	5.5
Belgium	4.0	–0.8	–3.9	4.6	2.9	10.5	5.2
Sweden	–2.9	–7.0	1.1	10.4	–10.0	4.3	5.1
Finland	0.7	–9.8	4.5	–8.1	–3.9	9.6	3.9
Spain	–0.5	–6.6	–13.7	5.2	–6.3	20.8	3.7
Portugal	3.2	3.6	–1.2	–9.4	5.2	14.8	3.6
UK	–1.5	–6.4	–29.2	4.4	–3.4	16.0	1.9
Switzerland	5.6	–11.9	5.9	–8.9	4.3	6.1	1.8
France	0.9	–6.8	–1.4	0.5	0.5	6.6	1.7
USA	–4.0	–17.2	8.3	–23.3	–16.9	20.2	0.5
Germany	2.0	–7.3	–0.7	–0.7	4.4	7.5	0.4
Ireland	–4.5	–27.6	–6.3	–43.6	–11.1	29.7	0.0
Denmark	0.5	–5.9		–136.4	–1.6	5.2	–0.5
Austria	3.3	–4.0	4.4	–31.6	1.5	7.1	–0.5
Netherlands	5.7	–14.7		–24.1	4.3	8.9	–0.6
Greece	5.2	–5.8	–17.5	–37.9	–0.1	16.7	–2.7
Italy	–0.6	–4.1	4.6	–25.3	–0.3	6.5	–4.0

(b) The contribution of each component to the change in total GHDI (percentage points)

Country	Employee compensation	Mixed income	Operating surplus	Property income and other transfers	Taxes and Social contributions	Social benefits	GHDI
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Norway	6.3	0.2	–0.1	1.8	–2.9	3.0	8.3
Canada	1.5	0.2	1.0	–0.7	1.6	2.0	5.5
Belgium	3.4	–0.1	–0.4	0.7	–1.6	3.2	5.2
Sweden	–3.2	–0.7	0.1	0.8	6.6	1.4	5.1
Finland	0.6	–1.1	0.5	–0.8	1.9	2.8	3.9
Spain	–0.4	–1.7	–1.0	0.3	2.2	4.2	3.7
Portugal	2.3	0.5	–0.1	–1.3	–1.5	3.7	3.6
UK	–1.2	–0.6	–2.6	0.7	1.5	4.1	1.9
Switzerland	5.1	–1.5	0.0	–1.5	–2.4	2.0	1.8
France	0.7	–0.7	–0.2	0.1	–0.2	1.9	1.7
USA	–3.0	–2.6	0.8	–1.9	3.9	3.2	0.5
Germany	1.5	–1.0	0.0	–0.2	–1.9	2.0	0.4
Ireland	–3.7	–4.1	–0.7	–1.9	3.9	6.5	0.0
Denmark	0.6	–1.0		–3.4	1.3	2.1	–0.5
Austria	2.5	–0.6	0.4	–4.3	–0.7	2.1	–0.5
Netherlands	5.6	–3.5		–2.8	–2.9	2.9	–0.6
Greece	2.4	–1.7	–1.7	–5.8	0.0	4.1	–2.7
Italy	–0.3	–0.9	0.5	–5.2	0.1	1.8	–4.0

Source: OECD, ‘Detailed National Accounts: Simplified non–financial accounts’, 2010, OECD National Accounts Statistics (database), http://dx.doi.org/10.1787/data–00010–en, except for Greece and Spain, whose data are from Eurostat, ‘Annual sector accounts: Non–financial flows and stocks, Non–financial transactions (nasa_nf_tr)’, http://epp.eurostat.ec.europa.eu/portal/page/portal/sector_accounts/data/database (both accessed 30 January 2012).

Table 2. Employment rates, level (2007) and change (2007–9), working–age individuals

Country	Level 2007 (%)	Change 2007–9 (ppt)
Germany	69.0	1.4
Netherlands	74.8	0.9
Switzerland	78.6	0.6
Austria	71.4	0.2
France	64.0	0.2
Greece	61.4	–0.1
Norway	76.9	–0.4
Belgium	62.0	–0.4
Japan	70.7	–0.6
Australia	72.8	–0.9
Italy	58.7	–1.2
Denmark	77.1	–1.4
Portugal	67.8	–1.5
United Kingdom	72.3	–1.6
Finland	70.5	–2.1
Canada	73.6	–2.1
New Zealand	75.2	–2.3
Sweden	75.7	–3.5
United States	71.8	–4.2
Spain	66.6	–6.0
Ireland	69.2	–6.7
Average	70.5	–1.5

Source: OECD, 'Labour Market Statistics: Labour force statistics by sex and age: indicators', (2010, OECD Employment and Labour Market Statistics (database), http://dx.doi.org/10.1787/data–00310–en (accessed 23 February 2011)
Notes: 'ppt' stands for percentage points. Persons of working age, 15–64. The average is unweighted.

Table 3. Share (%) of total household income from rent and from interest and dividends received by decile groups of household income, European countries, 2007

income from rent

Row %	Decile group		
	1 to 5	6 to 9	10
Denmark	28	45	28
Sweden	21	47	32
Norway	16	45	39
Greece	12	48	39
Portugal	9	46	45
Spain	14	38	48
Italy	13	39	48
Belgium	17	34	49
Germany	15	36	49
UK	9	40	51
Ireland	15	32	53
Finland	11	33	56
Austria	7	26	66

income from interest and dividends

Row %	Decile group		
	1 to 5	6 to 9	10
Italy	23	46	30
Germany	24	44	32
UK	19	41	40
Austria	17	42	41
Belgium	19	37	44
Portugal	16	36	48
Spain	14	37	49
Ireland	9	37	54
Sweden	17	29	54
Norway	15	25	60
Greece	3	27	70
Finland	7	22	70
Denmark	–5	2	103

Source: EU–SILC 2008, cross–sectional database. Version 2, August 1, 2010. Data for the Netherlands and France were not available at time of writing.
Notes: The distributions refer to total equivalised net household income among households (SILC variable hx090) for calendar year 2007 except for Ireland and the UK – see the notes to Figure 5. Income is equivalised by the modified–OECD equivalence scale; the income from rent was computed from variable hy040g; the income from interests and dividends was computed from variable hy090g. Decile group 1 is the poorest; decile group 10 is the richest. Row percentages sum to 100%.

Table 4. Changes in real income, poverty rates, and inequality, 15 European countries, 2007–9

Statistic and subgroup	Country														
	AT	BE	DK	FI	FR	DE	GR	IE	IT	NL	NO	PT	ES	SE	UK
Real median equivalent net household income (percentage change)															
All persons	6.2	5.8	2.8	4.4	3.7	1.3	4.8	0.3	–0.5	2.0	5.9	6.1	–1.2	5.9	–5.4
Female aged 18+	6.2	6.2	2.9	5.3	3.2	1.6	3.4	1.1	0.3	2.3	7.6	6.5	–0.2	4.5	–5.3
Male aged 18+	4.4	6.0	2.6	3.2	4.0	0.9	4.5	–0.2	0.6	2.0	6.2	5.8	–2.5	5.4	–5.4
Absolute poverty rate (percentage point change)															
All persons	–1.8	–2.6	0.4	–2.4	n.a.	–0.1	–2.6	–2.1	–0.3	–0.8	–1.9	–2.9	2.0	–0.9	0.7
Aged 0–17 years	–2.2	–1.9	0.2	–2.8	n.a.	1.8	–2.8	–2.0	0.4	–0.4	0.7	–3.2	3.1	–1.1	0.1
Aged 18–64 years	–1.4	–1.9	0.9	–1.1	n.a.	–0.2	–2.0	–1.6	0.9	–0.4	–2.0	–2.3	2.8	–0.3	1.2
Aged 65+ years	–2.9	–5.7	–1.7	–7.0	n.a.	–1.1	–4.4	–5.1	–4.1	–3.3	–5.3	–5.5	–2.9	–2.5	–0.7
Female	–1.8	–3.1	–0.1	–2.5	n.a.	–0.3	–2.5	–2.7	–0.4	–0.4	–3.1	–3.3	1.6	–0.7	0.5
Male	–1.9	–1.9	0.9	–2.3	n.a.	0.1	–2.7	–1.6	–0.1	–1.1	–0.6	–2.7	2.2	–1.1	0.8
Relative poverty rate (percentage point change)															
All persons	–0.3	–0.1	1.5	–0.5	0.8	0.4	–0.2	–2.2	–0.5	–0.2	–0.2	–0.6	1.1	0.7	–1.3
Aged 0–17 years	–0.6	1.1	1.8	–0.6	1.9	2.3	0.0	–0.4	0.0	0.8	2.1	–0.4	1.8	0.2	–2.3
Aged 18–64 years	–0.2	–0.1	1.6	0.5	1.0	0.2	0.0	–1.2	0.6	0.2	–0.5	–0.6	2.6	0.7	–0.3
Aged 65+ years	0.2	–1.8	–0.4	–4.2	–1.3	–0.8	–1.2	–12.1	–4.3	–3.5	–2.7	–1.3	–5.7	0.5	–4.2
Female	0.0	–0.7	1.4	–0.7	0.7	0.2	0.1	–3.4	–0.6	0.4	–0.7	–0.7	0.3	1.3	–1.8
Male	–0.5	0.3	1.4	–0.3	0.9	0.7	–0.6	–1.1	–0.3	–0.8	0.2	–0.6	1.8	0.1	–0.9
Employed (16–64 years)	–1.5	–0.4	1.4	–1.5	–0.2	0.0	–0.3	–0.5	0.5	0.4	–0.2	–1.8	2.0	–0.2	–1.6
Not employed (16–64 years)	2.3	–1.7	1.9	2.0	1.8	4.2	1.4	–5.5	0.4	2.0	0.3	1.4	1.6	3.9	–3.5
Gini coefficient (percentage point change)															
All persons	–0.1	–0.9	1.8	–0.9	0.7	–0.9	–0.5	–2.5	0.2	–2.1	–1.5	–2.1	2.6	0.1	–0.2
S80:S20 ratio (percentage point change)															
All persons	0.0	–0.2	0.8	–0.2	0.2	–0.3	–0.3	–0.6	0.1	–0.3	–0.3	–0.5	1.5	0.0	0.0
Aged less than 65 years	0.0	–0.2	0.8	0.0	0.2	–0.2	–0.2	–0.6	0.2	–0.3	–0.3	–0.5	1.9	0.2	0.0
Aged 65+ years	–0.1	0.6	0.7	–0.1	–0.1	–0.2	–0.4	0.5	–0.2	–0.1	–0.2	–0.4	0.1	–0.5	–0.2
Female	0.1	–0.2	0.7	–0.2	0.2	–0.3	–0.2	–0.6	0.1	–0.3	–0.4	–0.6	1.2	0.0	–0.1
Male	–0.1	–0.2	0.8	–0.1	0.2	–0.2	–0.3	–0.4	0.1	–0.4	–0.2	–0.5	1.6	0.0	–0.1

Source: EU–SILC data summaries at http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database (series ilc_di03, ilc_li22, ilc_li02, ilc_li04. ilc_di11). (Accessed 19 December 2011.) Notes: n.a.: not available. Definitions of median and poverty rates are as in Figures 2.17, 2.19, and 2.21. The ‘S80:S20’ ratio is the ratio of the share of equivalent net household income held by the richest fifth to the share of equivalent net household income held by the poorest fifth.

Table 5. The four most frequently cited areas of expenditure and revenue reported by OECD member states as part of their fiscal consolidation plans, Autumn 2010

Expenditure		Revenue	
Area	Number of countries	Area	Number of countries
Welfare	18	Consumption taxes	20
Health	15	Tax expenditures	14
Pensions	14	Income taxes	12
Infrastructure	13	Tax on financial sector	8

Source: OECD (2011d), Figure 1.21 p. 46, and Figure 1.28 p. 53.
Notes: 30 countries were surveyed of which not all had fiscal consolidation plans. The headings are those given in the source document. 'Welfare' appears to be a broad heading covering all public cash benefits including universal benefits.