

Session 3: Impact of the Great Recession on the Well-Being of Households I
Time: Tuesday, August 7, 2012 AM

*Paper Prepared for the 32nd General Conference of
The International Association for Research in Income and Wealth*

Boston, USA, August 5-11, 2012

**The Distributional Effects of Austerity Measures:
A Comparison of Six EU Countries**

Tim Callan
Chrysa Leventi
Horacio Levy

Matsaganis
Alari Paulus
Holly Sutherland

For additional information please contact:

Name: Holly Sutherland
Affiliation: ISER University of Essex

Email Address: hollys@essex.ac.uk

This paper is posted on the following website: <http://www.iariw.org>

The distributional effects of austerity measures: a comparison of six EU countries¹

Tim Callan, ESRI, Dublin

Chrysa Leventi, Athens University of Economics and Business

Horacio Levy, ISER University of Essex

Manos Matsaganis, Athens University of Economics and Business

Alari Paulus, ISER University of Essex

Holly Sutherland*, ISER University of Essex

Paper to be presented at the 32nd General Conference of the *International Association for Research in Income and Wealth*

Boston, USA, August 5-11, 2012

Abstract

We compare the distributional effects of policy changes presented as “austerity measures” in six EU countries that experienced large budget deficits following the financial crisis of the late 2000s and subsequent economic downturn, using the EU microsimulation model EUROMOD. The six countries, Estonia, Ireland, Greece, Spain, Portugal and the UK, chose different policy mixes to achieve varying degrees of fiscal consolidation. We find that the burden of fiscal consolidation brought about through the first round effects of increases in personal taxes, cuts in spending on cash benefits and reductions in public sector pay is shared differently across the income distribution in the six countries. In Greece, the better off lose a higher proportion of their incomes than the poor. At the other extreme, in Portugal, the poor lose a higher proportion than the rich. Including increases in VAT alters the comparative picture by making the policy packages appear more regressive, to varying extents.

JEL: C81, H55, I3

Keywords: Austerity measures, European Union, Fiscal consolidation, Income distribution, Microsimulation.

* corresponding author

¹ **Acknowledgements:** We would like to thank Jose Albuquerque, Mike Brewer, Carlos Farinha, Francesco Figari, Vitor Junqueira and Terry Ward for comments, advice and assistance. We also acknowledge the contribution of all past and current members of the EUROMOD consortium. The process of extending and updating EUROMOD is financially supported by the Directorate General for Employment, Social Affairs and Inclusion of the European Commission [Progress grant no. VS/2008/0318]. The estimates for Ireland are based on microdata from the Irish SILC 2008 made available by the Irish Central Statistics Office. For Portugal we make use of microdata from the EU Statistics on Incomes and Living Conditions (EU-SILC) made available by Eurostat under contract EU-SILC/2009/17; for Estonia, Greece and Spain the national EU-SILC “PDB” data made available by respective national statistical offices; and for the UK Family Resources Survey data made available by the Department of Work and Pensions via the UK Data Archive. The authors alone are responsible for the analysis and interpretation of the data reported here.

1. Introduction

The financial and economic crisis which started in the late 2000s and the austerity measures to counter the subsequent government budget deficits are widely perceived to have an impact on income poverty and inequality. In this paper we do not consider the wider aspects of the economic crisis on income distribution, which are considered for example in Jenkins et al. (2011) and instead focus on the effects of austerity measures alone, comparing the size and distributional effects of the policy packages chosen in six EU countries: Estonia, Ireland, Greece, Spain, Portugal and the United Kingdom.

Government budgets were severely affected by the crisis. Of the six countries analysed in this paper, three were running budget surpluses in 2007 and another two had budget deficits around the European Union's Stability and Growth Pact limit of 3% of GDP. By 2009 only Estonia had a deficit below that limit. The other five had budget deficits much higher than the EU-27 average and around or above 10% of GDP (see Figure 1). Our choice of six countries to analyse is based on their being among those in the EU with the highest increase in deficit and/or reduction in GDP or employment within the period between 2007 and 2011. The degree of deficit reduction these six governments set out to achieve naturally varied, and so did the policy mix chosen to achieve it. Our analysis addresses the question of how reforms to direct personal taxes, cash benefits and public sector pay affect different income groups and types of household, and how they impact on risk of poverty. We also consider changes to some employer costs (social contributions) and the incidence of increases in VAT across the household income distribution.

[PLACE FIGURE 1 HERE]

The structure of this paper is as follows. A range of conceptual and consistency issues arise when doing such analysis, particularly in a comparative setting. Section 2 discusses these issues and also briefly describes EUROMOD, the EU tax-benefit microsimulation model.² Section 3 introduces the austerity measures taken in each country and highlights those modelled in this analysis. Section 4 presents an analysis of the distributional effects of the austerity measures in the six countries and shows how the different policy mixes have their own distributional implications. Section 5 concludes by placing this analysis in the context of questions about the effects of the economic crisis as a whole, by summarising our policy relevant findings and by explaining the caveats to be adopted when interpreting them.

2. Methodology

There are many analytical choices and assumptions to be made when simulating the effects of austerity measures on income. There are also choices to be made in considering how to measure the impact and what indicators to use. Both types of choice are particularly important when making comparisons across countries. On the one hand the same choices should be made in each country for valid comparisons to be made. On the other hand, the most appropriate choice may vary across countries, depending on the nature and timing of the measures taken. In addition, possibilities may be limited due to lack of data in some countries, but not in others. In this paper we attempt to define an equivalent (i.e. comparable) assessment in each country. This builds on previous work

² For Ireland the analysis makes use of the national tax-benefit model, SWITCH, using methods and assumptions aligned with those adopted in EUROMOD. See Callan et al. (2011).

which took an essentially national perspective in each case and considered the implications of methodological differences when interpreting results (Leventi et al., 2010).

Among the methodological issues to be confronted are the following: Which measures count as austerity measures? What is the counterfactual, i.e. what do we assume would have happened to policies without the austerity measures? Which measures can be assessed across the income distribution, with a reasonable degree of precision? To what extent can (and should) indirect effects and macroeconomic changes be accounted for? We consider each in turn.

Which measures count as austerity measures?

In some countries, such as Greece, explicit packages of reforms have been labelled as austerity measures. While mostly involving tax increases and cuts in social benefits and public sector pay, they also include increases in some benefits or reductions in taxes for certain groups to compensate or alleviate the impact of other measures. In any case, the package as a whole can be easily identified. In other countries it is not so clear how policies would have evolved in the absence of the budgetary crisis. In the UK, for example, there was a change of government in mid 2010 and the policy changes include, alongside measures that might have been introduced by any government, cuts and restructuring of the welfare system that arguably are part of a new approach, some under the guise of austerity. In general our approach has been to focus on changes that were explicitly introduced in order to cut the public deficit, or stem its growth. The aim is to distinguish between changes that were part of a “business as usual” scenario and those introduced for austerity reasons. In particular the removal of temporary fiscal stimulus measures is not considered as part of an austerity package if those reforms were originally presented as temporary.

A second area of consideration is the “time span” to consider for the changes. In some cases measures were all announced and introduced within a single year. In other cases, for instance in the UK, measures announced at one point (e.g. in 2010) may not be implemented fully until much later (e.g. 2014). There are several different rationales for the phasing of tax increases and spending cuts. One is to reduce the risk of another (or further) macroeconomic downturn and soften the blow for political feasibility reasons. Another is related to the long term restructuring of the tax and welfare system. A third might be to influence expectations and therefore behaviour, particularly in the financial markets. Distinguishing between these three types of phasing is difficult. Furthermore, it is possible that the medium term plans that are announced will be reversed or amended before being implemented, or further measures introduced (e.g. in Greece, Ireland and Portugal during late 2011). For this reason we limit the changes that we analyse to those already introduced by June 2011. We do not harmonise the starting point for the changes and hence focus on the evaluation of all (implemented) changes across countries rather than policy changes in exactly the same period.

The counterfactual

The way in which the counterfactual scenario (i.e. what would have happened in the absence of the austerity measures) is simulated is critical to the evaluation of the effects. We have chosen to interpret the “absence of the austerity measures” as the continuation of pre-austerity policies, indexed according to standard practice and official assumption, or law. Such indexation is not the same across countries. Whereas the UK has long-established indexation rules and conventions (Sutherland et al., 2008) which are currently changing (Joyce and Levell, 2011), most of the policies in Estonia, Ireland and Greece are not regularly indexed and instead are changed occasionally on an ad hoc basis. In Portugal and Spain there is a mix of regular indexation and ad hoc changes.

Which measures can be simulated?

In most countries austerity measures take the form of some combination of: (i) reductions in cash benefits and public pensions; (ii) increases in direct taxes and contributions paid by households; (iii) increases in employer-paid contributions; (iv) increases in indirect taxes; (v) reductions in public services that have an impact on the welfare of households using them; (vi) reductions in public expenditure that cannot be allocated to households (e.g. pure public goods like defence spending) and increases in taxes that are not straightforward to allocate to households; (vii) cuts in public sector pay (viii) cuts in public sector employment.

The direct effect on the public budget will be the net effect of these changes. There will be interactions. For example, reductions in public sector pay will serve to reduce tax revenue; increases in indirect taxes will result in increased inflation and hence (in some cases) increased indexation of benefits. The eventual overall result will also depend on any behavioural or macro-economic second and third round effects. In this analysis we focus on the direct, first round, effects of changes in cash payments and direct personal taxes and contributions, i.e. (i) and (ii) from the list above. In addition, the effects of public sector pay cuts are captured for all countries except the UK (vii).³ The effect of the pay cut is measured net of any reduction in income tax and social contributions. Where possible and relevant we also measure the effect of increased employer contributions (iii) and draw on available previous research to show, in broad and approximate terms, the additional effect of indirect tax increases (iv).

Macroeconomic and second order effects

It is important to note that our simulations are applied to household survey data collected before the financial and economic crisis. Hence, effectively we calculate the impact of the austerity measures on populations with pre-crisis characteristics. Market incomes are adjusted by source, in line with actual changes between the period when the data were collected and the “austerity” year (see Table 1) but nevertheless the size and distribution of the effects of the austerity policies might be somewhat different once unemployment increases and other labour market changes due to the crisis, directly or indirectly, have been accounted for. We might expect the effects of benefit cuts to be amplified and for the effects of tax and contribution increases to be dampened to some extent. This issue is distinct from whether our analysis captures the full effects of the crisis, which, as explained above, is not the aim of this paper.

[PLACE TABLE 1 HERE]

The austerity measures themselves may induce second order and macro-economic effects. For example, households facing income losses may adapt their behaviour in an attempt to compensate, to some extent, for such adverse changes in circumstances. For instance, those who are able to may work longer hours or increase their labour supply in other ways; young people facing drastic reductions in living standards may return to live with their parents; reductions in income will lead to reduction in consumption and, potentially, a slower recovery. These issues are beyond the scope of this paper. Wider aspects of the crisis beyond the austerity measures are ignored, even though the latter may arguably aggravate the former, at least to some extent.

³ In the UK, while public sector institutions have had their budgets cut, and pay rises are certainly restricted, there is no figure for a specific pay cut that can be simulated in this exercise.

The European tax-benefit model EUROMOD

Our analysis makes use of EUROMOD, the EU tax-benefit microsimulation model based on information from a representative sample of each national population, using micro-data from the Eurostat and national versions of the European Union Statistics on Income and Living Conditions (EU-SILC) and the Family Resources Survey for the UK. EUROMOD simulates cash benefit entitlements and direct personal tax and social insurance contribution liabilities on the basis of the tax-benefit rules in place and information available in the underlying datasets. Market incomes are taken from the data, along with information on other personal/household characteristics (e.g. age and marital status). See Sutherland (2007) and Lietz and Mantovani (2007) for further information.

In this analysis, some adjustments are made for non take-up of certain means-tested benefits and behaviour in this respect is assumed to be the same before and after the austerity measures.⁴ It is assumed that there is no tax evasion and that the tax rules are universally respected and the costs of compliance are zero.

3. Simulating the austerity measures

We focus on the austerity measures implemented after the 2008 economic downturn and up to mid-2011. However, the period in which austerity measures were introduced is different across countries depending on many factors, including the timing of the national macroeconomic and budgetary reactions to the financial crisis. Among the countries included in the analysis, Estonia, Ireland, Portugal and the UK started introducing austerity measures in 2009 (see Table 1 above) and apart from Estonia followed with further measures in 2010 and 2011.⁵ Spain introduced measures in 2010-11, following a fiscal stimulus package in 2008-09 which was also partially reversed (but not considered as part of austerity measures in this analysis). In Greece, there were two packages of austerity measures introduced in 2010.⁶

In order to tackle increasing budget deficits, the governments tried to find ways both to increase revenues and decrease expenditures. From Table 2, which summarises the types of measures that have been used in each country within the scope of our analysis, it emerges that all countries have cut cash benefits and/or pensions and increased income taxes. However, in the UK, Spain and Greece, only the top income tax rate(s) were increased, and in Greece tax rates in lower bands were actually decreased. Ireland and Greece further introduced additional new taxes and/or contributions, some one-off. In five out of the six countries the (standard) rate of VAT was increased and also in five of the countries public sector pay cuts were introduced in this period.⁷ Only half of

⁴ A recent study by Matsaganis et al. (2010) estimated that the non take-up of means-tested benefits for the elderly in two of the countries examined here (Greece and Spain) could be very extensive. There is a long history of research on non take-up in the UK (e.g. Duclos, 1995; Pudney et al., 2006).

⁵ Some policy measures in the UK which were implemented between April 2009 and June 2011 had been announced before the start of the crisis or were introduced as part of the political deal made in forming the 2010 coalition government. We exclude these (which tend to reduce tax revenue or increase spending) from the comparison by including them in both the “with” and “without” austerity simulations.

⁶ A third package of austerity measures was announced in June 2011. The measures were applicable from later in 2011 and are not captured in our simulations.

⁷ Ireland followed later than the other countries by increasing the standard rate of VAT in 2012.

the countries – Estonia, Ireland and the UK – increased social insurance contributions (both worker and employer). Furthermore, Estonia was the only country to make notable fiscal adjustments in the form of reducing credited social insurance contributions (more specifically, by temporarily suspending payments to the 2nd pension pillar).

Although our analysis covers the main changes in direct taxes and cash benefits, due to data limitations it is not possible to simulate all changes: e.g. cuts in minor benefits and tax allowances in Estonia; an increase in the tax on deposit interest in Ireland; cuts in the benefits and tax credits administered by some regional governments in Spain and certain cuts in (local) benefits in the UK. Among the changes in indirect taxes, as well as increases in the standard rates of VAT, reduced rates of VAT and excises were increased in some cases but are not captured in our analysis, except for Greece. More detail of the changes in each country is provided in the appendix.

[PLACE TABLE 2 HERE]

Our simulations compare the situation after the austerity measures have been introduced with that under a “business as usual” scenario. This broadly corresponds to the pre-austerity policy system indexed in the way that is usually assumed in policy announcements and public finance projections in the country concerned and/or is written into the law. These indexation assumptions are the following:

- **Estonia:** No indexation except for pensions (indexed by a weighted average of CPI and wage growth)
- **Ireland:** No indexation
- **Greece:** No indexation
- **Spain:** No indexation except for pensions (indexed by CPI)
- **Portugal:** Indexation of most components by CPI
- **UK:** Indexation according to statute or assumptions built into official fiscal projections (OBR, 2011; Annex C). Mainly by prices; some components by earnings; some components not indexed.

In each case the level and distribution of market incomes is drawn initially from data from the recent, pre-crisis, past. For Greece, Portugal and Spain this is 2006 income data from the EU-SILC/national SILC, for Estonia it is 2007 income data from the national SILC, for Ireland it is 2008 income data from the national SILC and for the UK it is 2008/9 Family Resources Survey data (see Table 1). In each case market incomes are updated appropriately to the “baseline”, i.e. the policy simulation year (2009 in Estonia, 2010 in Greece and 2011 in the remainder of the countries). These incomes are then held constant and the counterfactual and reform scenarios are simulated on the same distributions of market income.

4. The effects of austerity measures

We consider the effects produced by the austerity measures in several dimensions. First, we analyse the size and composition of the austerity packages, i.e. changes to cash benefits, income taxes and contributions paid by workers (employees and self-employed), public pay cuts (net of corresponding tax and contribution reductions) and also employer contributions and credited contributions, all of which can be simulated with EUROMOD. We do not include the effects of indirect tax increases at this point. As our estimates of these measures are derived using a different approach, based on data from other studies, they are likely to be not consistent with those derived from EUROMOD.

Secondly, the effects on household disposable income are considered, first, in terms of the proportional reductions in income across the income distribution and then in terms of the impact on at risk of poverty rates. Since household disposable income is not directly affected by employer or credited contributions, changes in these are not included in this part of the analysis.

Finally, we show the effect of the VAT increases by expressing it, together with the other measures analysed in this paper, as a proportion of household disposable income.

Size and composition of austerity packages

The extent and composition of the “austerity packages” analysed here is shown in Table 3. Measured as a percentage of pre-austerity total disposable income, the overall fiscal consolidation generated by the measures included in the analysis varies from about 2% of disposable income in the UK to 8% in Ireland. It is 6% in Estonia and between 2% and 3% in Greece, Spain and Portugal. Table 3 also shows the relative importance of the different types of measure, including employer contributions which are relevant only for Estonia and the UK and reductions in credited contributions which are relevant only for Estonia.

[PLACE TABLE 3 HERE]

Comparing across countries, the relative importance of the different types of measure varies greatly. Pay cuts for public sector workers (net of taxes and contributions) are substantial in Ireland, Greece and Spain, amounting to between 1 and 2 percent of total household disposable income and, in the case of Greece, more than half of the net overall effect. Increases in social insurance contributions are important in Ireland (only on workers), Estonia and the UK (workers and employers). Overall, expenditure on benefits and pensions is reduced in all countries, particularly in Ireland, Greece and Portugal. Benefit and pension reductions are less important in aggregate in Estonia and the UK. Income tax rises considerably in all countries except Greece, and particularly in Ireland, Portugal and Spain, where the increases are equivalent to more than 1 percent of total disposable income. In Greece income tax and employee contributions decrease after the austerity measures. This is to a small extent due to taxes and contributions collected from pensions which were reduced. But it is mainly due to the fact that the reform of the income tax schedule, as part of the austerity package, itself lead to a reduction in tax revenue.

Effects across the distribution of household incomes

The implications of the austerity measures across the income distribution are illustrated in Figure 2. This shows the average proportional change in household disposable income by decile group caused

by the austerity measures that have a direct bearing on household income.⁸ The effects of changes to employer and credited contributions shown in Table 3 are not included here. The results show that the reduction in income due to the measures is relatively flat across the income distribution in Estonia and Spain (i.e. each decile group pays roughly the same proportion of income). In the UK the effect is also fairly uniform up to the 9th decile group, but much larger at the top. The distribution is more uneven in Ireland where the proportional reduction in income is larger at the bottom as well as, more especially, at the top. Pensioners, who are concentrated in the middle decile groups, have had their income relatively well protected. Portugal is the only country with a clearly regressive distribution, with percentage losses that are considerably larger in the first and second decile groups than higher up the distribution. The opposite is the case in Greece, where percentages losses are largest for the top decile groups and those at the bottom pay relatively little.

[PLACE FIGURE 2 HERE]

Figure 3 distinguishes the proportional effect on household income in each decile group by the three main types of change: to benefits and pensions, to income taxes and contributions, and to net public sector pay. The distributional incidence of cuts to benefits and pensions depends mainly on the location of their beneficiaries in the income distribution. In Portugal, Ireland and Spain these cuts are relatively large and mainly affect households in the lower part of the income distribution. Interestingly, results are different in the case of Greece, where most of the cuts are to pensions and where pension recipients tend to be located higher up the income distribution. These cuts do not have much effect on the income of poorer households and are mainly concentrated in the upper middle part of the distribution. In Estonia and the UK the size of these cuts is relatively small and the effect is spread across the bottom two thirds of income distribution.

[PLACE FIGURE 3 HERE]

The pattern of the distribution of tax and contribution changes is quite different. In Ireland and to a lesser extent in Portugal the reductions in disposable income due to tax and contribution increases are larger in the upper part of the distribution. The same applies in the UK but concentrated in the top decile group.⁹ (The reduction in tax in the bottom decile group is due to the freezing of local tax.) While in Estonia, the reduction is larger in the first decile group and then relatively flat and declining in the top half of the distribution, in Spain it describes a U-shape with households in the upper middle part of the income distribution most affected. In Greece, most decile groups actually gain on average from the income tax changes, especially in the middle of the distribution, and it is only in the top decile group, that taxes rise.

Finally, public sector pay cuts have a larger effect in the upper part of the income distribution in all the countries where these apply, but the gradient varies, with the strongest effect in Ireland. (These are shown net of taxes and contributions on the reduction – they take account of the fact that the employees concerned pay less tax because they earn less – which can explain why the effect is not stronger in the top income groups where taxes are higher.)

⁸ Deciles are calculated using household disposable income for each individual, equivalised using the modified OECD scale.

⁹ Browne and Levell (2010) show the large increase in tax in the top decile group in the UK is itself heavily skewed to the top one percent. This is confirmed by our own analysis, not reported here.

It is also of interest to understand how the burden of the austerity measures is shared across different types of household. Figure 4 compares the proportional change in disposable income by decile group for the whole population (as in Figure 2) with that for (a) people in households with children (defined as aged under 18) and (b) people in households containing elderly people (defined as aged 65 or more). In Greece this latter group loses more proportionately, regardless of their position in the income distribution. In the other five countries households with older people lose less than all households and it is households with children that tend to lose more, although in Portugal this only applies at the bottom of the income distribution. In Estonia the contrast between the position of children and the elderly is particularly striking, especially towards the bottom of the income distribution. In Greece children are relatively well-protected, especially towards the middle and bottom of the distribution. These effects are partly due to decisions about tax and benefit changes that particularly affect children or elderly people: for example choices over whether to reduce a child tax credit or a pension. They are also partly driven by the composition of households across the income distributions.

[PLACE FIGURE 4 HERE]

Risk of poverty

The implications of austerity measures for the risk of poverty, defined as having income below 60% of the median, depends on how this effect is calculated. Given the reduction in income at the bottom of the income distributions we might expect the risk of poverty to rise, if a fixed poverty threshold is used. However, if median income is falling too (see Figure 2) and the poverty threshold is allowed to shift in the same way, it is not clear what to expect in terms of relative poverty risk after the austerity measures are introduced (other things remaining the same). Table 4 shows the change in poverty risk using both a fixed poverty threshold and one that falls as median income is reduced. This confirms that when keeping the threshold fixed, the proportion of the population at risk of poverty rises in each country. It does so most in Ireland (3.7 percentage points) and Portugal (2.0) but by less than one percentage point in the other countries. In all countries, except Greece and the UK, the proportion of children at risk rises considerably, especially in Ireland. The risk of poverty also increases among the working age population especially in Ireland and Portugal and to a lesser extent in Estonia and Spain. The proportion of older people at risk increases by less than the population as a whole, most in Portugal, Greece and Spain and actually falls a little in Ireland.

Not surprisingly, median equivalised income declines in all countries as a result of the austerity measures: by less than one percentage point in the UK up to over 7 percentage points in Ireland. If the poverty line is recalculated on the basis of the median after the measures have been imposed, the overall at-risk-of-poverty rate is broadly unchanged or falls a little in all countries, except Portugal where it rises. By age group, increases in the risk of poverty among those of working age and the elderly are notable in Portugal as is the substantial reduction in the risk of poverty among the elderly in Estonia and Ireland, where pension incomes have been relatively well-protected.

Indirect taxes

In most of the countries there have also been changes to indirect taxes that we cannot model in detail (because EUROMOD's input database (EU-SILC) does not include data on expenditure). However, drawing on other research, it is possible to give an indication of the size and incidence of the effect of increases in VAT across the income distribution.

Using external information for Estonia, Portugal, Spain and the UK on the incidence of VAT by income decile group and assuming that there is no change in pre-tax expenditure or in pre-tax

relative prices, we have estimated the increase in standard rate VAT as a proportion of disposable income.¹⁰ For Greece, the effects of changes in all rates of VAT have been estimated from a previous study using micro-data from a Greek Household Budget survey (Decoster et al., 2010; Matsaganis and Leventi, 2011).

In Estonia and Spain the main VAT rate increased by two percentage points; in the UK the increase was 2.5 percentage points; in Portugal it was 3 percentage points and in Greece the increase in the main rate was 4 percentage points (plus 1 and 2 percentage point increases to the reduced rates). Assuming the VAT increases are proportional to the pre-reform VAT payments, we find that in each of the countries, the effect is regressive across the income distributions.¹¹ The effect is largest in Greece where the extra tax represents almost 5.6% of household income in the bottom quintile group and 2.7% in the top quintile group. The corresponding figures for the other countries are, for Estonia: 1.5% and 1.1%; for Spain: 1.4% and 1.1%, for Portugal: 1.4% and 1.0% and for the UK: 2.2% and 1.2%. The relative degree of regressivity across countries is due to (a) differences in the structure of VAT and how it relates to consumption patterns (i.e. the extent to which goods with lower tax rates are consumed by those on low incomes) and (b) the effective savings rate across the income distribution. For Greece, spending is much higher than income in the lower income decile groups. The same tends to apply in the other countries, but to a lesser extent.

The combined effect of the VAT increase and of the changes simulated with EUROMOD (direct taxes, benefits and pensions, and public sector pay) is shown in Figure 5 (dashed line), contrasted with the effect of the income changes alone (as in Figure 2: solid line).¹² Given the approximations and the assumptions made about incidence, we cannot draw firm conclusions. Nevertheless, in most countries where VAT rates were raised, the regressiveness of the increased VAT across the income distribution affects the conclusions we might draw about the distributional effects of the austerity measure packages. In Spain, Estonia and the UK the proportion of income contributed to the austerity measures by those on low incomes is now increased relative to the contribution by those on high incomes. The very strongly progressive nature of the Greek measures before including the effect of VAT rises is transformed into a U-shaped picture involving large losses for the bottom two decile groups in particular. Once VAT increases are considered, the percentage losses among the low income Greek population are similar in scale to those for the Irish low income population (where there are no VAT increases in the relevant period).

[PLACE FIGURE 5 HERE]

¹⁰ The studies used are, respectively, for Estonia: Vörk et al. (2008), for Spain: Serrano (2001) and for the UK: Barnard (2010). For Portugal we carried out our own approximations based on information from the 2005/06 Household Budget Survey on the distribution of expenditure by COICOP categories by income quintile group. VAT was calculated based on the most usual VAT rate applying to each spending category. There were no substantial changes to VAT in Ireland in the relevant period.

¹¹ It should be noted that assessing the effect of taxes paid on the basis of recorded spending patterns as a proportion of recorded household income can distort the view of the regressivity or otherwise of indirect taxes, and especially the effect at the bottom of the income distribution.

¹² Note that by combining the results in this way we assume that the composition of the decile groups in the two data sources are the same. Both sets of calculations use a very similar concept of household disposable income and the same equivalence scale. However, the fact that different surveys are used means that there are bound to be some differences in the composition of the income deciles. In particular the study in indirect taxes that we use for Spain is more than 10 years old. These results should be viewed with caution, therefore.

5. Concluding remarks

The effects of the economic crisis and austerity on income distribution are of great current relevance, not only because inequality, and any driver of growth in it, matters in its own right, but also because the way that the cost of the crisis is distributed has implications for the prospects for macroeconomic recovery and financial stability, as well as for the political acceptability of pathways in this direction. The analysis presented in this paper is not about the effects on inequality of the crisis as a whole, nor does it consider all aspects of economic welfare. Instead it focuses on the effects of austerity packages on household incomes, leaving aside the potentially larger effects on income inequality from labour market developments and financial, macroeconomic and political disarray, and on inequalities more generally from cuts in spending on public services. Other studies are attempting to explore some of these complex issues at the national level – for example see Matsaganis and Leventi (2011) for Greece, Brandolini et al. (2011) for Italy, Nolan et al. (2011) for Ireland and Joyce and Sibieta (2011) and Brewer et al. (2011) for UK.

It is important to assess and compare the effects of austerity measures across countries, even though their effects may in some cases be small and/or differ in distributional terms from the overall impact of the crisis. This is because the policies put in place as part of the budgetary retrenchment process are one arena in which governments can exert some direct control and can make choices. Macro-economic and labour market policies are blunt instruments in terms of their distributional effects. In the face of rising unemployment, worsening living standards and growing budget deficits, governments still have choices over the distributional properties of the austerity measures that they introduce. Direct tax and benefit changes as well as public pay cuts are sharp instruments in the sense that their incidence is clear (assuming no evasion or avoidance take place) and the distributional impacts of tax-benefit changes can be fine tuned. Therefore, while our analysis does not tell us who is suffering most because of the crisis as a whole, it does allow us to assess the extent to which any such pain may have been exacerbated or mitigated by policy choices over austerity measures. With that in mind we can conclude the following from our analysis.

Except in Portugal and Estonia, high income households (top decile group) contribute a larger proportion of their income to public pay cuts, direct tax increases and cash benefit cuts than the bottom decile group (Fig. 2). The distribution of the burden of austerity on disposable income is clearly and strongly regressive in Portugal, quite flat across income decile groups in Estonia and Spain, mildly progressive in the UK, with a much bigger effect right at the top, also progressive in Ireland (although losses in the lower middle income groups, where pensioners are concentrated, are lower than those in the bottom decile group), and clearly and strongly progressive in Greece. Adding the approximate effect of increases in VAT alters the shape in Greece, with the burden now larger at the bottom and the top than in the middle of the income distribution (Fig. 5). The regressive effect is similar but less strong in the UK and Spain.

In all countries that we analyse, except Greece, the austerity measures fall less heavily on older people than on the population in general (Fig. 4). This is particularly clear in Ireland and in Estonia but does not apply at low incomes in the UK or at higher incomes in Portugal. In Greece, pensions are not protected and face particular cuts, at each point in the income distribution. In all countries, except Greece, the measures have a larger effect on households with children than those without (Fig. 4). This applies particularly in Estonia (and dramatically at low incomes) and also in Portugal at low levels of income. In the UK, households with children in the bottom 20% of the distribution on average do not lose from the measures as a whole because of counter-balancing increases in means-tested payments for children. In Greece households with children tend to lose less of their disposable income than others, right across the income distribution and on average are better off than before in the third and fourth decile groups.

Changes to benefits and/or pensions and benefits tend to hit those on low income the hardest (Fig. 3). This effect is strongest in Ireland and in Portugal but does not apply in Greece where the largest effect is in the middle of the distribution. Changes to taxes and contributions tend to affect those on high income the most. This is clearly true in Ireland and the UK and but less strongly so in Portugal. The effect is greatest in the upper-middle of the distribution in Spain while in Estonia it is greater in the bottom and the middle than at the top. In Greece the choice of a progressive reform to the income tax schedule which involves cuts in taxes for those on middle incomes and increases only at the top (including a small cut in revenue, even if there had been no other changes – Fig. 3) has served to mitigate the fall in incomes for those in the middle of the distribution due to the crisis as a whole (Matsaganis and Leventi, 2011).

Using a fixed poverty threshold, the effect of the austerity measures on the risk of poverty increases, especially in Ireland and Portugal. In line with the larger burden of austerity measures on households with children, risk of poverty among children rises particularly in Estonia and Portugal (and falls a little in the UK where there is some additional protection at low incomes). In Greece, where older people face a particular burden, risk of poverty among older people also rises by more than on average (Table 4).

In interpreting our analysis there are some caveats to be borne in mind.

Simulating the effects of the austerity measures on the pre-recession population as represented by data collected in 2007 and 2008 (Table 1) may not accurately describe their effect in a mid- (or post-) recession world. Our methodology implicitly assumes that demographic and labour market changes are not dramatic in the short term. While this is usually true, it is far less so at times of crisis. To the extent that these changes alter the underlying distribution of income against which the effects of the austerity measures are assessed – for example, if they reduce income at the lower end of the distribution – it means that the effect of the imposition of austerity measures would have a bigger proportional effect than shown here. Furthermore, a sharp rise in unemployment among primary earners has clear implications for the tax base and demand for social support. This might mean that we over-estimate the effects of tax increases and under-estimate the effects of benefit cuts in the analysis. However, results from a recent study for Ireland, which accounts for post-recession levels of employment and unemployment (Callan et al., 2010), are broadly similar to those reported here, so the extent of this under- and over-estimation might not be large.

The main focus is a static analysis of current incomes. However some austerity measures will only have their impact in the longer term. For example, in Estonia the suspension of credited contributions did not affect current household disposable income. However it has been a significant source of additional revenue, as indicated by Table 3. For the majority of workers who are enrolled in the 2nd pension pillar, the government transferred one-fifth of the pension insurance contributions (paid by employers only) from the first to the second pillar, hence reducing the funds available for current public pensions. Temporarily halting such transfers has helped to fill the hole in the finances of current pensions at the expense of future pensions. A full account of the effects of measures such as these would require an inter-temporal life-cycle analysis which is beyond the scope of this paper.

Our analysis does not include the impact of cuts in in-kind benefits and services on households. This is for two reasons. First, the information requirements for a comparable analysis of six countries are considerable. Secondly, given the present state of research and knowledge in this area, any distributional results would be driven by the assumptions that would need to be made about the valuation of services, their incidence and the nature and incidence of the cuts.

Finally, the story about fiscal consolidation through public sector pay and cash benefit cuts and tax and contribution increases, is not yet complete. For comparability reasons we have chosen to analyse changes that have already been implemented and not to include the effects of policies that have been, in some countries, already announced for future implementation. This is because in other countries new austerity packages are being discussed and/or may be introduced at some point in time. Taking account of a longer period of changes is likely to show a larger aggregate effect and not necessarily with the same distributional pattern. In Greece the late 2011 package is likely to prove highly regressive relative to the 2010 packages analysed here. Analysis of the changes in the UK announced up to 2015 (rather than 2011 as in this analysis) shows a much more regressive picture than indicated here (Browne and Levell, 2010) in which the number of people at risk of poverty is set to rise (Brewer et al., 2011).

Although a final assessment will only be possible as a piece of historical analysis once the austerity period can be considered to be complete, an interim comparative analysis such as that performed in this paper is relevant. We draw out the distributional implications of particular policy choices that may have been driven mainly by macroeconomic or political concerns. Comparing these effects across countries offers the possibility of policy learning, from which any future austerity reforms may benefit.

References

- Adiego, M., O. Cantó, H. Levy, M. M. Paniagua and T. Pérez, "EUROMOD Country Report: Spain 2006-2009" ISER, University of Essex, Colchester, 2011.
- Barnard, A., "The effects of taxes and benefits on household income, 2008/09" Office for National Statistics, 2010.
- Brandolini, A., F. D'Amuri and I. Faiella, "Country case study – Italy" chapter 5 in Jenkins et al, "The Great Recession and the Distribution of Household Income", presented at XIII European Conference of the Fondazione Rodolfo Debenedetti, Palermo, 2011.
- Brewer, M., J. Browne and R. Joyce, "Child and working-age poverty from 2010 to 2020", IFS Commentary C121, Institute for Fiscal Studies, London, 2011.
- Browne, J. and P. Levell, "The distributional effect of tax and benefit reforms to be introduced between June 2010 and April 2014: a revised assessment", IFS Briefing Note 108, Institute for Fiscal Studies, London, 2010.
- Callan, T., C. Keane, J.R. Walsh and M. Lane, "From Data to Policy Analysis: Tax-Benefit Modelling using SILC 2008", forthcoming *Journal of the Statistical and Social Inquiry Society of Ireland*, 2011.
- Callan, T., B. Nolan, C. Keane, J.R. Walsh, "Inequality and the Crisis: The Distributional Impact of Tax Increases and Welfare and Public Sector Pay Cuts", *The Economic and Social Review*, Vol 41 No 4, 461–471, 2010.
- Decoster, A., J. Loughrey, C. O'Donoghue and D. Verwerft, "How regressive are indirect taxes? A microsimulation analysis for five European countries", *Journal of Policy Analysis & Management* 29 (2) 326-350, 2010.
- Duclos, J.-Y., "On equity aspects of imperfect income redistribution", *Review of Income and Wealth*, 41, 177–190, 1995.
- Farinha Rodrigues, C. and V. Junqueira "EUROMOD Country Report: Portugal 2006-2009" ISER, University of Essex, Colchester, 2011.
- Haux, T., H. Sutherland, A. Tumino and F. Zantomio, "EUROMOD Country Report: United Kingdom 2006-2009" ISER, University of Essex, Colchester, 2011.
- Jenkins, S.P., A. Brandolini, J. Micklewright and B. Nolan, "The Great Recession and the Distribution of Household Income", presented at XIII European Conference of the Fondazione Rodolfo Debenedetti, Palermo, 2011.
- Joyce, R. and P. Levell, "The impact in 2012-13 of the change to indexation policy" IFS Briefing Note 120, The Institute for Fiscal Studies, London, 2011.
- Joyce, R. and L. Sibieta, "Country case study – UK" chapter 7 in Jenkins et al, 2011. "The Great Recession and the Distribution of Household Income", presented at XIII European Conference of the Fondazione Rodolfo Debenedetti, Palermo, 2011.
- Leventi, C., M. Matsaganis and P. Tsakloglou, "EUROMOD Country Report: Greece 2006-2009" ISER, University of Essex, Colchester, 2011.

- Leventi, C., H. Levy, M. Matsaganis, A. Paulus and H. Sutherland, “Modelling the distributional effects of austerity measures: The challenges of a comparative perspective”, Research Note 8/2010 of the *European Observatory on the Social Situation and Living conditions*, Brussels, 2010.
- Lietz, C. and D. Mantovani, “A Short Introduction to EUROMOD: An Integrated European Tax-Benefit Model”, in *Micro-simulation in action: Policy analysis in Europe using EUROMOD* edited by O. Bargain. Research in Labor Economics, Vol. 25. Elsevier, 2007.
- Matsaganis, M. and C. Leventi, “The distributional impact of the crisis in Greece”, EUROMOD Working Paper No. EM3/11, ISER, University of Essex, Colchester, 2011.
- Matsaganis, M., H. Levy and M. Flevotomou, “Non take up of social benefits in Greece and Spain”, *Social Policy and Administration* 44 (7) 827–844, 2010.
- Nolan, B., T. Callan and B. Maître “Country case study – Ireland” chapter 4 in Jenkins et al, 2011. “The Great Recession and the Distribution of Household Income”, presented at XIII European Conference of the Fondazione Rodolfo Debenedetti, Palermo, 2011.
- Office for Budget Responsibility (OBR), *Fiscal Sustainability Report*, TSO, London, 2011.
- Pudney, S., R. Hancock and H. Sutherland, “Simulating the reform of means-tested benefits with endogenous take-up and claim costs”, *Oxford Bulletin of Economics and Statistics*, 68 (2) 135-166, 2006.
- Serrano, A., “Redistributive Effect dissintegrated of the current VAT in Spain: possible reforms ways”, UAB Department of Applied Economics, WP0113, Barcelona, 2001.
- Sutherland, H., “EUROMOD: the tax-benefit microsimulation model for the European Union” in A. Gupta and A. Harding (editors) *Modelling our future: population ageing, health and aged care*, International Symposia in Economic Theory and Econometrics Vol. 16, Elsevier, Amsterdam: 483-488, 2007.
- Sutherland, H., R. Hancock, J. Hills and F. Zantomio, “Keeping up or falling behind? The impact of benefit and tax uprating on incomes and poverty” *Fiscal Studies*, 29 (4) 467-498, 2008.
- Vörk, A. and A. Paulus, “EUROMOD Country Report: Estonia 2006-2009” ISER, University of Essex, Colchester, 2011.
- Vörk, A., A. Paulus and H. Poltimäe, “Maksupoliitika mõju leibkondade maksukoormuse jaotumisele” PRAXIS WP No. 42, Tallinn, 2008.

Table 1: Summary of input datasets and period of analysis

Country	Input dataset	Income reference period	Austerity measures
Estonia	EE National SILC 2008	2007 (annual)	2009
Ireland	IE National SILC 2008	2008 (current)	2009-11
Greece	EL National SILC 2007	2006 (annual)	2010
Spain	ES National SILC 2007	2006 (annual)	2010-11
Portugal	PT EU-SILC 2007	2006 (annual)	2009-11
UK	UK FRS 2008/09	2008/09 (current)	2009-11

Table 2: Type of austerity measures introduced from 2009 to mid-2011

Type of measures	EE	IE	EL	ES	PT	UK
Benefit and/or pension cuts (or freezing)	Yes	Yes	Yes	Yes	Yes	Yes
Increased income taxes and/or reduced tax concessions	Yes	Yes	Yes	Yes	Yes	Yes
Increased worker social insurance contributions	Yes	Yes	No	No	No	Yes
Public sector pay cuts	Yes	Yes	Yes	Yes	Yes	No ^a
Increased employer social insurance contributions	Yes	Yes ^b	No	No	No	Yes
Reduction of credited social insurance contributions	Yes	No	No	No	No	No
Increased standard rate of VAT	Yes	No	Yes ^c	Yes	Yes	Yes

Notes: The austerity measures included here are limited to those that can be simulated with EUROMOD and additionally increases in (the standard rate of) VAT; (a) see footnote 3, (b) not simulated (in SWITCH); (c) simulation also includes the increase in the reduced rates of VAT.

Table 3: Aggregate effect of simulated austerity measures as a percentage of total household disposable income, by type of policy

	EE	IE	EL	ES	PT	UK
Total	6.2	8.1	2.2	2.7	3.0	1.9
Employer SIC	0.7	n/s	-	-	-	0.6
Credited SIC	2.1	-	-	-	-	-
Worker SIC	1.9	3.6	-0.1	-	0.0	0.7
Income taxes	0.6	1.7	-0.4	1.1	1.2	0.5
Benefits and pensions	0.2	1.4	1.6	0.8	1.6	0.2
Public sector pay (net)	0.6	1.5	1.2	0.8	0.2	-

Source: EUROMOD version F4.19. Note: The austerity measures included here are limited to those that can be simulated with EUROMOD. Increases in indirect tax, and some minor tax-benefit changes (see text) are not included. SIC stands for social insurance contributions; n/s for not simulated and “-” means no changes for that type of policy.

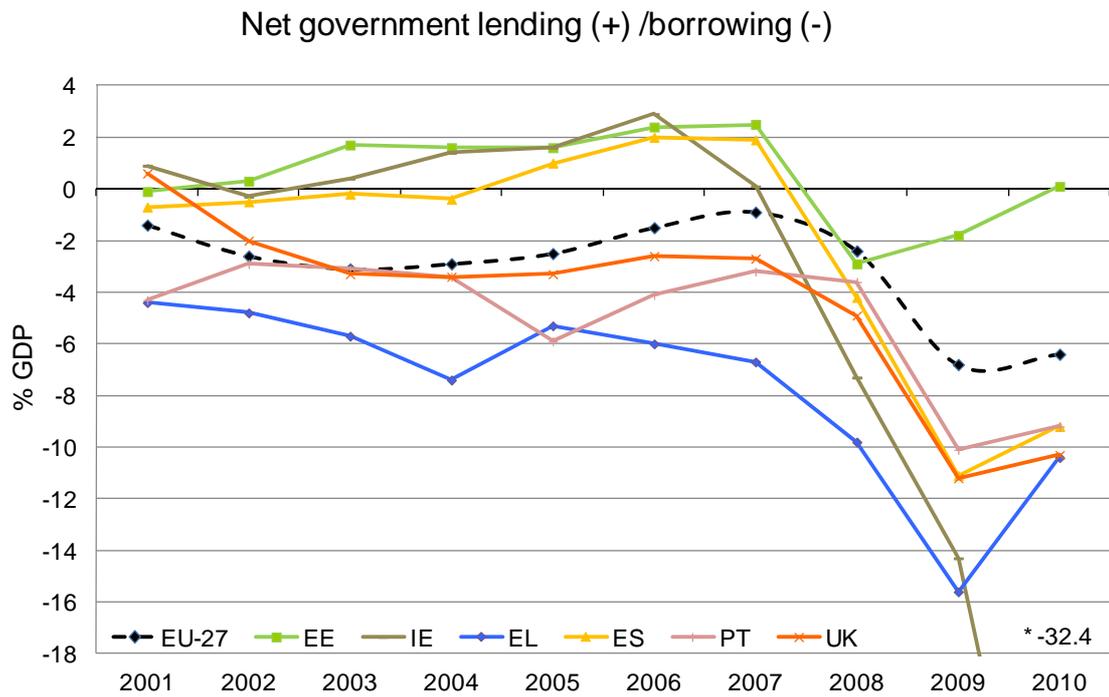
Table 4: Risk of poverty rates before and after the introduction of austerity measures

	EE	IE	EL	ES	PT	UK
Risk of poverty rate before	15.3	12.4	20.4	18.6	18.5	16.6
Risk of poverty rate after (fixed threshold)	16.2	16.0	21.1	19.6	20.5	16.6
Percentage point change in risk of poverty rate relative to base scenario by age						
All	1.0	3.7	0.7	1.0	2.0	0.0
0-17	2.2	5.0	0.3	1.2	3.2	-0.5
18-64	0.8	3.8	0.6	0.9	1.4	0.0
65+	0.1	-0.7	1.3	1.1	2.8	0.4
Change in median equivalised income (%)	-2.9	-7.6	-1.2	-2.7	-2.0	-0.8
Poverty rate after (relative threshold)	14.9	11.9	20.3	18.3	19.6	16.1
Percentage point change in risk of poverty rate relative to base scenario by age						
All	-0.4	-0.5	-0.1	-0.3	1.1	-0.4
0-17	1.0	-0.4	-0.6	-0.2	2.5	-1.1
18-64	-0.1	-0.2	-0.2	-0.1	0.8	-0.3
65+	-3.2	-1.9	0.7	-0.8	1.0	-0.2

Notes: The austerity measures included here are limited to those that have a direct effect on household disposable income (changes to direct taxes, cash benefits and public sector pay). They do not include changes to employer or credited contributions or indirect taxes. Risk of poverty rates are calculated as the percentage of people in the relevant group with equivalised household income below 60% of the median, using the modified OECD equivalence scale. The fixed threshold is calculated using equivalised disposable income in the pre-austerity scenario.

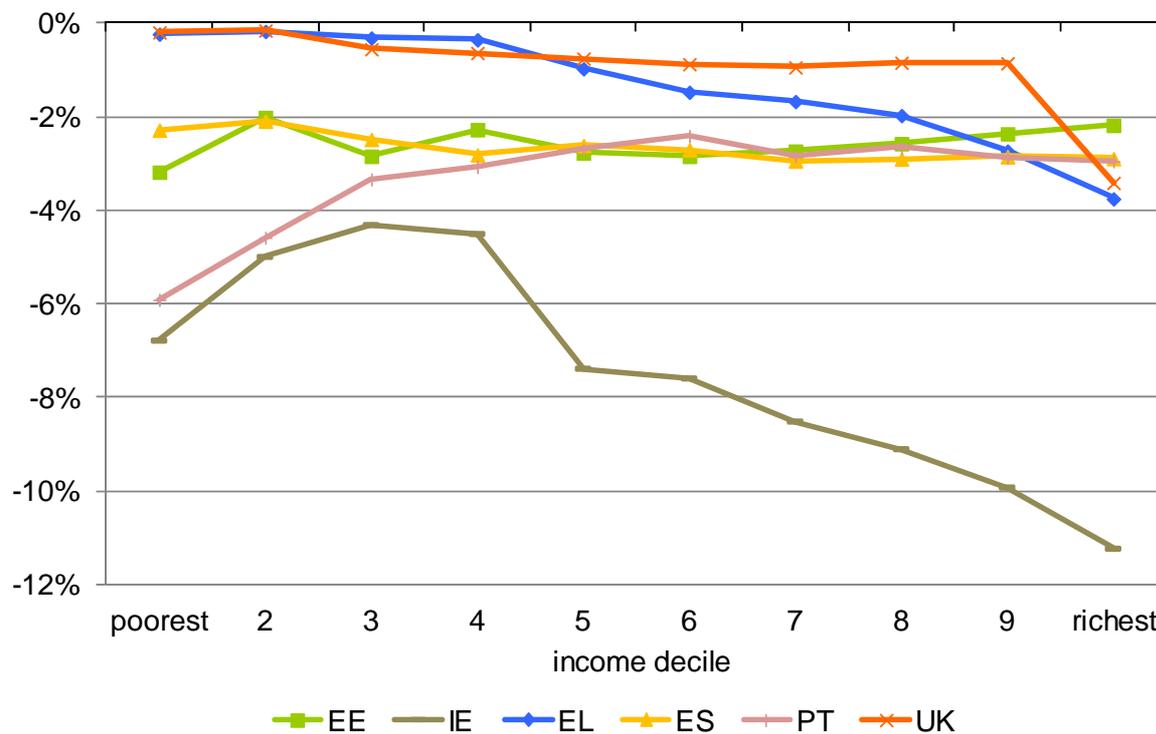
Source: EUROMOD version F4.19.

Figure 1 Government deficits as a percentage of GDP (2001-2010)



Source: Eurostat (last accessed on 16 September 2011).

Figure 2 Percentage change in household disposable income due to simulated austerity measures by household income decile group



Notes: The austerity measures included here are limited to those that have a direct effect on household disposable income (changes to direct taxes, cash benefits and public sector pay). They do not include changes to employer or credited contributions or increases in indirect taxes. Deciles are based on equivalised household disposable income in the pre-austerity scenario and are constructed using the modified OECD equivalence scale to adjust incomes for household size.

Source: EUROMOD version F4.19.

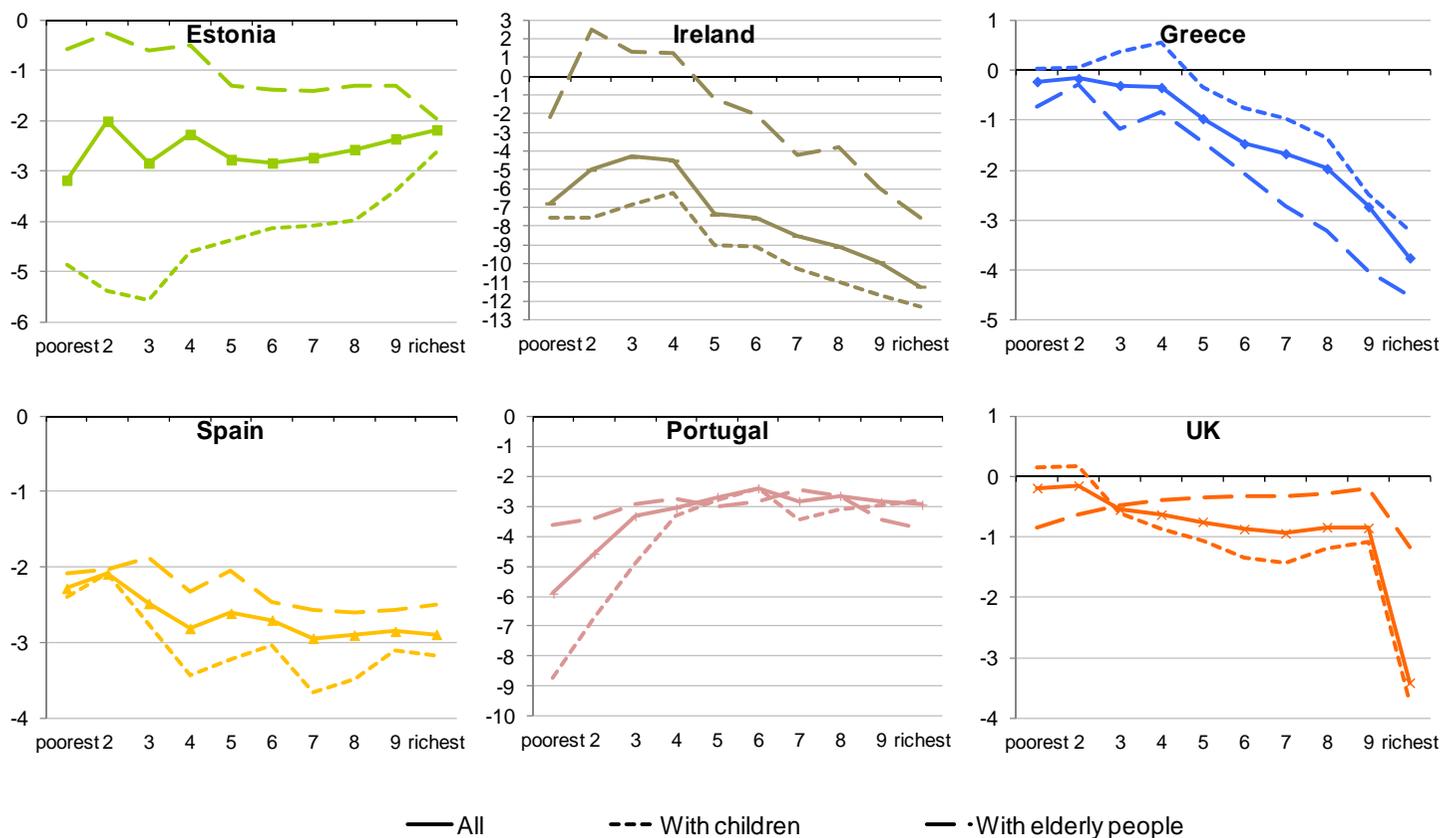
Figure 3 Percentage change in household disposable income due to simulated austerity measures: by type of measure and household income decile group



Notes: The austerity measures included here are limited to those that have a direct effect on household disposable income (changes to direct taxes, cash benefits and public sector pay). They do not include changes to employer or credited contributions or increases in indirect taxes. Deciles are based on equivalised household disposable income in the pre-austerity scenario and are constructed using the modified OECD equivalence scale to adjust incomes for household size.

Source: EUROMOD version F4.19.

Figure 4 Percentage change in household disposable income due to simulated austerity measures: by type of household and household income decile group



Notes: The austerity measures included here are limited to those that have a direct effect on household disposable income (changes to direct taxes, cash benefits and public sector pay). They do not include changes to employer or credited contributions or increases in indirect taxes. Deciles are based on equivalised household disposable income in the pre-austerity scenario and are constructed using the modified OECD equivalence scale to adjust incomes for household size. Children are defined as those aged under 18 and “elderly people” as those aged 65 or more. The charts are drawn to different scales, but the interval between gridlines on each of them is the same.

Source: EUROMOD version F4.19.

Figure 5 Austerity measures as a percentage of household disposable income by income quintile group: change excluding and including VAT increases



Notes: The austerity measures included here are: (a) limited to those that have a direct effect on household disposable income (changes to direct taxes, cash benefits and public sector pay) and (b) increases in the standard rate of VAT. Other increases in indirect taxes are not included. Quintiles are based on equivalised household disposable income in the pre-austerity scenario and are constructed using the modified OECD equivalence scale to adjust incomes for household size.

Source: EUROMOD version F4.19 and Barnard (2010), Matsaganis and Leventi (2011), Serrano (2001) and Vörk et al. (2008).

Appendix 1: Austerity measures in 2009-11

Estonia¹³

The tax-benefit policy changes simulated in our analysis are the following (taking effect, unless otherwise specified, from 1 January 2009):

Direct taxes and contributions

- The increase in employer and employee unemployment insurance contributions (from 1 June 2009 and 1 August 2009)
- The increase in the minimum levels of pension and health insurance contributions
- The suspension of credited contributions and employee contributions to the 2nd pension pillar (between 1 June 2009 and 31 December 2010)

Benefits and tax credits

- The narrowing of eligibility conditions for income tax child allowance
- The abolition of child school allowance
- The narrowing of eligibility conditions for childcare allowance
- The increase in minimum levels of unemployment insurance benefit (from 1 July 2009)

Public sector pay

- Public sector pay cuts (about 3.5% on average in 2009).

Indirect taxes (in Figure 5 only)

- Standard rate of VAT increased for 18% to 20% (in June 2010)

In addition there were the following changes in 2009-10 which are not simulated:

- Changes related to minor benefits: additional childcare leave for fathers and compensation of study loans was abolished, sickness benefit and severance pay was reduced, and the eligibility for dental care benefit was narrowed.
- The abolition of tax deduction for the following expenses: interest payments of study loans, donations and trade union membership fees (from 1 January 2010)
- Freezing of minimum pension (in 2010)
- Reduced rate of VAT increased from 5% to 9% (in June 2010)
- Alcohol, tobacco and fuel excise increases (July 2009 and January 2010)

¹³ For more information about policies and how they are simulated in EUROMOD for Estonia see Vörk and Paulus (2011).

The following tax-benefit policy changes in 2009-11 are covered in our analysis:

Direct taxes and contributions

- The tranche of income taxed at the standard, 20% rate (the “standard rate band”) was reduced from €35,400 to €32,800. There was an equivalent €2,600 reduction in the standard rate band for lone parents and for one-earner married couples. Two-earner married couples continued to receive a doubled standard rate band.
- The basic personal tax credit was reduced from €1,830 in 2008 to €1,650 in 2011. Precisely the same reduction applied to tax credits for lone parents and for employees (the “PAYE” tax credit)
- Special tax provisions for the elderly were scaled back: the age tax credit was reduced from €325 to €245 while the income tax exemption limits for those aged over 65 were reduced from €20,000 to €18,000
- Initially, a temporary income levy was introduced and then increased. By 2011 this had been replaced by a new Universal Social Charge (USC) which replaced both this temporary levy and the pre-existing Health Contribution. The new USC is a tax payable on gross income (before pension contributions). Income from social welfare payments or from deposit income on which retention tax (DIRT) has been paid is exempt. There is no allowance, but incomes below €4,004 per annum are exempt. The rates of Universal Social Charge are: 2% on the first €10,036, 4% on the next €5,980 and 7% on the balance.¹⁵
- The ceiling on employee and employer social insurance contributions (PRSI – Pay-Related Social Insurance) was abolished.
- The rate of pay-related social insurance contributions (PRSI) for the self employed was increased from 3% to 4%
- There were significant changes in the tax treatment of employee superannuation (pension) contributions. Until 2008, these had been excluded from gross income for tax purposes and similarly excluded for the purposes of calculating social insurance contributions. The upper ceiling on this relief from taxation was also very high. A number of restrictions on the extent of the implied tax relief were introduced

Benefits and tax credits

- The universal Child Benefit payment was reduced from €166 to €140 per month (€203 to €172 per month for 3rd and higher order children), with a compensating increase being paid to welfare recipients as part of their welfare payment.
- Welfare payment rates were increased in the October 2008 Budget by a little over 3%. In subsequent years, payments to those of working age were reduced by about 4% in 2010 and a further 4% in 2011.
- Payments to those of pension age benefited from the initial increase but were then not reduced.

¹⁴ For more information about policies and how they are simulated in SWITCH for Ireland see Callan et al. (2011).

¹⁵ However the rate is capped at 4% for those on low incomes, who qualify for the means-tested full medical card, and for those aged 70 or over. There is a surcharge of 3% on individuals who have income from self-employment that exceeds €100,000 in a year, regardless of age.

- Jobseeker's Assistance payment rates for unemployed people aged under 25 were sharply reduced, by about 25% for those aged 22-24 and by 50% for the youngest unemployed.
- Family Income Supplement (FIS – an in-work benefit) was increased somewhat ahead of the rate of wage growth.
- A cash benefit entitled the Early Childcare Supplement, with a value of €1,100 per annum, was abolished and replaced by a new, non-cash scheme of subsidisation of places in early child care for children aged 3 years of age.

Public sector pay

- In early 2009, emergency legislation was enacted requiring public sector workers to make an additional “pay related deduction” in respect of their pensions (PRD, but more commonly referred to as the public service pension levy). The average rate of deduction was about 7-8 per cent of salary, but the structure was strongly progressive: the first €15,000 of income was zero-rated, the next €5,000 at 5%, a further €20,000 at 10% and the balance at 10.5%. This was widely seen as an attempt to reduce public sector pay without a reduction in nominal salary levels, and is frequently treated as an implicit salary cut.
- Budget 2010, announced late in 2009, implemented reductions in public service salaries as follows: 5% on the first €30,000 of salary, 7.5% on the next €40,000 of salary and 10% on the next €55,000 of salary.

This produced overall reductions in salaries ranging from 5% to just under 8% in the case of salaries up to €125,000. Reductions ranging from 8% on salaries of up to €165,000, 12% on salaries up to €200,000 and 15% on salaries of €200,000 or more were also implemented.

In addition there are the following changes that have taken place in the period 2009-2011 but have not been simulated in the present exercise because of data limitations:

- A new carbon tax was introduced, and there were some minor changes to other indirect taxes.
- The tax on deposit interest (DIRT – deposit interest retention tax) was increased over the period by about 5 percentage points up to 27 per cent.

Greece¹⁶

The main policy changes that are simulated in this paper were as follows:

Direct taxes and contributions

- Introduction of a one-off (retrospective) tax at 1% of personal annual incomes in 2009 over €100,000.
- The structure of personal income tax was made more progressive: nine tax brackets, including a personal allowance of €12,000 per year, and an increased top rate of 45% for annual incomes over €100,000.
- Introduction of ‘Pensioners’ Solidarity Contribution’, i.e. a special tax on pensions, with tax rates rising from 3% for pensions between €1,400 and €1,700 per month to 10% for pensions exceeding €3,500 per month. Pensions below €1,400 per month are exempt.

¹⁶ For more information about policies and how they are simulated in EUROMOD for Greece see Leventi et al. (2011).

- The tax base was extended to include unemployment benefits, large family benefits and contributory disability benefits for individuals with taxable income over €30,000 a year.

Benefits and tax credits

- The 13th and 14th monthly pension payments were abolished. In their place, flat-rate vacation allowances totalling €800 a year will be paid to pensioners aged 60 and over receiving a pension below €2,500 per month. Invalidity pensions, social pensions and farmers' basic pensions are excluded (i.e. continue to be paid 14 times a year).
- Tax allowances and tax credits (from 1 January 2010). The child tax allowance was raised (to €1,500, €3,000 and €11,500 per annum for tax units with 1, 2 and 3 children respectively).
- Installation of eco-friendly energy systems tax allowance was made a tax credit at 20% of the relevant expenditure up to a maximum tax credit of €600 annually. Private insurance contributions tax allowance was also made a tax credit at 20% of the relevant expenditure up to a maximum tax credit of €240 annually for unmarried persons and €480 for married couples.

Public sector pay

- The 13th and 14th salaries hitherto paid to civil servants and public utilities employees were abolished. In their place, flat-rate vacation allowances totalling €1,000 a year will be paid to public sector workers earning less than €3,000 per month.
- Public sector wages capped at €5,981 a month¹⁷.
- Special allowances paid to civil servants were reduced by 20%. Family, seniority, post-graduate studies and hard & arduous occupation allowances were excluded. Public utilities employees, whose special allowances other than family allowances are part of base pay, had the latter cut by 10%.

Indirect taxes (in Figure 5 only)

- Increases in the standard rate of VAT from 19% to 23% and in the reduced rates also (increased from 4.4% to 5.5% and 9% to 11%).

In addition there were the following measures that are not simulated here:

Direct taxes and contributions

- Charitable donations tax allowance, previously available at the marginal rate, was made a tax credit at 20% of the relevant expenditure, and capped at 10% of total taxable income. The household expenses tax credit was abolished.

Indirect taxes

- Excise duty on tobacco, alcohol and fuel increased by 30%.
- Taxes on luxury items up by 20%.

¹⁷ High-court judges excepted. This exception is not simulated.

Spain¹⁸

The 2010-11 austerity measures that are simulated include:

Direct taxes and contributions

- Addition of two tax brackets for top earners (at 44% for annual incomes between €120,000 and €175,000, and at 45% for annual incomes over €175,000).
- Flat tax rate on capital income (18%) replaced with two tax bands 19% up to 6,000 euro per year and 21% above that limit.

Benefits and tax credits

- Elimination of universal birth grant from January 2011.
- Pension freeze for 2011, except for minimum and non contributory pensions.
- Freeze of Indicator for social benefits (IPREM) in 2011. The income tests of child benefit and unemployment insurance and assistance benefits are based in this indicator.
- Tightening of the eligibility conditions to the Temporary Unemployment Protection Program (Programa Temporal de Protección por Desempleo e Inserción)
- Reduction of child benefit for children aged 0 to 2 from €500 to €291, in 2011.
- Means-testing of the €400 personal tax credit from 2010.

Public sector pay

- Civil servants' pay cut up to 9.7% (5% in average) in 2010; pay freeze in 2011.

Indirect taxes (in Figure 5 only)

- From July 2010, the standard rate of VAT increased from 16% to 18%.

In addition there were the following measures that are not simulated here:

- From July 2010, reduced VAT rate also increased from 7% to 8%. Base rate was maintained at 4%.
- Some regional governments have eliminated or reformed (scaled-down) their benefits and tax credits.

Portugal¹⁹

The 2009-11 austerity measures that are simulated include:

Direct taxes and contributions

- Increasing tax rates by 1 and 1.5 percentage points depending on income level.

¹⁸ For more information about policies and how they are simulated in EUROMOD for Spain see Adiego et al. (2011).

¹⁹ For more information about policies and how they are simulated in EUROMOD for Portugal see Farinha Rodrigues and Junqueira (2011).

- Adding a new bracket for incomes above € 153,300 per year, increasing the highest tax rate from 42% to 46.5%.
- Replacing the reference indicator for tax credits from the minimum wage (€485 in 2011) to the social benefit index (€419.22 in 2011) or the amount of the minimum wage in 2010 (€475), whatever is larger, while maintaining the same proportions of the reference indicator.
- Reducing the pension tax allowance.

Benefits and tax credits

- Freezing, between 2009 and 2011, the nominal value of the social benefit index (SBI) which is the base for most social benefits.
- Freezing, between 2010 and 2011, the nominal value of benefits not linked to the SBI (including pensions).
- Reducing the amount and tightening the eligibility conditions to family benefit.
- Freezing, between 2010 and 2011, the nominal value of the basic amount and reducing the generosity of the implicit equivalence scale of social assistance.

Public sector pay

- Cutting the pay of civil servants up to 10%.

Indirect taxes (Figure 5 only)

- From January 2011, the standard rate of VAT was raised from 20% to 23%.

In addition there were the following measures that are not simulated here:

- From January 2011, the reduced VAT rate was increased to 13% and the base rate to 6% (before the austerity measures these were 12% and 5%, respectively).

United Kingdom²⁰

The 2009-11 austerity measures that are simulated include:

Direct taxes and contributions

- An increase in 2011 in all employees' and employers contribution rates of one percentage point.
- Introduction of a 50% tax band on incomes over £150,000 per year in 2011.
- Abatement of the personal allowance by £1 in every £2 of taxable income over £100,000 per year from 2010.
- Freezing of Council Tax (local taxation) in 2011, intended to mitigate the effects of the austerity measures.

²⁰ For more information about policies and how they are simulated in EUROMOD for the UK see Haux et al. (2011).

Benefits and tax credits

- Withdrawing the family element of the Child Tax Credit (CTC) from higher-income families at a faster rate and from a lower threshold than previously (in 2011).
- Increasing the rate at which tax credits are withdrawn in 2011 from 39% to 41%.
- Removing the baby element of the CTC in 2011.
- Working Tax Credit (WTC)/CTC first threshold frozen and second threshold reduced in nominal terms
- 30-hours addition in WTC frozen; 30-hours disregard in Housing Benefit (HB) and Council Tax benefit (CTB) also frozen in 2011.
- Basic amount of WTC/CTC frozen in 2011.
- Childcare addition to WTC reduced from 80% of costs to 70% in 2011.
- Child Benefit rates frozen in 2011.
- Real increases in the child element of the Child Tax Credit in April 2011 (intended to mitigate some of the cuts in support for children, for low income families)
- Freezing of savings credit maximum payments within Pension Credit in 2011.
- Deductions from benefit (Income Support, HB and CTB) for non-dependents uprated by the CPI in 2011 (previously frozen in nominal terms)
- Non-continuation of the Winter Fuel Allowance additions introduced by the previous government.

Indirect taxes (in Figure 5 only)

- The standard rate of VAT was increased from 15% to 20%. This followed a VAT reduction from 17.5% to 15% as part of the earlier stimulus measures so according to the criteria adopted in this paper, only the increase from 17.5% to 20% is considered as an austerity measure.

This list excludes some changes introduced in the period 2009-11 that are judged to be not austerity measures. These are included in both the base and the reform in our simulations. We list them below, together with the justification for not counting them as austerity measures

- An increase to the income tax personal allowance for those aged under 65 by £1,000 per year in 2011. This amounted to a 10.4% real increase over the two year period and was offset by a reduction in the threshold to the higher rate of income tax and upper thresholds on contributions, to target the tax cut on standard rate taxpayers (part of the deal struck by the political parties forming the coalition government in 2010).
- Increases in the lower limits for employee and employer contributions (part of a long-term agenda to align income tax and social contribution thresholds).
- Real increases in the child element of the Child Tax Credit in April 2010 (part of the previous Government's strategy to reduce child poverty).
- WTC payable to people aged 60+ if they work more than 16 hours per week, from 2011; above inflation increases to the Pension Credit guarantee credit and Basic State Pension in 2010; an increase in the lower capital threshold in Pension Credit, HB and CTB from £6000 to £10,000 in 2010 for pension-age people (part of a restructuring of state incomes for pensioners).

In addition there are the following changes that have taken place in the period 2009-2011 but have not been simulated in the present exercise because of data limitations.

Benefits and tax credits

- Changes to the way in which in-year changes are made to tax credit awards so that increases in income of more than £10,000 (rather than £25,000) in April 2011 will reduce tax credit payments and falls in income of up to £2,500 will not increase tax credit payments. Also, claimants will have to inform HMRC about changes in their circumstances more quickly.
- Housing benefit reform: Local Housing Allowance (LHA) rates will be set at the 30th percentile of local rents rather than the 50th percentile. Irrespective of local rents, there will be caps on the total amount of rent that can be claimed under LHA and rents will be capped at the 4-bedroom rate. The existing disregard of rent up to 15% more than LHA levels will be removed. Housing benefit will be reduced for those of working age living in social housing that is under-occupied. Finally, LHA will be limited to single-room levels for single people aged 25-35.