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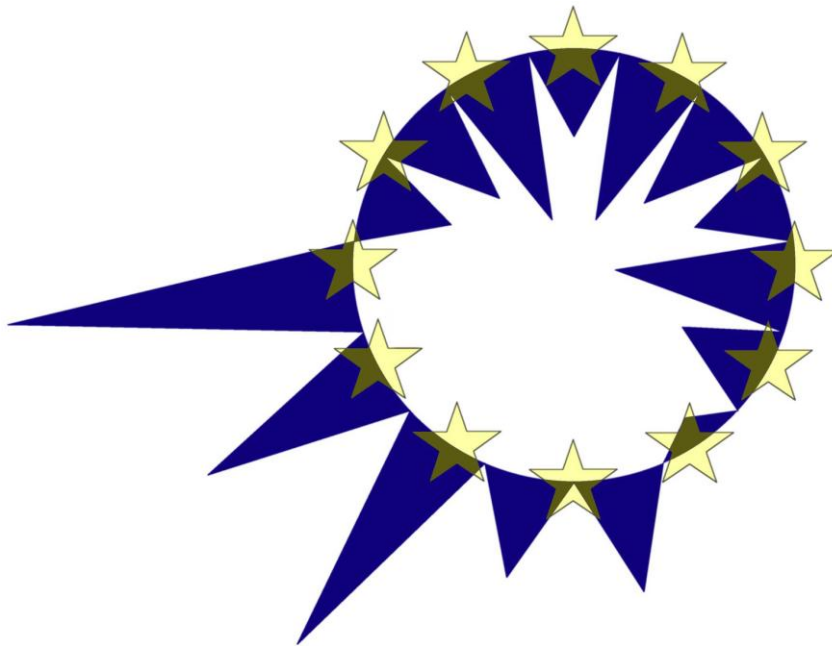
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EUROMOD

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The Distributional Effects of Fiscal Consolidation in Nine Countries

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January 2013

THE DISTRIBUTIONAL EFFECTS OF FISCAL CONSOLIDATION IN NINE EU COUNTRIES¹

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ABSTRACT

We compare the distributional effects of policy changes presented as fiscal consolidation measures in nine 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 nine countries, Estonia, Greece, Spain, Italy, Latvia, Lithuania, Portugal, Romania and the UK, chose different policy mixes to achieve varying degrees of fiscal consolidation. We find that the burden of fiscal consolidation

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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 nine countries. In Greece, Spain, Italy, Latvia, Romania and the UK the better off lose a higher proportion of their incomes than the poor. At the other extreme, in Estonia, the poor lose a higher proportion than the rich. In Lithuania and Portugal the burden of fiscal consolidation falls more heavily on the poor and the rich than it does on those with middle incomes. 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.

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1. Introduction

The distributional effects of the financial and economic crisis which started in the late 2000s and of the fiscal consolidation measures introduced to counter the subsequent government budget deficits are of great current relevance. This is 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.

Furthermore, it is important to assess and compare the effects of fiscal consolidation measures that have a direct impact on household incomes because the policies put in place as part of the budgetary retrenchment process are one arena in which governments can exert some direct control on distributional outcomes and can make choices. Macro-economic and labour market policies - and even cuts in public services - 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 fiscal consolidation 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 takes place) and the distributional impacts of tax-benefit changes can be fine tuned.

In this paper we focus on the effects of fiscal consolidation 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.² As such it is not about the effects on inequality of the crisis as a whole, nor does it attempt to consider all aspects of economic welfare. We compare the size and distributional effects of the household income-based policy packages chosen in nine EU countries: Estonia, Greece, Spain, Italy, Latvia, Lithuania, Portugal, Romania and the United Kingdom. The paper updates a similar analysis carried out a year ago (Callan et al., 2011). It captures the effects of further policy changes, extends the country coverage and refines the methodology as well as adding some new features to the analysis.

Government budgets were severely affected by the crisis. Of the nine countries analysed in this paper, only two were running budget surpluses in 2007 (Estonia and Spain) though apart from Greece all other had budget deficits around the European Union's Stability and Growth Pact limit of 3% of GDP.³ By 2009 only Estonia - which made most of fiscal adjustments in that year - had a deficit below that limit. Seven countries had budget deficits much higher than the EU-27 average, around or above 10% of GDP, and Italy slightly below the average. In 2010-11, the budget deficits were reduced in all countries though remained still above the 3% limit (except in Estonia which had even a small surplus by then), the highest deficits (8-9%) being in Greece, Spain and the UK.

The degree of deficit reduction that these nine 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

² Other studies are attempting to explore some of these complex issues at the national level - for example see Matsaganis and Leventi (2012) for Greece, Brandolini et al. (2013) for Italy, Nolan et al. (2013) for Ireland and Joyce and Sibieta (2013) and Brewer et al. (2011) for UK.

³ See Eurostat database, General government deficit/surplus (indicator: tec00127).

pay affect different income groups and types of household, and how they impact on risk of poverty. We also consider the incidence of increases in VAT across the household income distribution.

The structure of this paper is as follows. Section 2 discusses methodological issues and explains our chosen approach, and also briefly describes EUROMOD, the EU tax-benefit microsimulation model. Section 3 introduces the fiscal consolidation measures taken in each country and the scope of our analysis. Section 4 presents an analysis of the distributional effects of the measures in the nine countries and shows how the different policy mixes each have their own distributional implications. Section 5 sensitivity-tests the results for some countries for the effects of the economic situation in the labour market. Section 6 puts the effects of the fiscal consolidation measures into context by considering the distributional implications of all tax-benefit changes in the period 2008-12. Section 7 concludes 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 fiscal consolidation 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.

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

2.1 Which measures count as fiscal consolidation 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 (e.g. in Spain) is not considered as part of the fiscal consolidation package if those reforms were originally presented as temporary. In section 6 we separately consider the effect of all tax and benefit changes, including those that were part of some other policy agenda.

A second area of consideration is the "time span" over which to analyse 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). Furthermore, it is possible that the medium term plans that are announced will be reversed or amended before being implemented or further measures introduced. In addition, some of the measures introduced earlier in the period were intended to be temporary from the beginning or have been reversed later. We limit the changes that we analyse to those in place in June 2012. We focus on the austerity packages rather than policy changes in exactly the same period across countries and, hence, the starting point for the changes varies across countries. In section 6 we separately consider the effect of all policy changes over a common period (June 2008 to June 2012).

2.2 The counterfactual

The way in which the counterfactual scenario, i.e. what would have happened in the absence of the fiscal consolidation measures, is simulated is critical to the evaluation of the effects. We have chosen to interpret the "absence of the fiscal consolidation measures" as the continuation of pre-fiscal consolidation policies, indexed according to standard practice and official assumption, or law. Such indexation is not the same across countries. Apart from public pensions, most of the countries do not regularly index policies and instead change these occasionally on an ad hoc basis. The exceptions are Italy, Portugal and the UK with especially the latter having long-established indexation rules and conventions (Sutherland et al., 2008) although these are currently in the process of changing (Joyce and Levell, 2011).

2.3 Which measures can be simulated?

In most countries the fiscal consolidation 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, including interactions between various instruments. For example, reductions in public sector pay and taxable pensions/benefits will serve to reduce tax revenue; means-tested benefits may absorb to some extent income losses due to other measures; 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 first round, effects of changes in cash payments and direct personal taxes and contributions, i.e. (i) and (ii) from the list above, which have a direct impact on income distribution. In addition, the effects of public sector pay cuts (vii) are captured, measured net of any reduction in income tax and social contributions. Drawing on available previous research we also show, in broad and approximate terms, the additional effect of indirect tax increases (iv).

2.4 Macroeconomic and labour market 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 fiscal consolidation 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 2012 (see Table 1) but nevertheless the size and distribution of the effects of the fiscal consolidation policies might be somewhat different once unemployment increases and other labour market changes due to the crisis 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. In section 5 we explore whether adjustments to account for major changes in the labour market affect our conclusions about the distributional effects of the policy packages.

Table 1: Summary of input datasets

Country		Input dataset	Income reference period
Estonia	EE	National SILC 2008	2007 (annual)
Greece	EL	National SILC 2008	2007 (annual)
Spain	ES	National SILC 2008	2007 (annual)
Italy	IT	National SILC 2008	2007 (annual)
Latvia	LV	EU-SILC 2008	2007 (annual)
Lithuania	LT	EU-SILC 2008	2007 (annual)
Portugal	PT	EU-SILC 2008	2007 (annual)
Romania	RO	EU-SILC 2008	2007 (annual)
UK	UK	FRS 2009/10	2009/10 (current)

2.5 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 tax evasion (Greece, Italy) and non take-up of certain means-tested benefits⁴ and behaviour in this respect is assumed to be the same before and after the policy changes.

⁴ A 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).

3. Simulating the fiscal consolidation measures

We focus on the fiscal consolidation measures implemented after the 2008 economic downturn and up to mid-2012. The starting point from which 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, the Baltic countries (Estonia, Latvia and Lithuania), Portugal and the UK started introducing fiscal consolidation measures in 2009 (see Table 2) and followed with further measures in 2010 to 2012.⁵ Other countries (Greece, Spain and Romania) started fiscal consolidation in 2010 and Italy introduced its first measures in 2011.

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. All of the countries except Lithuania and Romania increased both income taxes and workers' social insurance contributions. Greece further introduced additional new taxes and/or contributions, some on a one-off basis. In principle, all countries also cut (or froze or somehow limited) public sector pay though given the period of analysis this excludes Estonia and also the UK, due difficulties in establishing the extent and incidence of any effect.⁶ While a number of countries also increased property taxes, it has not been possible to model these policy changes for all of them, due to lack of necessary information in the data. Finally, all countries have also increased the (standard) rate of VAT.

Table 2: Type of household income-based fiscal consolidation measures introduced (as of June 2012)

Type of measures	EE	EL	ES	IT	LT	LV	PT	RO	UK
Benefit and/or pension cuts (or freezing)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Increased income taxes and/or reduced tax concessions	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes
Increased worker social insurance contributions	Yes	Yes	No	Yes	No	Yes	Yes	No	Yes
Public sector pay cuts (or freezing)	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Increased property taxes	No	Yes	(Yes)	Yes	(Yes)	(Yes)	(Yes)	(Yes)	No
Increased standard rate of VAT	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start period of measures	2009	2010	2010	2011	2009	2009	2009	2010	2009

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" fiscal consolidation simulations. Their effects are captured in the analysis in section 6 of this paper.

⁶ In Estonia there was a substantial cut in average public sector pay in 2009. But by the end point of the period we consider, public pay had risen again (similar to the average wage in the private sector). 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. This is partly because it is difficult to distinguish public and private sector employees, a factor that explains why this information is not collected in the UK micro-data that are used in this study.

Notes: The fiscal consolidation measures included here are limited to those that have a direct effect on household income, plus also increases in (the standard rate of) VAT. Temporary measures which were reversed by mid-2012 are excluded. Employer contributions were increased in Estonia, Greece, Italy and the UK but the effect is not included in our analysis of household income. In the table, Yes in bold indicates that measures are captured in our analysis. (Yes) in parenthesis indicates that measures were introduced but are not possible to simulate (see Appendix 1).

As we aim to quantify the effect of fiscal consolidation on 2012 incomes, our counterfactual scenario excludes all measures which were reversed before mid-2012. In some cases, these provided substantial fiscal savings in a particular year.⁷

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; cuts in the benefits and tax credits administered by some regional governments in Spain. 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.

Our simulations compare the situation after the fiscal consolidation 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) and upper ceilings for contributory benefits (linked to average wage growth). Pension indexation rules were changed in 2009 and that is considered as one of the fiscal consolidation measures.
- **Greece:** No indexation
- **Spain:** No indexation except for pensions (indexed by CPI)
- **Italy:** Pensions and benefits indexed mainly by prices, no indexation of Personal Income Tax bands.
- **Latvia:** No indexation except for pensions and minor disability benefits (indexed by a weighted average of CPI and wage growth before 2009 and by CPI since 2009).
- **Lithuania:** No indexation
- **Portugal:** Indexation of most components by CPI
- **Romania:** No indexation except for pensions (indexed by a weighted average of CPI and average wage growth)
- **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.

For all countries except the UK the level and distribution of market incomes is drawn initially from data from the recent, pre-crisis, past using data on 2007 incomes from

⁷ For example, there were public wage cuts and suspended payments to the 2nd pension pillar in Estonia, a number of one-off additional taxes and contributions in Greece, an increase of income tax in Latvia and cuts in public pensions in Lithuania.

the 2008 EU-SILC or national SILC. For the UK the data refer to a period near the beginning of the crisis: 2009/10 using data from the 2009/10 Family Resources Survey (see Table 1). In each case market incomes are updated appropriately to the “baseline”, i.e. the policy simulation year of 2012. 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 fiscal consolidation measures

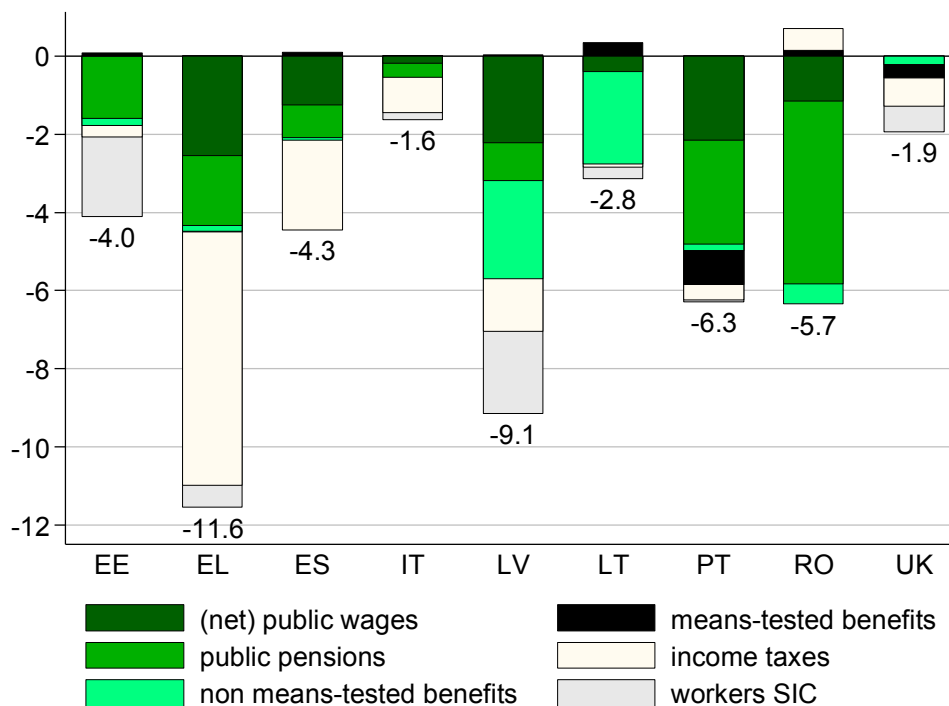
We first analyse the size and composition of the austerity packages, i.e. changes to cash benefits, income taxes and contributions paid by workers (employees and self-employed) as well as public pay cuts (net of corresponding tax and contribution reductions). This is expressed as the net proportional reduction in household disposable income in each country. We then explore the distributional effects by analysing the proportional reductions in income, across the pre-austerity income distribution and by household type. Finally we separately show the effect of the VAT increases which are cruder estimates, based on data from other studies, as the SILC datasets underlying EUROMOD do not include information about consumption expenditures.

4.1 Size and composition of the household income-based fiscal consolidation packages

The extent and composition of the “fiscal consolidation packages” analysed here is shown in Figure 1. Measured as a percentage of pre-austerity total disposable income, the overall fiscal consolidation generated by the household income-based measures included in the analysis varies from 1.6% of disposable income in Italy and 1.9% in the UK to 9.1% in Latvia and 11.6% in Greece. In interpreting these figures it is important to remember that they do not reflect the scale of the fiscal consolidation effort as a whole in each country. In some countries measures without a direct impact on household income – such as those affecting the corporate sector or employers generally; or cuts in public services (as in Italy) – have a relatively large role. In other cases the main effect of the measures is being planned for a period in the future (UK) and in Estonia, Greece, Latvia and Lithuania our analysis excludes the effect of measures that had already expired by mid-2012. These results indicate the scale of immediate and direct losses in income experienced by households.

Figure 1 also shows the relative importance of the different types of measure. Comparing across countries, this varies greatly, indicating that there has been no common approach to consolidating public budgets. Pay cuts for public sector workers (net of taxes and contributions) play a major role in Greece, Latvia and Portugal and a somewhat smaller role in Romania and Spain. Cuts in public pensions are especially important in Romania (making up well over half the overall total) and also in Portugal, Estonia and Greece. Increases in income tax are important in Greece and Spain, and in terms of the share of the total, also in Italy and the UK. Increases in worker social insurance contributions are important in Estonia and Latvia and in terms of the share, in the UK. Cuts in non-means-tested benefits are relatively large in Lithuania and Latvia. There were also cuts in means-tested benefits in Portugal and also the UK. In the other countries, spending on these benefits tended to increase, partly making up for reductions in other incomes. (In Portugal and the UK the negative effect shown is the net effect of cuts in entitlements and increases in the numbers eligible and size of payments due to cuts in other incomes). There are also interactions between pension and benefit cuts and income tax (and in some countries, social contributions) payable on these benefits. The figures for income tax increases are net of reductions due to the decreased tax base in these respects. The net effect is positive in Romania where there were no consolidation-related changes to income tax.

Figure 1: Aggregate effect of simulated household income-based fiscal consolidation measures in place in 2012 as a percentage of total household disposable income, by type of policy



Source: own simulations with EUROMOD version F6.0.

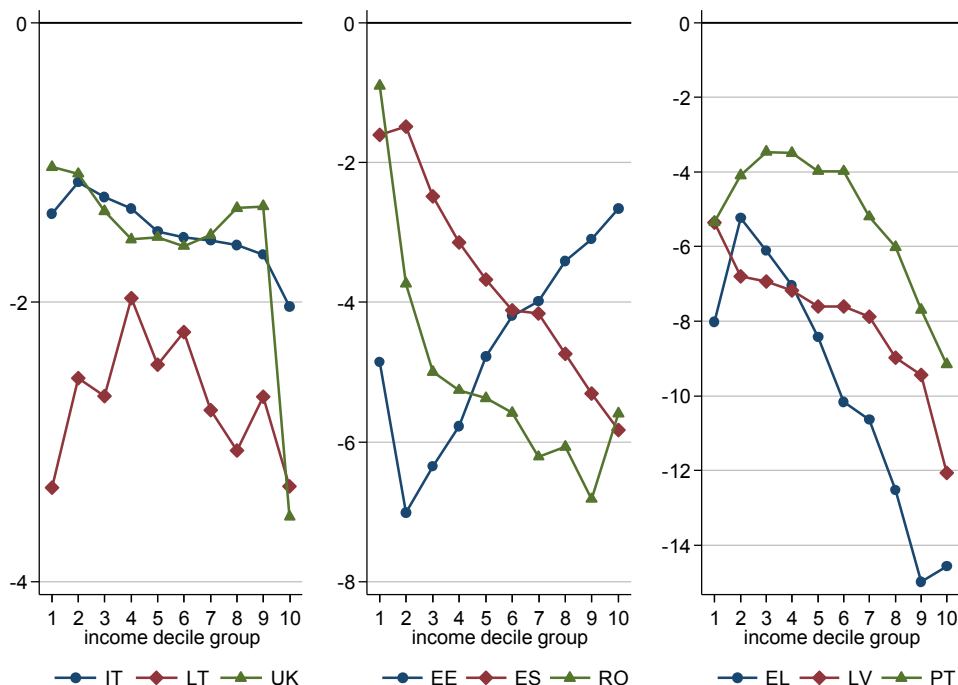
4.2 Effects across the distribution of household incomes

The implications of the fiscal consolidation 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 fiscal consolidation measures that have a direct bearing on household income.⁸ The figure groups countries into three, based on the overall size of the change in income and the three figures are drawn to different scales (the gridlines are all 2 percentage points apart).

Two thirds of the countries (Greece, Spain, Latvia, Italy, Romania and the UK), show **progressive cuts** in income on the whole, i.e. richer income groups contributing more in relative terms. Lithuania and Portugal show an **inverted U-shape pattern** where middle income groups contribute less compared to low and high income groups. Estonia is the only country with a clearly **regressive** distribution of cuts.

⁸ Deciles are calculated using household disposable income for each individual, equivalised using the modified OECD scale. Incomes are as in 2012, but without the fiscal consolidation measures.

Figure 2: Percentage change in household disposable income due to simulated household income-based fiscal consolidation measures by household income decile group



Notes: The 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). Deciles are based on equivalised household disposable income in 2012 in the absence of fiscal consolidation measures and are constructed using the modified OECD equivalence scale to adjust incomes for household size. The charts are drawn to different scales, but the interval between gridlines on each of them is the same. Source: own simulations with EUROMOD version F6.0.

To understand the reasons behind these overall distributional outcomes we focus on the distributional effects each of the four main types of change: to (a) public sector pay, net of taxes and contributions, (b) public pensions, (c) other benefits and (d) income taxes and social contributions. This is shown in Figure 3.⁹

Public sector wage cuts had a progressive effect in all countries where they were implemented during the period we consider. The large size of this effect drives the overall progressivity observed in Greece, Latvia, Italy and Romania in Figure 2.

The distributional incidence of cuts to public pensions (see Figure 3b) depends on the design of the changes and the location of pensioners in the income distribution. In most of the countries where public pensions were reduced, this was implemented in the form of suspending pension indexation and freezing their nominal values. This measure implies a proportional decrease in pension incomes for all pensioners and higher losses for the lower-middle decile groups where pensioners are typically located. This is seen for example for Spain and Latvia. A progressive effect where

⁹ Note that these charts have different scales in order to focus on the distributional implications of each type of measure rather than the differences in overall size (which is shown in Figure 1).

losses are larger in percentage terms in the middle and top of the distribution than at the bottom is observed in countries (like Greece, Italy and Portugal), which limited the pension freeze to higher pensions and/or cut pensions in nominal terms, with larger reductions for higher pensions. These changes help to drive the overall progressive effect shown in Figure 2 for Greece and Portugal. In Estonia, the reduction was due to the change in the indexation of public pensions which we estimate to have resulted in the average pension being almost 10 percent lower in 2012 than it would have been otherwise. Similar to Spain and Latvia, pensions were proportionally reduced but the effect on average household income is regressive because of the location of pensioners towards the bottom of the distribution. This cut also drives the overall regressive effect observed for Estonia in Figure 2 as the effects due to other instruments were smaller in size as well as less pronounced across the income distribution. Overall, the largest pension losses were in Romania due to relatively high inflation (see Table 3) eroding the real value of frozen pensions. In Romania pensioners are located throughout the income distribution. Minimum pensions are not normally indexed, explaining the smaller measured loss for low income households shown in Figure 3b.

Cuts to non-pension benefits (Figure 3c) are notable only in a few countries though their incidence across the income distribution is very diverse, the distributional pattern being due to several changes to various benefits happening at the same time. Four countries with substantial cuts in benefits are Latvia, Lithuania, Portugal and the UK. Large progressive cuts are seen in Latvia where the main contributory benefits were capped, driving the overall progressive effect seen in Figure 2. The large regressive effects in Portugal resulted from the freeze of the means-tested benefit. In the UK the losses are at the bottom and the middle of the distribution due to a combination of several changes to the benefits for families with children, including some sharper means-testing. In Lithuania the effect is fairly even across the distribution due to the combined effects of three types of changes: lower income households being affected the most by cuts in social assistance, middle income groups by the child benefit becoming means-tested and the upper end of distribution by cuts in contributory family benefits.

There are important interactions in all countries, in the form of means-tested benefits absorbing part of income losses due to other instruments. However, this is only evident for countries like Estonia (where social assistance was also made more generous), Spain and Romania; while in other countries the negative effect from cuts in non means-tested benefits (Greece, Lithuania) or even in means-tested benefits themselves (Portugal, UK) dominates.

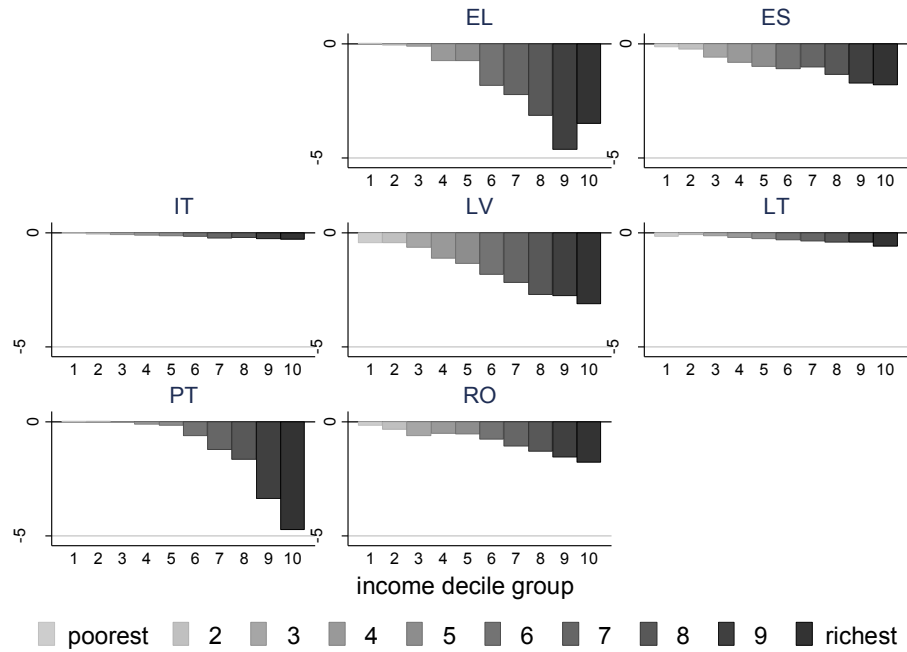
The pattern of the distribution of combined income tax and social contribution changes (Figure 3d) is generally quite flat. In the case of the Baltic countries, small progressive increases from worker contributions are balanced with small regressive tax increases. Stronger progressive effects can be seen for Greece (with the exception of the first decile group), Spain and the UK, where the tax increases are incident mainly on the top decile group.¹⁰ These tax increases drive the overall progressive effects seen in Figure 2 for Spain and the UK and are also important in Greece. There are again interactions as in some cases tax and contribution increases are offset by reduction in tax collected from taxable pensions and benefits.¹¹ These are relatively small though

¹⁰ 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.

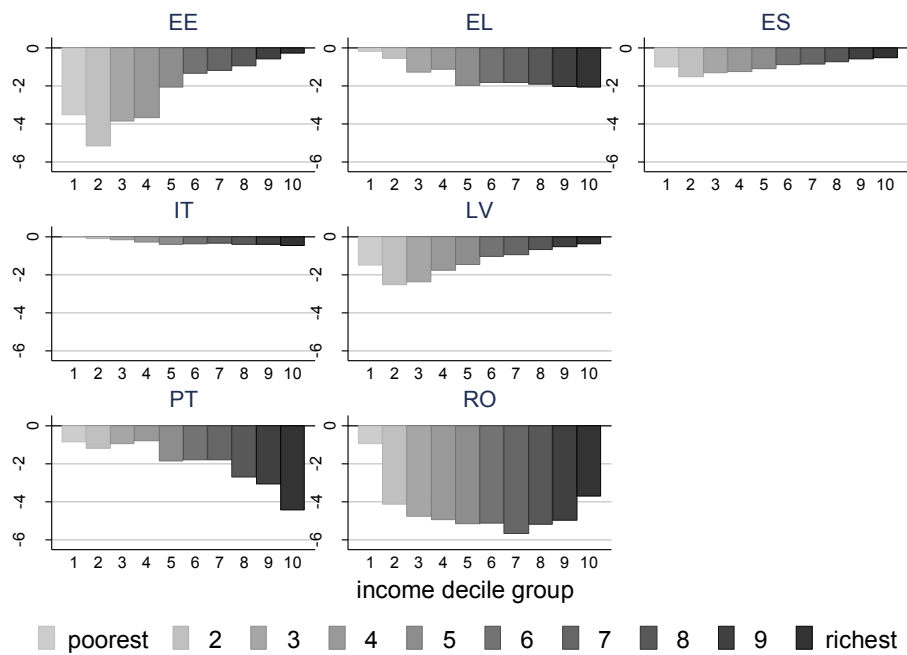
¹¹ Changes in taxes and contributions due to cuts in (gross) public wages have been separated and shown together with the latter in Figure 3a.

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

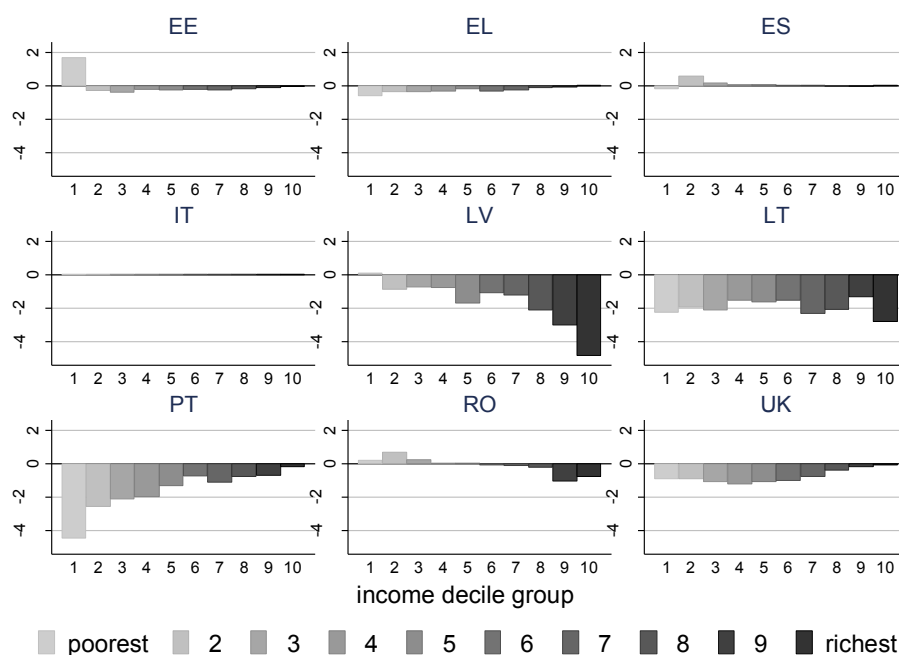
(a) public sector wages (net of taxes and SICs)



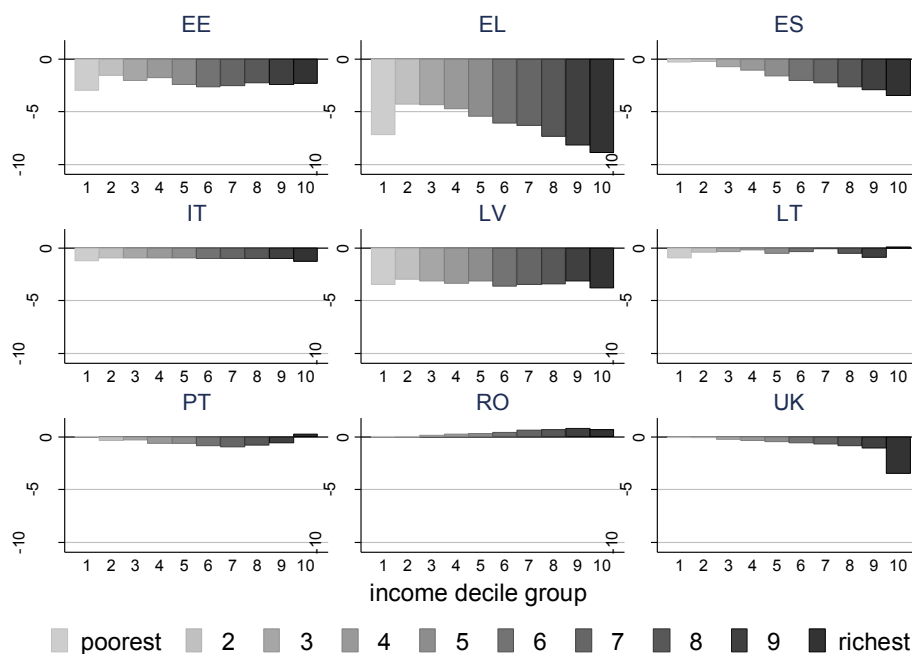
(b) public pensions



(c) non-pension benefits



(d) Income tax and worker SICs



Notes: The 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). Deciles are based on equivalised household disposable income in 2012 in the absence of fiscal consolidation measures and are constructed using the modified OECD equivalence scale to adjust incomes for household size. The absence of a country

from a chart indicates that there were no changes of the relevant type. Source: own simulations with EUROMOD version F6.0.

and on this graph visible only for Romania, which had largest reductions in public pensions and no policy changes to income tax or social contributions.

To summarise, the overall progressive effect shown in Figure 2 for Greece, Spain, Latvia, Italy, Romania and the UK is primarily due to public sector wage cuts, except in Spain and UK where it is driven by progressive tax cuts. The latter are also important in Greece. Overall progressivity is further strengthened by cuts in non means-tested benefits (Latvia) and cuts in public pensions (Greece and Portugal). While Italy implemented several progressive measures these have only a limited effect due to very narrow targeting.¹² In the UK, the progressivity is achieved through a much larger burden on the top decile group while the effects are fairly uniform for the other decile groups. The clearly regressive distribution in Estonia is driven by the cuts in public pensions although the (increased) means-tested social assistance lessens the effect for the first decile group.

In Lithuania, the inverted u-shaped effect arises from a combination of progressive public wage cuts and cuts to several benefits. In the case of Portugal, this effect is due to a combination of progressive effects from cuts in public wages and pensions and regressive effects from the reduction of the (real) value of means-tested social assistance.

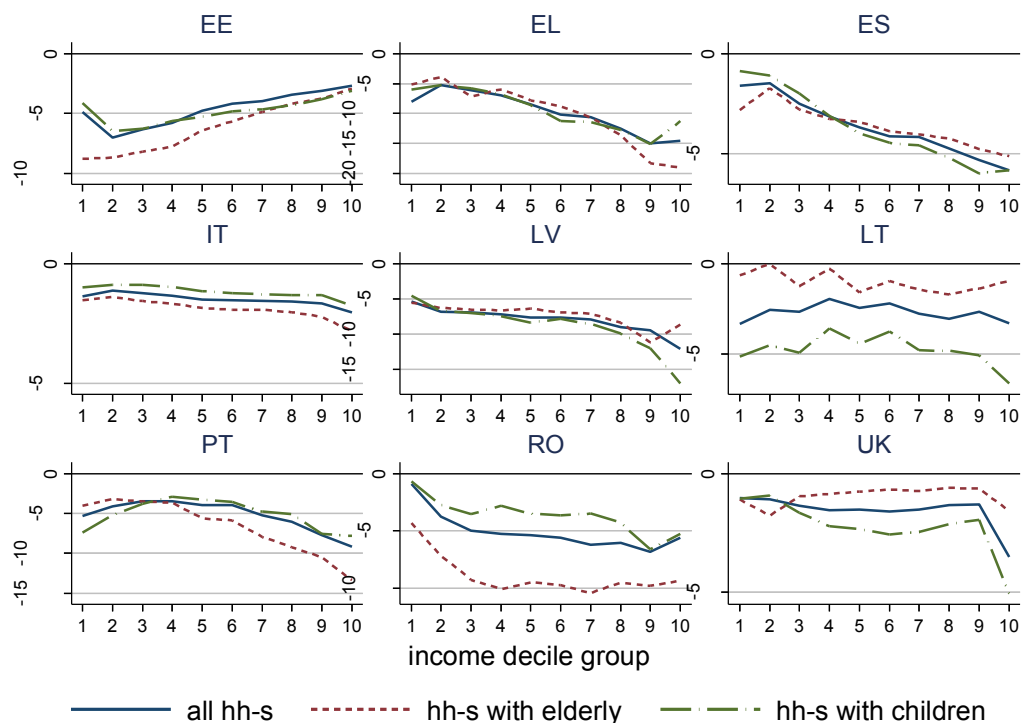
It is also of interest to understand how the burden of the fiscal consolidation measures is shared across different types of household. Figure 4 compares the proportional change in disposable income by decile group for the whole population (as in Figure 2) with that for (a) people in households with children (defined as aged under 18) and (b) people in households containing elderly people (defined as aged 65 or more). Across countries the effects are rather similar for these groups with two main exceptions: households with children lose more right across the income distribution in Lithuania,¹³ while the opposite is true in Romania. There are also countries where the two lines cross, showing how at low income levels families with children (Spain, UK) or families with elderly (Greece, Portugal) are better protected while it is the opposite at higher income levels. Overall, 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.¹⁴

¹² The solidarity contribution (i.e. additional 3% tax on pension incomes and public sector wages above a threshold of 300,000 per year) affects only 0.07% of tax payers (figures based on fiscal data in 2010) and it is deductible from the income tax. The public pension cuts are only above 90,000 euro per year affecting 0.97% of pensioners. The same threshold of 90,000 euro per year is used for the public sector wage cuts, while only 1.49% of Italian employees (considering both public and private sectors) declare earnings above this threshold to the tax authorities.

¹³ Lithuania did cut public pensions but this was a temporary measure in 2010-11 and as such not included in our analysis as it focuses on fiscal consolidation measures as of mid-2012.

¹⁴ We also looked at the effects on the risk of poverty as defined having income below 60% of the median. If fixed poverty thresholds are used then, as expected, the risk of poverty rises in all countries due to falling incomes. However, if poverty thresholds are allowed to shift then the impact is relatively small, with the poverty rate changing less than half a percentage point in all countries except in Estonia (an increase of 1.7pp), Greece and Spain (a decrease of 2pp and 1.3pp, respectively). Changes by age groups are broadly in line with Figure 4 – the poverty rate for elderly people increasing more in Estonia and Romania and for children in Lithuania and Portugal.

Figure 4: Percentage change in household disposable income due to simulated household income-based fiscal consolidation measures: by type of household and household income decile group



Notes: The 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). Deciles are based on equivalised household disposable income in 2012 in the absence of fiscal consolidation measures 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: own simulations with EUROMOD version F6.0.

4.3 Indirect taxes

In all of the countries we consider there have also been changes to indirect taxes. While these do not have an effect on household disposable income they do impact directly each household's consumption potential. For this reason, we also compare the effect of fiscal consolidation measures discussed above with those of increases in indirect taxes.

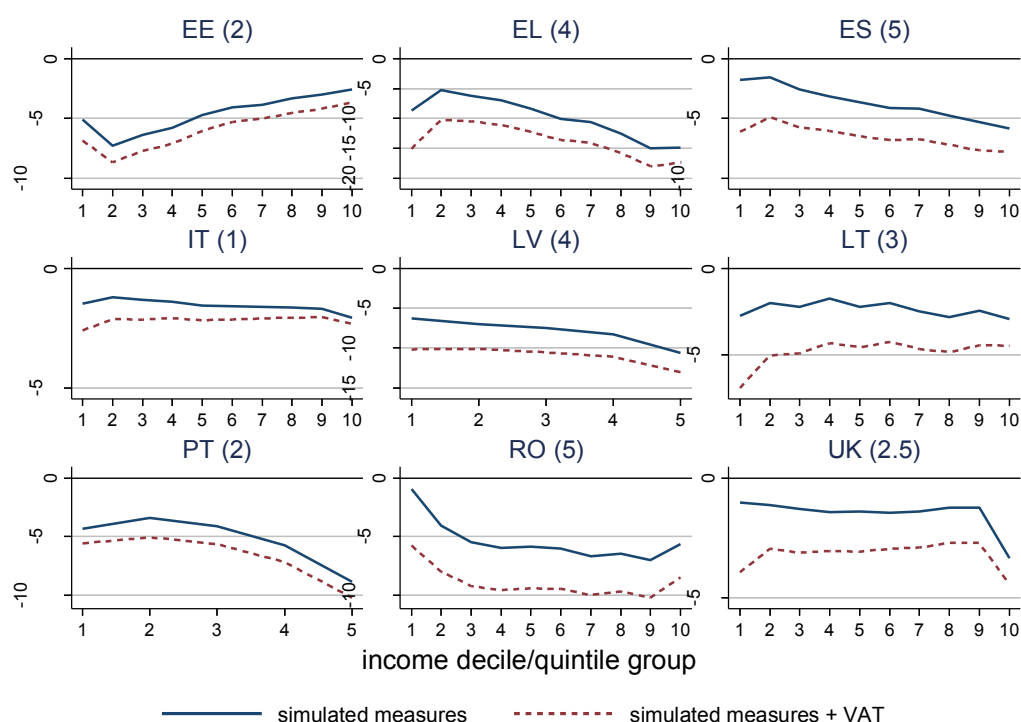
Using our own estimates or external information (where available) on the incidence of (pre-reform) VAT by income group (decile or quintile), we have estimated the increase in VAT payment due to the increase in the standard rate VAT as a proportion of disposable income.¹⁵ In doing so, we have assumed that (i) there is no change in pre-

¹⁵ The studies used are, respectively, Vörk et al. (2008) for Estonia, Matsaganis and Leventi (2011) for Greece, Institute for Fiscal Studies (2011) for Spain, Taddei (2012) for Italy Ivaškaitė-Tamošiūnė (2012) for Lithuania and Barnard (2010) for the UK. For the other countries we carried out our own calculations based on information from Household Budget Surveys (HBS) on the distribution of expenditure by COICOP categories by income

tax expenditure or in pre-tax relative prices and (ii) the VAT increases are proportional to the pre-reform VAT payments.

The effects are shown in Figure 5, which also indicates the change in the main VAT rate which ranges from 1 (Italy) to 5 percentage points (Spain and Romania). 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 with a dashed line, contrasted with the effect of the income changes alone with a solid line (as in Figure 2).¹⁶

Figure 5: Simulated household income-based fiscal consolidation measures as a percentage of household disposable income by income decile/quintile group: change excluding and including VAT increases



Notes: The fiscal consolidation 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 (shown in percentage points after each country acronym). Other increases in indirect taxes are not included. Deciles or quintiles are based on equivalised household disposable income in 2012 in the absence of fiscal consolidation measures and are constructed using the modified OECD equivalence scale to adjust incomes for household size. The charts are drawn to different scales, but the interval between gridlines on each of them is the same. Source: own calculations with EUROMOD version F6.0 and Barnard (2010), Ivaškaitė-Tamošiūnė (2012), Matsaganis and Leventi (2012), Institute for Fiscal Studies (2011), Taddei (2012) and Vörk et al. (2008).

decile/quintile group. 2006 HBS was used for Italy, 2008 HBS for Latvia, 2005/06 HBS for Portugal and 2009 HBS for Romania. Note that EUROMOD's input database (EU-SILC) does not include data on expenditure.

¹⁶ 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 (generally) 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. These results should be viewed with caution, therefore.

We find that in each of the countries, the effect is regressive across the income distributions.¹⁷ 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 impact of VAT changes is naturally larger in countries with bigger increases in the standard VAT rate but what is important to note is that in several countries (Spain, Lithuania, Romania and the UK) the effects are of similar magnitude to the measures affecting household incomes directly which highlights their importance.

5. Are the results sensitive to labour market conditions?

The analysis presented so far assumes pre-crisis employment levels, based on patterns of labour market activity as captured by the 2008 SILC data (and 2009/10 FRS data for the UK) . As such it reflects the effect of fiscal consolidation as though it took place in the early stages of the crisis and could be argued to show how the effects would have been seen, *ex ante*, at the time. On the other hand, as the economic crisis deepened, the countries considered here experienced, and in many cases are still experiencing, reductions in labour market activity. This not only undermined governments' efforts to reduce public deficits but may have also altered the distributional impact of those efforts. Therefore, we also make adjustments to account for employment changes to show the effect of measures looking back from a later stage and better reflecting the *actual* outcome. Overall, this also helps to establish how sensitive our results are to labour market conditions.

More specifically, we adjust the 2008 SILC data to replicate changes in employment as indicated by 2007 and 2011 Labour Force Survey (LFS) data, and repeat the analysis. (This is not done for the UK because the data already come from a later period.) The method, which builds on previous work by Figari et al. (2011) and Avram et al. (2011) is explained in Navicke et al. (2012). The data are modified by moving selected people from employment into short- or long-term unemployment; and in some cases from being out of work into employment. The proportions undergoing such transitions depend on the changes observed in the LFS data within each of 18 strata of characteristics - according to age group (3), gender and educational level (3). Given the new conditions for people selected to make transitions, EUROMOD re-calculates the components of household income and draws an alternative income distribution, both before and after the fiscal consolidation measures. The data incorporating the adjusted labour market are then used to repeat the analysis reported above.

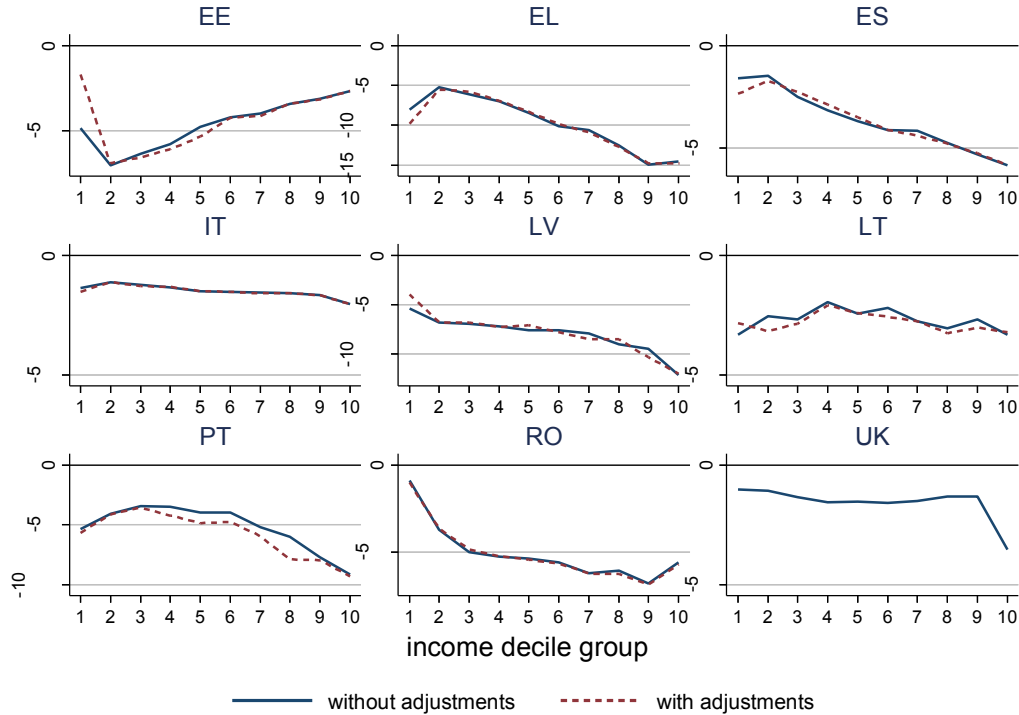
In fact these adjustments make little difference to the aggregate effects. The proportional reduction in household disposable income is the same or within 0.1 of a percentage point of that shown in Figure 1, except for Portugal where the reduction is 6.9 per cent instead of 6.3 per cent without the adjustment. Distributionally there are also only small effects. Figure 6 compares the percentage change in household income without the labour market adjustment (as in Figure 2) and with the adjustment, by income decile group.¹⁸ Overall, the effects across countries and income distribution are

¹⁷ 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.

¹⁸ The composition of decile groups and decile points are not the same with and without the labour market adjustment: reranking of households according to their income is one of the

very similar. Differences can be seen (i) for the bottom decile group which experiences smaller income losses in the Baltic countries (especially in Estonia) and greater losses in Greece and Spain, and (ii) greater losses for the middle income groups in Portugal.

Figure 6: Simulated household income-based fiscal consolidation measures as a percentage of household disposable income by income decile group: with and without labour market adjustments



Notes: The 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). Deciles are based on equivalised household disposable income in 2012 in the absence of fiscal consolidation measures and are constructed using the modified OECD equivalence scale to adjust incomes for household size. The charts are drawn to different scales, but the interval between gridlines on each of them is the same. Source: own calculations with EUROMOD version F6.0.

6. Fiscal consolidation in context: the effect of all tax-benefit changes 2008-2012

The analysis has focused on measures that were intended to reduce public sector spending or increase tax revenues within the relevant period of fiscal consolidation in each country. In this section we put the effect of these measures into perspective by considering the effect of all direct tax and benefit changes implemented in a common period 2008-2012. This analysis is distinguished from that in the previous sections in three ways. First, it includes measures that were not part of the fiscal consolidation strategy and which generally but not uniformly had the effect of increasing household incomes (see Appendix 1). Secondly, the time period that is considered is common across countries and as such includes in some countries policy reforms that pre-dated the period in which fiscal consolidation was considered a priority. This applies particularly to Italy and also to Greece, Spain and Romania (see Table 2). Thirdly this

effects of labour market change and is one of the reasons we might expect the picture of the distributional effects of policy reform to be sensitive to labour market conditions.

analysis excludes the effect of public sector pay cuts focusing on the pure tax and benefit effects. The analysis in this section is based on (estimated) 2012 levels of pay in both private and public sectors which are unchanged in the modelled scenarios.

Our analysis shows what the distributional implications of returning to the 2008 tax-benefit system instead of the actual 2012 policy system would be. It indicates to what extent policy changes over the period have favoured (relatively) the rich or the poor, and the young or the old. In a first step we assume that the 2008 system would have been updated in the normal way for each country (see section 3 above) and consider the percentage change in household disposable income that is due to moving to the 2012 system. This is shown in the first column of Table 3. The change is different from that shown for fiscal consolidation (Figure 1) because it does not include reductions in public sector pay, it covers a longer time period in some countries and because it includes some policy changes that are not part of the fiscal consolidation packages. The main additional policy changes are

- **Estonia:** None. All changes between 2008 and 2012 are considered as part of fiscal consolidation.
- **Greece:** Mainly pre-austerity policy changes in 2009, including increases in social insurance contributions for the self-employed as well as several benefits, and lowering of income tax rates.
- **Spain:** None. All changes between 2008 and 2012 are considered as part of fiscal consolidation.
- **Italy:** Proportional taxation of income from property (mainly at 21%) rather than its inclusion in the tax base of the progressive income tax, favouring richer tax payers.
- **Latvia:** Changes in taxes and benefits linked to minimum wage increases; an increase in disability benefit for people disabled from childhood and dependent tax allowance, changes in social assistance benefits.
- **Lithuania:** Changes in personal income tax and health insurance contributions in 2009 which is considered to be a strategic tax-benefit reform and not intended as an austerity measure. It involved lowering average tax rates, introducing progressive changes to tax allowances and universalising health insurance contributions.
- **Portugal:** None. All changes between 2008 and 2012 are considered as part of fiscal consolidation.
- **Romania:** Introduction of a minimum pension; introduction of an indexation mechanism for certain social benefits; an increase in the child raising benefit; changes to social insurance contributions (raising the minimum contribution and introducing an upper ceiling).
- **UK:** A substantial increase to the income tax personal allowance for those aged under 65, limited to standard rate taxpayers.

Household incomes on average fell due to the tax-benefit policy changes relative to what would have happened if the 2008 system had remained in place with standard national indexation.¹⁹ The exception is Romania where on average incomes are higher by 9 percentage points under 2012 policies than under 2008 policies, mainly due to

¹⁹ Compared with the scale of change when focusing on fiscal consolidation measures (as in Figure 2) on the whole the effect on income is similar or less negative.

the introduction of a minimum pensions, increases in pensions and some social benefits and reductions in social contributions. The largest reduction in incomes is 8.4%, in Greece. Part of the difference across countries in the change in income shown in this first column of Table 3 is due to different indexation practices across countries. In some countries, we are comparing 2012 levels of benefits (for example) with 2008 levels uprated by movements in prices or earnings. In others the standard practice is not to index on a regular basis and we are comparing 2012 payments with those made in 2008 in nominal terms.

Table 3: Percentage change in household disposable income due to direct tax and cash benefit policy changes 2008-12

Country	Percent change in income, 2008 policies indexed		Change in CPI 2007-11
	... using national practice	... by CPI	
Estonia	-4.0	-5.5	<i>1.196</i>
Greece	-8.4	-10.8	<i>1.139</i>
Spain	-3.3	-4.2	<i>1.093</i>
Italy	-1.0	-3.2	<i>1.091</i>
Latvia	-6.2	-7.0	<i>1.226</i>
Lithuania	-0.2	-5.1	<i>1.220</i>
Portugal	-5.1	-4.4	<i>1.069</i>
Romania	+9.0	-0.1	<i>1.279</i>
UK	-0.4	-0.2	<i>1.143</i>

Source: own simulations with EUROMOD F6.0; last column is based on Eurostat HICP annual average change (indicator *prc_hicp_aind*).

In order to neutralise this effect, in a second step we construct an alternative counterfactual which updates all 2008 monetary values in the tax-benefit system by a common index. We chose to use the movement in the CPI 2007-2011²⁰ (see the last column in Table 3), which permits an assessment of the policy changes relative to changes in the current cost of living (as measured by the CPI) and also allows us to assess the size and distributional effects of fiscal drag, sometimes known as “bracket creep” in the case of tax thresholds (Immervoll, 2005) or, in the case of benefit payments not linked to previous earnings as “benefit erosion” (Sutherland et al., 2008). Note that over the four years there have been large differences in inflation across countries, ranging from 7 percent in Portugal to nearly 30 percent in Romania.

The second column of Table 3 shows the percentage change in income due to the policy reforms, relative to the price indexed 2008 base policy. In all countries except Portugal and the UK the price-adjusted size of the average income loss is larger (more negative) than under the scenario where national indexation practice is used as the counterfactual. This indicates the extent to which these standard practices do not maintain tax and benefit levels and thresholds relative to the cost of living. In Romania the 9 percent gain is reduced to a tiny loss in real terms. In Portugal and the UK, however, standard indexation practice in this period was on average slightly more generous than indexation by CPI.

With a price indexed base in all countries the largest reduction in incomes due to tax-benefit reforms is in Greece (10.8 per cent), followed by Latvia (7 per cent). In

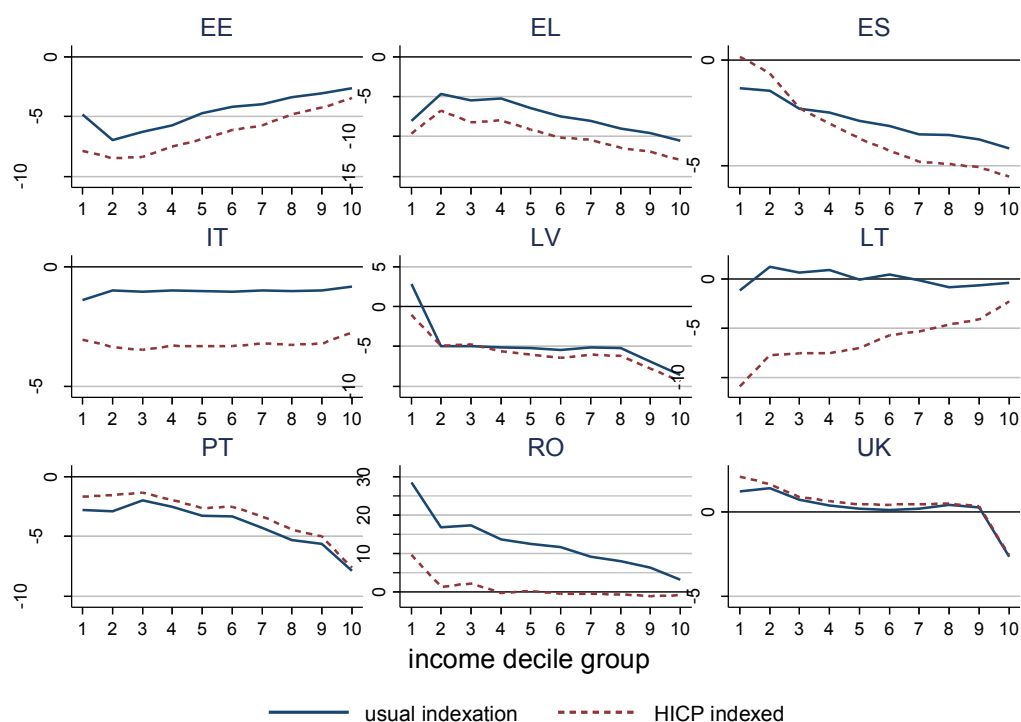
²⁰ The lag of one year is commonly used in actual indexation regimes.

Romania and the UK policy reforms had an almost neutral effect on incomes on average while in the remaining countries they reduced incomes by between three and six percentage points.

Our focus is on the distributional effects and the relative percentage change in household disposable income across groups within the population. The effect across the income distribution is shown in Figure 7, where households are ranked according to their 2012 counterfactual income (i.e. if the 2008 policies had continued). The solid lines show the change in household income assuming normal indexation practice as the counterfactual and the dotted lines show the effect of 2012 policies relative to comprehensive price indexation of 2008 policies.

Focussing on the first of these shows a broadly similar set of patterns in terms of the distributional effects of fiscal consolidation shown in Figure 2 but with some distinct differences. The effects are less progressive (or even slightly regressive) in Italy, Greece and Spain, but more progressive in Latvia and Romania. The latter is especially progressive with the bottom decile group increasing their incomes by nearly 30 per cent. However, once the Romanian comparison uses the price-indexed base (dashed lines in Figure 7), the effect is much smaller but still progressive.

Figure 7: Percent change in household disposable income by income decile group due to tax-benefit policy changes 2008-12



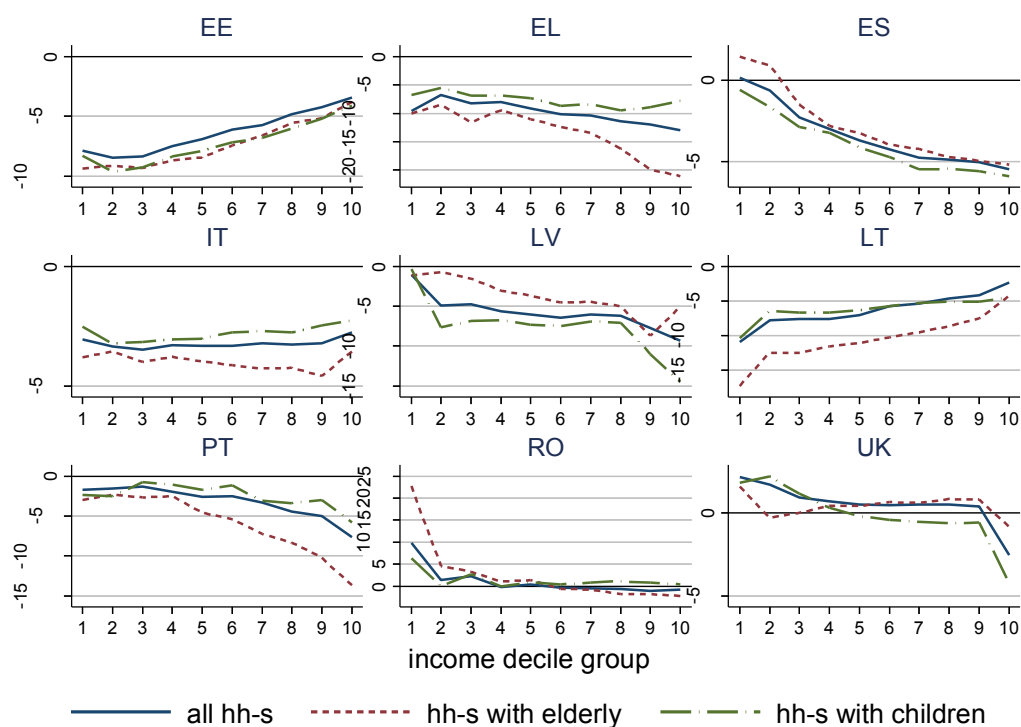
Notes: The measures included here are limited to those that have a direct effect on household disposable income (changes to direct taxes, cash benefits and public sector pay). Deciles are based on equivalised household disposable income in 2012 with 2008 policies, indexed and are constructed using the modified OECD equivalence scale to adjust incomes for household size. The charts are drawn to different scales, but the interval between gridlines on each of them is the same. Source: own calculations with EUROMOD version F6.0.

Comparing the effect of 2012 policies with 2008 policies indexed by prices generally results in all decile groups losing a greater proportion of their incomes than if customary indexation is assumed as the counterfactual. This is clearly seen, either

without strong distributional implications (Italy, Greece and Estonia) or with a much larger effect at the bottom of the distribution than the top (Lithuania, Romania). In Lithuania the large losses at the bottom of the distribution relative to the price indexed base change the overall outcome from flat/u-shaped to regressive. Spain is the only country where the two lines cross meaning that price indexation compared to national practices would favour noticeably some income groups (i.e. the bottom of the distribution) while it is the opposite for others (i.e. the top of the distribution). In other countries the differences are small (Latvia, Portugal and the UK). In the latter two, the difference is in the other direction: the price indexed 2008 system is slightly less generous than the system using national indexation practices, across the whole distribution in Portugal and at the bottom in the UK. Finally, it is worth noting that in Romania (bottom 3 decile groups) and the UK (all but the top decile group) the average effect of policy reforms relative to the price-indexed 2008 system is an increase in income, not a reduction.

In order to highlight any differential effects according to age, Figure 8 shows the results of the simulation with the price-indexed counterfactual 2008 system for households with children (aged under 18) and households with elderly people (aged 65+) in the same manner as Figure 4. In general the differences across household types are small, with some notable exceptions. In Lithuania the extent of benefit erosion is high, especially for households with elderly people who lose substantially more than households in general, especially in the middle and bottom of the distribution. This is due to the non-indexation of pensions over the period. The same is true in Greece and Portugal but at the top of the income distribution, and also in Italy where the effect is smaller. Freezing or cutting of pensions is the main explanation in these countries too. The difference in distributional pattern compared with Lithuania is due to the different location of elderly people in the income distribution. In contrast in Romania, low income households with elderly people gain substantially relative to other households, due to increases in pensions and the introduction of a minimum pension. In some other countries (Latvia, Spain and the UK except at the bottom of the distribution) households with children lose somewhat more than households in general.

Figure 8: Percent change in household disposable income by income decile group and household type due to tax-benefit policy changes 2008-12: using a CPI-indexed base



Notes: The 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). Deciles are based on equivalised household disposable income in 2012 with 2008 policies, indexed and are constructed using the modified OECD equivalence scale to adjust incomes for household size. The charts are drawn to different scales, but the interval between gridlines on each of them is the same. Source: own calculations with EUROMOD version F6.0.

7. Concluding remarks

Our analysis of the household income based fiscal consolidation measures introduced through cuts in cash benefits, increases in income taxes and workers' social contributions and cuts in public sector pay in the nine countries considered has shown that:

- There is wide variation in the scale of the resulting aggregate reduction in household incomes: from under 2% in Italy and the UK to 9% in Latvia and nearly 12% in Greece.
- Different combinations of policy instruments and specific changes to those instruments were adopted, resulting in differences in the distributional profiles of income losses. The changes in six countries (Greece, Spain, Latvia, Italy, Romania and the UK), are progressive on the whole, i.e. richer income groups contributing more in relative terms. Lithuania and Portugal show an inverted U-shape pattern where middle income groups contribute less compared to low and high income groups. Estonia is the only country with a clearly regressive distribution of income cuts.
- Across countries the effects are rather similar for households containing children and older people as they are for the population as a whole. There are two main exceptions: households with children lose more right across the income distribution in Lithuania, while in Romania this is true for households with older people. There are also countries where it is low income households with children (Spain, UK) or with elderly people (Greece, Portugal) that are better protected while at higher income levels the reverse is the case.
- Even if the poor pay a lower proportion of their income than the rich, in some countries the scale of the reductions in income is large, even for the poor. This is particularly clear in Greece where the 10% of households with the lowest incomes lose on average 8% of their incomes from the policy changes and the figure is over 5% in Latvia and Portugal.
- Adding the approximate effect of the increases in VAT which have been introduced in all nine countries reduces any progressive effect. It is important to note that in some countries (Spain, Lithuania, Romania and the UK) the scale of the effects is of similar magnitude to that resulting from the measures affecting household incomes directly. This highlights the importance of including the effect of VAT increases.
- These results concerning the effects of the consolidation policies are generally not sensitive to the labour market conditions that are assumed to prevail in the period of their implementation.

We have also considered the effects of all the tax-benefit policy changes introduced in the period 2008-12 and found that, while generally reducing incomes, the scale of the effect is smaller and the distributional impact is similar or less progressive than the austerity changes in isolation. This is partly because of the public sector pay cuts, which are not included in this exercise and tend to bear more heavily on the middle and top of the income distribution. It is also partly because the "all changes" scenario also includes some reforms that pre-dated the austerity period in some of the countries (Italy in particular) or were part of some other policy agenda. Some of these reforms have the effect of increasing rather than cutting household incomes.

By contrasting the effect of two assumptions about how 2008 policies would have been indexed up to 2012 if there had been no reforms, we have illustrated the effects of failing to automatically keep tax thresholds and benefit levels synchronised with the

cost of living. The scale of the effect is influenced by the rate of inflation and the distributional consequences vary across countries not simply because of differences in tax benefit systems but also due to the location of those affected in the income distributions. In Latvia, Portugal and the UK existing indexation regimes do manage to keep pace. (In Latvia this is despite pensions being the only part of the system that is regularly indexed.) In the other countries they do not and in Lithuania, Spain and Romania “fiscal drag” has major distributional implications: in Spain having the effect of increasing the progressivity of policy changes over the period, in Romania reducing progressivity and in Lithuania increasing regressivity.

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

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.

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. Analysis of the changes in the UK announced up to 2015 (rather than 2012 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). A new Greek package has recently been agreed, to come into effect in 2013. In addition, as this paper was in its final stages (early December 2012), a further major reform to personal income tax was announced. This is to apply retrospectively and will affect 2012 incomes.²¹ Our simulations have not taken this into account.

That future changes might alter the relative position of the countries in an assessment of the distribution of the burden of fiscal consolidation is well illustrated by a comparison of the results from this study with those from the similar study carried out a year previously (Callan et al., 2011). The two analyses have five countries in common. For the UK the policies analysed are very similar and so is the distributional effect (progressive mainly because of tax increases right at the top of the distribution). For Greece there are many additional changes, the effect is larger and still progressive except right at the bottom of the distribution. For Spain the effect is progressive whereas in the 2011 analysis it was flat. In Estonia the effect is very different due to the expiry of some policies and the cumulative impact of the change in pension indexation: regressive rather than flat. In Portugal, the regressive picture in 2011 has been transformed to an inverse U-shape because of the addition of some progressive policies (public sector wage and pension cuts) to the earlier regressive package.

²¹ The changes are set to be substantial, based on a first draft of the new legislation. They include the introduction of four distinct tax schedules for employment income, self-employment income, farming income and income from rent, and the abolition of most tax credits and tax allowances.

It is clear from this that the effect of fiscal consolidation on household income is an evolving story. On the one hand it is the cumulative effects (such as modelled here) that matter for a cross country assessment but on the other hand the situation at any one point in time is also important, at that time. 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 (and the previous 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 fiscal consolidation reforms may benefit.

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Appendix 1: Household income-based fiscal consolidation measures in 2009-12

Estonia²²

The tax-benefit policy changes simulated in our analysis are the following (introduced, unless otherwise specified, in 2009):

Direct taxes and contributions

- The increase in employer and employee unemployment insurance contributions
- The increase in the minimum levels of pension and health insurance contributions

Benefits and tax credits

- Change in the indexation of public pensions which allows in the case of nominal wage decreases to apply lower indices in subsequent years than otherwise. We estimate that average pensions would have been 10.5% higher in nominal terms by 2012 without this policy change.
- The narrowing of eligibility conditions for income tax child allowance; reductions for deductible expenses (2009-10 and 2012)
- The abolition of child school allowance
- The narrowing of eligibility conditions for childcare allowance
- The increase in minimum levels of unemployment insurance benefit
- The increase in social assistance benefit (in 2011)

Indirect taxes (in Figure 5 only)

- Standard rate of VAT increased from 18% to 20% (in 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: donations and trade union membership fees (from 2010)
- Reduced rate of VAT increased from 5% to 9% (in 2010)
- Alcohol, tobacco and fuel excise increases (in 2009-10)

Temporary measures

- The suspension of credited contributions and employee contributions to the 2nd pension pillar (between June 2009 and December 2010)

²² For more information about policies and how they are simulated in EUROMOD for Estonia see Vörk and Paulus (2012).

Greece²³

The tax-benefit policy changes simulated in our analysis are the following (introduced, unless otherwise specified, in 2010):

- The structure of personal income tax was changed twice (2010 / 2011): nine / eight tax brackets, including a personal allowance of €12,000 / €9,000 for persons aged below 30 or above 65 with gross personal income below €9,000 and €5,000 per year for all others, and an increased top rate of 45% for annual incomes over €100,000.
- Introduction of 'Solidarity Contribution', a tax paid by individuals with net taxable incomes exceeding €12,000 per year, with rates varying from 1% to 4%.
- Introduction of 'Pensioners' Solidarity Contribution', i.e. a special tax on main pensions, with tax rates rising from 3% for pensions between €1,400 and €1,700 per month to 10% (14% since 2011) for pensions exceeding €3,500 per month.
- Introduction of 'Additional Pensioners' Solidarity Contributions' i.e. a tax applicable to pensioners below 60 with main pensions exceeding €1,700 per month, with rates rising from 6% to 10%.
- Introduction of 'Pensioners' Solidarity Contribution on Supplementary Pensions', i.e. a tax on supplementary pensions, with tax rates rising from 3% for pensions between €300 and €350 per month to 10% for pensions exceeding €650 per month. Since 2012 all supplementary pensions are subject to an additional tax, with tax rates rising from 10% for pensions up to €250 per month to 20% for pensions exceeding €300 per month.
- Since 1st November 2011 all pensioners below 55 with main old-age pensions exceeding €1,000 are subject to 40% taxation. The tax rate applies to the pension amount exceeding €1,000 after all solidarity contributions concerning main pensions have been deducted. Persons aged above 55 with main old-age pensions exceeding €1,200 are subject to 20% taxation. The tax rate applies to the pension amount exceeding €1,200 after all solidarity contributions concerning main pensions have been deducted.
- Since 1st January 2012 all main old-age pensions exceeding €1,300 are subject to 12% taxation. The tax rate applies to the pension amount exceeding €1,300 after the deduction of all solidarity contributions concerning main pensions. Pensions are not allowed to fall below €1,300.
- 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.
- Introduction of emergency property tax. Since 2011, all persons who own commercial or residential property in Greece are subject to this tax. Its amount, varying from €3 to €16 per square meter, depends on the size and the cadastral value of the building. A specific factor according to the age of the building is also applicable (property tax = tax rate * m² * age factor). A reduced rate of €0.50 per square meter applies to vulnerable population

²³ For more information about policies and how they are simulated in EUROMOD for Greece see Leventi et al. (2012).

categories (i.e. families with three or more children and yearly taxable family income below €30,000, persons with severe disabilities). Unemployed persons with taxable income below €12,000 per year are exempted from the tax.

- In 2011 employer and employee unemployment insurance contributions were increased (+0.5% each). Public sector employees SIC were increased by 2%. Self-employed SIC were also raised (€10 per month).

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).
- In March 2012 unemployment insurance benefit was reduced by 22% (i.e. to €360 per month).
- *Child tax allowance* was changed to €1,500, €3,000 and €11,500 per annum in 2010 / €2000, €4,000 and €7,000 per annum in 2011 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. *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.
- In 2011 all tax credits were 50% reduced. *Self-employed social insurance contributions tax allowance* became a tax credit at 10% of the relevant expenditure up to a maximum tax credit of €1,000 annually. *Mortgage interest tax allowance* was provided as a tax credit (irrespective of the year that the loan was taken) at a flat rate of 10% of interest repayments for mortgages of up to €200,000 and housing units of up to 120 square meters.

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 month²⁴.
- 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%.
- As there is no statutory/regular indexation in Greece, our counterfactual for actual changes in average public sector pay is to uprate payments to their 2009 levels.

²⁴ High-court judges excepted.

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

- 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%.

Other

- In February 2012 the minimum wage was cut by 22% for workers aged above 25 and 32% for workers aged below 25. This is only implicitly included in the simulations (i.e. in the change of the uprating factor concerning employment income in 2012).

Temporary measures

- A one-off tax at 1% of incomes over €100,000 earned in 2009 (retrospectively applied on 2010 incomes).
- A lump-sum benefit for low-paid pensioners provided in 2011.

Spain²⁵

The 2010-12 fiscal consolidation measures that are simulated include:

Direct taxes and contributions

- 2010: 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.
- 2010: application of means-test on €400 tax credit.
- 2011: two new 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).
- 2012: rate increase and additional bracket for capital taxation (from 19-21% to 21-27%).
- 2012: another additional tax bracket: rate of 54% for incomes above €300,000, rates increased progressively in all other brackets (by 0.75 percentage points for income below €17,707 to 6 percentage points for incomes over €175,000)

²⁵ For more information about policies and how they are simulated in EUROMOD for Spain see Adiego et al. (2011).

Benefits and tax credits

- 2011: Elimination of universal birth grant from January 2011.
- 2011: Pension freeze for 2011, except for minimum and non contributory pensions.
- 2011/2012: Freeze of Indicator for social benefits (IPREM). The income tests of child benefit and unemployment insurance and assistance benefits are based in this indicator.
- 2011: Reduction of child benefit for children aged 0 to 2 from €500 to €291.

Public sector pay

- 2010: progressive public sector workers cut up to 9.7% (5% on average), from July 2010;
- 2011: pay freeze
- 2012: elimination of 14th month pay

Our counterfactual for actual changes in average public sector pay is the wage growth in the private sector (excluding foreign owned firms) which was +7.1% between 2008 and 2012.

Indirect taxes (in Figure 5 only)

- 2010: standard rate of VAT increased from 16% to 18%, from July 2010
- 2012: standard rate of VAT increased from 18% to 21%, from September 2012

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

- 2010: reduced VAT rate also increased from 7% to 8%. Base rate was maintained at 4%, from July 2010
- 2010: change in access to prescriptions
- 2010: elimination of partial retirement
- 2010: cuts in care benefits
- 2010-2012: some regional governments have eliminated or reformed (scaled-down) their benefits and tax credits.
- 2012: increase property tax (IBI) by 10% on non residential property

Italy²⁶

The following tax-benefit policy changes in 2011-12 are covered in our analysis:

Direct taxes and contributions

- Increase in employer and employee insurance contributions (+1ppt) for temporary workers

²⁶ For more information about policies and how they are simulated in EUROMOD for Italy see Ceriani et al. (2012).

- Increase in self-employed insurance contributions (+1.3ppt)
- Increase in regional personal income tax (+0.3ppt)
- Solidarity contribution: additional 3% tax on pension incomes and public sector wages above a given threshold. Deductible from Personal Income tax.
- Introduction of property tax on main residence (0.4% of increased cadastral value, with tax credits related to the presence of children in the household) and on other buildings (0.76% of increased cadastral value. Exclusion from personal income tax base of cadastral income related to buildings different from main residence.
- Increase of tax on dividends and bonds (other than government bonds), from 12.5% to 20%. Decrease of tax on deposits from 27% to 20%.

Benefits and tax credits

- Public pensions between 90,000 and 150,000 euro per year cut by 5%, 10% between 150,000 and 200,000 euro per year, 15% above 200,000 euro per year
- Freezing of public pensions above 1,405 euro per month

Public sector pay

- Public sector wages between 90,000 and 150,000 euro per year cut by 5%, 10% above 150,000 euro per year
- Freezing of public sector wages. Before 2011 the growth in average public sector wages was quite similar to wages in private sector. Our counterfactual for actual changes in average public sector pay is the wage growth in the private sector which was +2% between 2011 and 2012.

Indirect taxes (in Figure 5 only)

- Increase in standard VAT rate from 20% to 21%
- Increase in excise duties on fuel and tobacco

In addition there are the following changes that have taken place in the period 2011-2012 but have not been simulated in the present exercise because of data limitations:

- Changes in the public pension systems from 2012 on (i.e. increase in the required pensions' contribution years; abolition of pensions based exclusively on age requirements).
- National government surcharge on the regional vehicle property taxation
- Tax on harbor's boat park
- National Government tax on private aeromobiles.
- Stamp duty on bank accounts

Lithuania²⁷

The following tax-benefit policy changes in 2009-12 are considered to be fiscal consolidation measures and are covered in our analysis:

Direct taxes and contributions

- Changes in social insurance contribution rates and base for self-employed and those receiving income from sports, performing and copyright agreements.

Benefits and tax credits

- Means test introduced for child benefit since 1st March 2009 and further extended since 2010.
- Reduction of ceilings for unemployment social insurance benefit (at LTL650) since 2010.
- Reduction of ceilings for maternity and paternity social insurance benefit and extension of required insurance record.
- Reduction of ceilings, compensation rate and duration of payment of maternity/paternity social insurance benefit and extension of required insurance record between 2009-2012.
- Introduction of equivalence scales for estimating amounts of social assistance benefits since 2012.

Public sector pay

- Cuts on basic wage rates, coefficients and bonuses mostly since the second part of 2009 onwards. Changes in major segments of the public sector were modelled based on average wages reported by Statistics Lithuania between 2008 and the first quarter of 2012 (decrease of about 10.2% in sphere of public administration, defence and social security; increase of 1.9% in education sector and 0.6% in health care sector). In the counterfactual scenario public sector wages were kept constant at 2008 levels.

7.1 Indirect taxes (in Figure 5 only)

- Since the 1st January, 2009 the standard VAT rate increased from 18% to 19%, and from 1st September 2009 to 21%.

The following tax-benefit policy changes in 2009-12 are considered NOT to be fiscal consolidation measures and are only covered in our analysis in section 6.

Direct taxes and contributions

- Reform of PIT and health insurance contributions: since 1st January 2009 reduced income tax rate was abolished (15% in 2008) and the main tax rate (24% in 2008) reduced down to 15% (20% tax rate applies only for income from distributed profit). Basic allowance and allowances for children were increased, although are now progressively reduced with income (income category was extended to include all taxable income). Simultaneously

²⁷ For more information about policies and how they are simulated in EUROMOD for Lithuania see Lazutka et al. (2012).

compulsory health insurance contributions were universalized and set at 9% rate of the taxable income, gross wage or the monthly minimum wage corresponding to the group the insured person belongs to. As a result of the reform the tariffs of PIT and distribution of insurance contributions between employer/employee has changed, although the total tariff of PIT and contributions for the employed remained unchanged. The reform contributed to fiscal consolidation, although is not considered a fiscal consolidation measure but a strategic reform due to timing when it was planned and implemented.

Benefits and tax credits

- Retirement age increase: since 2012 till 2026 is set to reach 65 for both men and women (was 60 for women and 62.5 for men). The measure is considered a long-term demographic measure.

In addition there are the following changes that have taken place in the period 2009-2012 but have not been simulated in the present exercise because of data or other limitations:

- Reduction in replacement rate and increased waiting period for sickness social insurance benefit in 2009.
- Work incentives in the social assistance benefit (reduction of social assistance benefit for persons able to work but not working, extra payments to former long-term unemployed) introduced in 2012.
- Social experiment introduced in 5 municipalities where the function of provision of social assistance was transferred to municipalities' discretion.
- Changes in VAT rates for some types of goods/services (e.g. hotels and special accommodation services).
- Introduction of property tax of 1% on immovable property worth more than 1 mln. LTL (since 1st January 2012).
- Reduction of the part of paid social insurance contributions for pensions transferred to the private pension funds: reduced from 5.5% to 3% since 1st January 2009, to 2% since 1st July 2009 and to 1.5% since 1st January 2012 (has no immediate impact on disposable income).

Reversed measures

- Progressive structural cuts on old-age pensions, early old age pensions, state pensions and compensations, state assistance pensions, disability (work incapacity/invalidity) pensions, orphan (orphan/survivor) pensions since 2010. Since 1st January 2012 social insurance pensions (old age, disability and orphan) were restored to the 2009 levels

Latvia²⁸

The following tax-benefit policy changes in 2009-12 are covered in our analysis:

²⁸ For more information about policies and how they are simulated in EUROMOD for Latvia see Rastrigina et al. (2012).

Direct taxes and contributions

- Removal of income ceiling for obligatory social insurance contributions (2009)
- Increase in employee and self-employed social insurance contributions (2011)
- Reduction of tax exemptions (July 1, 2009)
- Increase in the personal income tax for self-employment income (2010)
- Introduction of income tax on dividends (2010)

Benefits and tax credits

- Pension freeze (2009)
- Cut in state family benefit and narrowing eligibility conditions for it (2010)
- Cut in child birth benefit (2010)
- Introduction of ceiling on contributory benefits: unemployment benefit (2010), maternity, paternity, and parental benefits (November 3, 2010)
- Cut in maternity benefit (November 3, 2010)
- Reduction of parental benefit by limiting eligibility to non-working parents only (May 3, 2010);

Public sector pay

- Average wage in the public sector decreased by 10.5% over 2008-2012. (Note that in 2008-2010 the public sector wages dropped by 16.7% and resumed slow nominal growth after 2010). In the counterfactual scenario public wages are kept frozen at the level of 2008.

Indirect taxes (in Figure 5 only)

- Increase in the standard VAT rate from 18% to 21% in 2009, and to 22% in 2011 (reduced back to 21% since July 1, 2012).

In addition there are the following changes that have taken place in the period 2009-2012 but have not been simulated in the present exercise because of data limitations:

- Extension of the property tax to residential houses (2010)
- Introduction of ceiling on sickness benefit (2010)
- Increase in the reduced VAT rate from 5% to 10% in 2009, and to 12% in 2011.

Temporary measures

- Increase in the standard personal income tax (2010, but reversed in 2011)

Portugal²⁹

The 2009-12 fiscal consolidation measures that are simulated include:

Direct taxes and contributions

- 2010: increasing tax rates by 1 and 1.5 percentage points depending on income level.
- 2011: new bracket for incomes above € 153,300 per year, increasing the highest tax rate from 42% to 46.5%.
- 2011: replace 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.
- 2011: reduce the pension tax allowance.
- 2012: brackets are not increased along with inflation
- 2012: increase tax rate on capital income
- 2012: change social insurance contributions of self-employed workers

Benefits and tax credits

- 2010-2012: freeze the nominal 2009 value of the social benefit index (SBI) which is the base for most social benefits.
- 2011: freeze the nominal value of benefits not linked to the SBI (including pensions).
- 2011: reduce the amount and tighten the eligibility conditions to family benefit.
- 2011: freeze the nominal value of the basic amount and reduce the generosity of the implicit equivalence scale of social assistance benefit.
- 2012: suspend 13th and 14th pension pay
- 2012: freeze pensions, except for low pensions
- 2012: reduce unemployment benefit amount and duration but also reduces minimum contribution period.

Public sector pay

- 2011: progressive pay cut of up to 10%.
- 2012: eliminate 13th and 14th pay

Our counterfactual for actual changes in average public sector pay is the wage growth in the private sector (excluding foreign owned firms) which was +1% between 2008 and 2012.

Indirect taxes (in Figure 5 only)

- 2011: the standard rate of VAT was raised from 20% to 23%.

²⁹ For more information about policies and how they are simulated in EUROMOD for Portugal see Farinha Rodrigues and Junqueira (2011).

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

- 2011: the reduced VAT rate was increased to 13% and the base rate to 6% (before the fiscal consolidation measures these were 12% and 5%, respectively).
- 2012: lay off of at least 2% of public sector workers

Romania³⁰

The following 2010-12 fiscal consolidation measures are covered in our analysis:

Benefits and tax credits

- Public pensions were frozen at the 2010 level (except for the minimum pension); practically no indexation was applied since then.
- The child raising allowance has been subject to changes both in amount and duration. Its amount has been reduced from 0.85% to 0.75% of previous income. The lower threshold has remained the same, but the upper ceiling has been subject to changes in policy rules. Thus, the parent has the option of choosing to take up the benefit for 1 or 2 years and the upper threshold is set accordingly, higher for 1 year and much lower for 2 years. The upper ceiling decreased from 4000 RON per month to 3400 RON per month if opting to receive the benefit for 1 year and 1200 RON per month if opting to receive it for 2 years.
- The allowance and the outfit for the new born children were abolished in mid-2010.
- The unemployment benefit has been decreased by 15%.

Public sector pay

- Public sector wages were cut by 25%, beginning from 1 July 2010. Cuts were partially reversed on 1 Jan. 2011, when 15% was restored. For the counterfactual, no indexation of public wages was assumed.

Indirect taxes (in Figure 5 only)

- From July 2010, the standard VAT rate has been increased from 19% to 24%.

In addition there are the following changes that have taken place in the period 2010-2012 but have not been simulated in the present exercise because of data limitations:

- The abolition of the financial aid for family set up and the abolition of some facilities granted to pensioners (transportation, etc.)
- The abolition of tax exemption for food, gift, holiday, social and childcare vouchers offered by companies to their employees.
- The reduction of deductible expenses for income from intellectual property rights.

³⁰ For more information about policies and how they are simulated in EUROMOD for Romania see Stroe et al. (2012).

- The abolition of tax exemptions for income from interests.

United Kingdom³¹

The 2009-12 fiscal consolidation tax-benefit measures that are simulated include:

Direct taxes and contributions

- 2010: Abatement of the personal allowance by £1 in every £2 of taxable income over £100,000 per year.
- 2011: An increase in all employees' and employers' contribution rates of one percentage point.
- 2011: The introduction of a 50% tax band on incomes over £150,000 per year.
- 2011: Freezing of Council Tax (local taxation), intended to mitigate the effects of the fiscal consolidation measures.
- 2012: Freezing of the income tax higher rate threshold
- 2012: Indexation of some thresholds by CPI instead of RPI (CPI tends to be lower although it makes little difference in 2012). This is a permanent change.

Benefits and tax credits

- 2011: Freezing of Child Benefit rates.
- 2011: Working Tax Credit (WTC)/CTC first threshold frozen and second threshold reduced in nominal terms.
- 2011: Increase in the withdrawal rate of WTC/CTC from 39% to 41%.
- 2011 onwards: Removal of the baby element of the CTC.
- 2011: Freezing of the 30-hours addition in WTC; 30-hours disregard in Housing Benefit (HB) and Council Tax benefit (CTB) also frozen in 2011 and 2012.
- 2011: Freezing of the basic amount of WTC/CTC.
- 2011 onwards: Childcare addition to WTC reduced from 80% of costs to 70%.
- 2011: Increases in real terms to the child element of the Child Tax Credit² (intended to mitigate some of the cuts in support for children, for low income families)
- 2011: Freezing of savings credit maximum payments within Pension Credit.
- 2011 onwards: Deductions from benefit (Income Support, HB and CTB) for non-dependents uprated by the CPI (previously frozen in nominal terms)
- 2011 onwards: Non-continuation of the Winter Fuel Allowance additions introduced by the previous government.
- 2012: Freezing of Child Benefit rates.

³¹ For more information about policies and how they are simulated in EUROMOD for the UK see Sutherland et al. (2012).

- 2012: Freezing of the basic amount of WTC/CTC.
- 2012: Freezing of the couple and lone parent elements of WTC.
- 2012 onwards: An increase in the work requirement for WTC from 16 to 24 hours per week for couples with children.
- 2012 onwards: The family element of CTC withdrawn immediately after the child element
- 2012: Freezing of savings credit maximum payments within Pension Credit.
- 2012 onwards: Housing benefit reform: Local Housing Allowance (LHA – HB for private tenants) rates are 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 is removed. LHA is limited to single-room levels for single people aged 25-35. Housing benefit for those in social housing is reduced for those of working age living in housing that is under-occupied.
- 2012 onwards: Most benefits and tax credits (and public sector pensions) indexed by CPI instead of using the RPI/Rossi indexes. In general this will tend to mean lower indexation although in 2012 it makes little difference.

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 a fiscal consolidation measure.

In addition there are the following changes that have taken place in the period 2009-2012 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 £2,500 (rather than £25,000) now reduce tax credit payments and falls in income of up to £2,500 do not increase tax credit payments. Also, claimants will have to inform HMRC about changes in their circumstances more quickly and backdating for new claims and changes of circumstances reduced from 3 months to 1 month.
- Abolition of time-limited 50+ element of Working Tax Credit
- Lone parents with youngest child 5+ moved on to conditional benefits (JSA/ESA) not IS
- Time-limiting of contributory Employment and Support Allowance to one year for those in Work-Related Activity Group.

This list excludes some changes introduced in the period 2009-12 that are judged to be not fiscal consolidation 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 fiscal consolidation measures. They are included in the exercise reported in section 6.

- 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). There was a further increase by £630 with similar adjustments to the other thresholds in 2012.
- 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).
- From 2010 onwards Child Benefit payments are disregarded in the assessment of CTC/WTC.
- From 2012: Increasing Basic State Pension by highest of average earnings growth, CPI inflation and 2.5%
- Reduction of contracted-out National Insurance rebates in 2012, which is part of an adjustment process overseen by the Government Actuary.
- From 2012 those on Carer's Allowance need work no more than 16 hrs to claim WTC.
- From 2012 Pension Credit: increase standard minimum income guarantee and raise Savings Credit threshold, with adjustment to maximum Savings Credit payment.