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Estimating the distributional
impact of the Greek crisis
(2009-2014)

**Chrysa Leventi,
Manos Matsaganis**

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ESTIMATING THE DISTRIBUTIONAL IMPACT OF THE GREEK CRISIS (2009-2014)

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by **Chrysa Leventi and Manos Matsaganis**

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ABSTRACT/RÉSUMÉ

Estimating the distributional impact of the Greek crisis (2009-2014)

Estimating the impact of the crisis on income distribution requires up-to-date information. Due to the complexity of income surveys such as EU-SILC, income data usually become available with considerable delay. In this context, micro-simulation models are an appropriate and widely used alternative to bridge the gap in official data, allowing for an early evaluation of the distributional impact of changes in tax-benefit policies and in the wider economy. This paper analyses the effects of the Greek crisis on inequality and poverty in 2009-2014 using the micro-simulation model EUROMOD. Specifically, the paper updates earlier OECD estimates of distributional effects of the crisis in 2009-2012, and provides new estimates for 2013-2014, a period for which survey data are not yet publicly available. The results indicate that inequality, as measured by most indicators, rose in 2010-2013 as the recession deepened and unemployment rose, and fell back in 2014 as the economy stabilised. Relative poverty seems to have increased in 2012, after remaining broadly unchanged in the previous two years; in 2013 it appears to have stabilised, while in 2014 it fell back to only slightly above its level in 2010 (13.8% vs. 13.2% respectively). This pattern is more pronounced when poverty is measured against an “anchored” benchmark: the proportion of population whose income fell below a poverty line anchored in pre-crisis terms increased steadily and steeply, until 2014 when it finally stabilised at 27.4% (from 13.2% in 2010). Not all population groups were affected evenly by recent developments: the rise of poverty in 2010-2013 especially affected the unemployed, the self-employed, the young, the middle-aged, families living in Athens, families paying rent or mortgage rather than outright owning their dwelling; on the contrary, relative poverty actually fell among groups traditionally seen as ‘poor’, such as farmers and the elderly – although in the latter case the relative improvement in terms of income may have been offset by difficulties in access to health care. The paper also assesses first-round effects of austerity policies on the income distribution *given changes in the wider economy*, i.e. abstracting from second-round effects associated with the deflationary impact of austerity on output. In this sense, early austerity policies *per se* appear to have had a small positive distributional impact, partly offsetting the increases in inequality and poverty due to the recession. As fiscal consolidation intensified in 2012, tax and benefit policies appear to have exacerbated the adverse distributional effects of the recession, causing poverty and inequality to rise further. From 2013, austerity policies seem to have had a more equalizing effect, especially at the bottom of the distribution and in terms of its distance from the top.

This working paper relates to the 2016 OECD Economic Survey of Greece (www.oecd.org/eeco/surveys/economic-survey-greece.htm).

JEL Classification: D31; D63; E62; H22; I32; I38.

Keywords: Greece; labour market; inequality; poverty; distributional impact; taxation

Estimer les effets de la crise grecque sur la distribution des revenus (2009-2014)

La présente étude s’appuie sur des modèles de microsimulation afin d’actualiser les estimations réalisées par l’OCDE quant aux effets de la crise sur les inégalités et la pauvreté en Grèce en 2009-2012, et en produire de nouvelles pour 2013-2014. À l’aune de la plupart des indicateurs utilisés pour les mesurer, les inégalités se sont creusées en 2010-2013 parallèlement à l’aggravation de la récession et à la montée du chômage, pour reculer ensuite en 2014 à la faveur de la stabilisation de l’économie. Le taux de pauvreté relative semble avoir augmenté en 2012, après être resté globalement inchangé au cours des deux années précédentes. Il s’est ensuite stabilisé en 2013 pour retomber, en 2014, en deçà du niveau de 2012. Cette tendance est encore plus marquée lorsque la pauvreté est mesurée par rapport à un seuil « ancré ». Toutes les populations n’ont pas été touchées dans les mêmes proportions par l’aggravation de la pauvreté relative : la montée de la pauvreté en 2010-2013 a particulièrement touché les chômeurs, les travailleurs indépendants, les jeunes, les personnes d’âge moyen, les ménages résidant à Athènes, et les ménages qui paient un loyer ou remboursent un prêt immobilier. À l’inverse, la pauvreté relative a en fait reculé parmi les populations traditionnellement considérées comme « pauvres », comme les exploitants agricoles et les personnes âgées – même si, pour ces dernières, l’amélioration relative des revenus pourrait avoir été compensée par des difficultés d’accès aux services de santé. Il semble que les politiques d’austérité en elles-mêmes (hors effets de l’assainissement budgétaire sur la production) ont eu un modeste impact sur les inégalités et la pauvreté relative dans un premier temps, atténuant en partie les effets de la récession. Avec l’intensification de l’effort d’assainissement des finances publiques en 2012, les politiques fiscales et sociales semblent avoir favorisé une hausse de la pauvreté et des inégalités. Depuis 2013, les mesures d’austérité semblent avoir contribué à réduire les inégalités, surtout au bas de l’échelle de distribution des revenus et en termes d’écart entre le bas et le haut de la distribution. La part de la population dont le revenu est tombé sous le seuil de la pauvreté ancrée avant la crise a augmenté avec chaque cycle de mesures d’austérité, et la hausse régulière du chômage n’a fait qu’amplifier le mouvement, jusqu’en 2014 lorsqu’elle a fini par se stabiliser.

Ce Document de travail se rapporte à l’Étude économique de l’OCDE de la Grèce 2016 (www.oecd.org/fr/eeco/etudes/etude-economique-grece.htm).

Classification JEL : D31; D63; E62; H22; I32; I38.

Mots clés : Grèce; marché du travail; inégalité; la pauvreté; impact distributif; imposition

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Estimating the distributional impact of the Greek crisis (2009-2014)

By Chrysa Leventi and Manos Matsaganis¹

This paper updates earlier OECD estimates of the effects of the crisis on inequality and poverty in Greece in 2009-2012 (Koutsogeorgopoulou et al., 2014), and provides new estimates for 2013-2014. As the paper uses a more recent wave of the European Union Statistics on Income and Living Conditions (EU-SILC)², from the year 2010 (reporting on 2009 incomes), the results shown here do not exactly replicate those of the earlier study for 2009-2012. Specifically, starting points are somewhat different, although trends over time are very similar.

The distributional effects of the crisis discussed here are derived using EUROMOD, the European Union tax-benefit microsimulation model. The model combines information from income surveys with the rules of the tax and benefit system to simulate tax liabilities and benefit entitlements of households. Its basic output is the micro-level change in household income due to policy changes (Sutherland, 2001). EUROMOD has been used for numerous applications, at a country or, EU-level, including the examination of the redistributive effects of tax-benefit policies, specific aspects of tax design (for example, housing taxation across Europe) and work incentives and labour supply, providing thereby a valuable tool for policy analysis (Sutherland and Figari, 2013). The use of the micro-simulation technique has important advantages, but also limitations (Box 1).

¹ Chrysa Leventi is Senior Research Officer at the Institute for Social and Economic Research, University of Essex, and Research Associate of the Policy Analysis Research Unit, Athens University of Economics and Business. Manos Matsaganis is Associate Professor at Department of Architecture and Urban Studies, Politecnico di Milano, and Co-ordinator of the Policy Analysis Research Unit, Athens University of Economics and Business. The authors would like to thank Herwig Immervoll (Senior Social Policy Economist, OECD directorate for Education, Learning and Skills) and Piritta Sorsa (Head of Division, OECD Economics department) for valuable comments on earlier drafts. Anthony Bolton provided administrative assistance.

2. At the time of writing, SILC 2012 (2011 income data) was also available for use in the Greek version of EUROMOD. Nevertheless, it was rejected in favour of SILC 2010 (2009 income data) on the grounds that the latter is the only dataset that can cover the whole period in question (i.e. 2009-2014), whereas using SILC 2012 would limit the scope of analysis to 2011-2014 alone. Moreover, the labour market adjustments required so that SILC 2012 reflects changes in the labour market in 2012-2014 were still being tested by EUROMOD developers in ISER Essex, which makes using SILC 2010 (where labour market adjustments have been thoroughly checked) a better and safer option.

Box 1. Advantages and drawbacks of micro-simulation models

Estimating the impact of the crisis on income distribution requires up-to-date information. Due to the complexity of income surveys, income data become available with considerable delay. For instance, survey data on incomes earned in 2014 will be released only in 2017. In this context, micro-simulation models are an appropriate, and widely used, alternative to bridge the gap in official data, allowing for an early evaluation of the distributional impact of the Greek crisis in 2009-2014.

In addition to providing timely information, micro-simulation allows to distinguish changes in the income distribution, to attribute them to specific market developments (such as the rise in unemployment), and to identify the impact of key government policies (such as changes in personal income tax or cuts in pensions), taking into account the complex ways in which taxes interact with benefits, and with market incomes.

There are, however, some methodological limitations in micro-simulation techniques that need to be taken into account when reading the results:

- First, under standard practice, micro-simulation provides estimates of first-order distributional effects of policy changes, ignoring second-order behavioural responses (e.g. linked to consumption or labour supply). If such behavioural responses are significant, this will affect estimates of distributional effects. Furthermore, broader interactions between fiscal consolidation and output (e.g. causing reductions in labour demand) are also being left out (see Box 2).
- Secondly, in the absence of up-to-date income data, a “synthetic” income distribution has to be created taking into account tax and benefit rules and labour market changes over the period of consideration (see below). Given that the synthetic distribution simplifies income dynamics, results may under- or over-estimate actual changes.

Data and estimation procedure

The information base of EUROMOD comprises the tax-benefit rules and a representative set of micro-data. The Greek micro-data underlying the current analysis are drawn from the 2010 cross-sectional European (UDB) and the national (PDB) versions of EU-SILC. The database provides multidimensional information on income distribution and social inclusion. Using the PDB version allows one to exploit more detailed information collected in the national questionnaire.

Since official income data are published only with a lag, a synthetic income distribution was created to analyse the distributional impact of crisis based on the following steps: *i*) simulating 2009-2014 tax and benefit policies in order to be able to calculate their (direct) effect on household incomes; *ii*) uprating the dataset’s underlying incomes, from EU-SILC’s income reference period (2009) to the latest policy year (2014); and *iii*) accounting for the rise in long-term and short-term unemployment³. The first two steps – *i.e.* simulating current policies on updated incomes – are part of the standard functionality of EUROMOD (and they are discussed here together). In view of the sharp rise in unemployment since the onset of the crisis, however, the current analysis also takes into account changes in the labour market characteristics of the population covered by the survey, thereby going beyond the standard practice in micro-simulation. In addition, estimates take into account tax evasion, which is important in the Greek context, improving the accuracy of the results. More information on creating the synthetic income distribution for Greece in 2009-2014 is provided below.

3. Changes in inactivity (non-participation in the labour force) are ignored here. Labour Force Survey data show that in the five years between 2009q2 and 2014q2 the inactivity rate rose from 35.0% to 39.8%. Over the same period, the unemployment rate went from 7.2% to 26.6% (total population aged 15+).

Updating incomes and simulating policies

The calculation of the disposable household income (for each household in the sample) in EUROMOD is made up by two elements: income that is simulated by the model and income taken from the survey data (for example, earnings) (Jara and Leventi, 2014). This involves simulating tax-benefit policies and updating the non-simulated income sources beyond the income data reference period (that is, beyond 2009) using factors based on available statistics.

With respect to the first step in the present analysis the Greek tax-benefit system was simulated for every single year from 2009 to 2014. All consolidation policies (described in the Annex A.1) were simulated directly by EUROMOD apart from changes in indirect taxes as the EU-SILC database does not provide information on consumption. On the other hand, the analysis does not take into account changes in the provision of social benefits in kind (publicly-funded health care, elderly care, education, childcare, and so on). While commendable progress has been made towards incorporating non-monetary components into EUROMOD, the relevant module is not available yet (see Paulus et al, 2010).

Regarding the updating of non-simulated income sources:

- Original incomes were updated on the basis of the Bank of Greece estimates (2015 and previous) of average rates of earnings growth of employees by category in 2009–2014 (Table A2.1). Incomes from self-employment were assumed to move in line with average incomes in the entire economy given the lack of reliable data on the earnings growth for this group. In the case of farmers, earnings were updated on the basis of data on gross value added by industry (EIStat, 2015). Finally, assets and expenditure have been updated on the basis of the most reliable information available (Table A2.2).
- Social benefits that are not simulated in EUROMOD, either because they are beyond the scope of the model or due to the lack of the necessary information, were updated on the basis of actual changes in rates or evolution of average payments (Table A2.3).

Accounting for the rise in unemployment

There are two main methods for accounting for changes in employment status. The first is a static approach. It involves a re-weighting of the EU-SILC sample by increasing the weights of households containing unemployed workers at the time of the survey, while reducing the weights of other households to hold constant the composition of the dataset (Immervoll et al., 2006). The second method introduces an element of dynamic change in micro-simulation by explicitly modelling labour market transitions at individual level. Specifically, this paper models transitions from employment to short-term unemployment, and from short-term to long-term unemployment (or vice versa).

A drawback of the re-weighting method is that it implicitly assumes that the characteristics of those losing their job at the onset of the crisis are similar to those already unemployed at the time of the survey, which can be quite misleading in the case of Greece (Leventi and Matsaganis, 2013). There has been, for example, a large increase in the unemployment rate of prime-age since 2010 – a traditionally protected group of workers.

The current analysis builds on the second approach. Drawing on the work of Rastrigina et al. (2015) the rise in unemployment was accounted for by modifying the employment status of a certain number of observations in the EUROMOD input data. This ‘nowcasting’ approach can be briefly summarised as follows. Observations are selected on the basis of conditional probabilities of being employed. A logit model is used for estimating a ‘risk score’ for working age (16-64) individuals in the EUROMOD input

data. The model is estimated separately for individuals with higher and lower levels of education, to allow for structural differences in the labour market situation of the two groups. The weighted total number of observations that are selected to go through transitions based on their probabilities corresponds to the relative net change in employment levels by age group, gender and education (a total of 18 categories) as shown in the macro level Labour Force Survey (LFS) statistics. Changes from short-term to long-term unemployment are also modelled based on a similar selection procedure as the one described above.

Table A2.4 shows the effect of adjustments on employment rates. The small difference in the initial (i.e. 2009) employment rates in EUROMOD (i.e. in SILC-based input data) relative to LFS data is mainly due to differences in the structure of the underlying working-age populations (as projected from the different samples of the two surveys), and also to differences in the way labour market status is measured in the two surveys. Hence, the aim of this adjustment is not to match the EUROMOD and LFS employment patterns in absolute terms but to account for *relative* changes in employment levels. Labour market characteristics and sources of income are re-calculated for those observations that are subject to transitions. In particular, employment and self-employment income is set to zero for individuals moving from employment into unemployment⁴; for individuals moving from unemployment into employment, earnings are set equal to the mean of those already employed within the same category (as defined by age, gender and education)⁵.

Accounting for tax evasion and benefit non take-up

Tax evasion adjustment was made on the basis of available estimates of income under-reporting by income source. In particular, based on Leventi et al. (2013), the rates applied were set to 5% for salaries and wages, 35% for self-employment earnings and 80% for farming incomes. On the assumption that net incomes reported in SILC reflect true incomes, that is, individuals reveal their real total net income to survey interviewers, the individuals' real gross income (which includes the part of income which is not reported to the tax authorities) have been calculated as follows:

$$G_i = N_i + T((1-r_i) * G_i)$$

where:

i = employment income, self-employment income, farming income;

N_i denotes individuals' real net income;

G_i denotes individuals' real gross income

r_i is the rate of income under-reporting; and

$T(G_i, r_i)$ the personal income tax function in the presence of tax evasion.

4. As explained earlier, the paper separately models changes from employment to short-term unemployment, and from short-term to long-term unemployment. This transition is critical due to its implications for eligibility for, and receipt of, unemployment benefits. In 2014, the coverage rate for contributory unemployment insurance benefit (max. duration: 12 months), though low (37%), was significantly higher than the coverage rate for non-contributory unemployment assistance benefit, catering for the long-term unemployed (4%).

5. Since most workers making the transition from unemployment to employment are likely to earn less than they did before they lost their job, the method applied here may understate the true extent of earnings dispersion (and income inequality). However, since such transitions were relatively rare in Greece in 2009-2014 (unlike those in the opposite direction, i.e. from employment to unemployment), the resulting bias is probably small.

By solving this recursive problem iteratively and for each income source separately, one can obtain the values of real gross income, G_i , with the rates of under-reporting used to separate the reported from the unreported part of gross income. EUROMOD treats the former as subject to income tax and social insurance contributions (and as used in resource assessment for means-tested benefits), while it adds the latter to individuals' disposable income.

As for the correction of benefit non take-up, this was carried out for three income-tested benefits: social pension, aimed for people aged over 65 with insufficient contributions for a social insurance pension; unemployment assistance, a non-contributory programme targeted at long-term unemployed workers in low-income families (Leventi and Matsaganis, 2013); and social dividend, an means-tested benefit paid as a lump sum to poor households in 2014.

Distributional indicators

The main distributional (income and poverty) measures used in the analysis are:

- *Income inequality*
 - *Gini coefficient*. Measures the extent to which income distribution among individuals or households deviates from a perfectly equal distribution (OECD, 2013). The Gini index is probably the most popular summary statistic of inequality as it is widely available due to its easy computation and comparability across countries and over time. A zero coefficient characterises perfect equality, whereas a coefficient of one represents perfect inequality, that is, all income is held by one individual or household. At the same time, the Gini has well documented drawbacks: two very different distributions, and thus different inequality patterns, may yield the same Gini coefficient (see, for example, Bellù and Liberati, 2006); and the Gini is more sensitive to changes in the middle of the income distribution, rather than the extremes which are of more interest from a social welfare perspective (see, for example, Atkinson, 1970).
 - *The inter-decile share ratio S90/S10*. It is the ratio of the equivalised disposable income of the 10% richest of the population to the poorest 10%.
 - *The inter-quintile share ratio S80/S20*. It is the ratio of the average equivalised disposable income of the 20% richest of the population to the poorest 20%. The last two measures focus on the tails of the income distribution.
- *Poverty indicators*. Poverty measures are based on income thresholds (poverty lines) determined in absolute or relative terms. To facilitate and guarantee cross-country consistency, the OECD uses relative and “anchored” poverty lines based on observed equivalised household median disposable income:
 - *Relative poverty*. The share of people living in households below a relative threshold of income, often under 50% of median disposable income. Disposable income is “equivalised” by dividing it by the square root of household size to adjust for economies of scale in household spending.
 - *“Anchored” poverty*. The poverty line is fixed at 50% of median equivalised household disposable income in a base year (2005, in this chapter) adjusted for inflation. This has some characteristics of an absolute measure, although it is sensitive to the choice of the base year.

Micro-simulation results for inequality and poverty

The micro-simulation results indicate that inequality, as measured by most indicators, rose in 2010-2013 as the recession deepened and unemployment rose, and fell back in 2014 as the economy stabilised (Table 1). The various indicators suggest that changes were more significant at the two ends (especially the lower end) of the income distribution, than around the middle.

Analysis of the changes in relative income share by decile provides further support to this finding (Figure 1). The poorest 10% of population lost 1.1 percentage point of their share in total household disposable income between 2009 and 2013, followed by the second decile (0.2 percentage point), while the top decile gained close to 0.7 percentage point (and deciles 8 and 9 around 0.3 percentage points). All remaining deciles saw their relative position change little (up to ± 0.6 or less).⁶

Table 1. Estimated inequality and poverty indices over the period 2009-14¹

	2009	2010	2011	2012	2013	2014
Income inequality						
Gini index	0.326	0.332	0.336	0.346	0.349	0.342
S80/S20 income decile ratio	5.4	5.7	5.9	6.7	6.8	6.5
S90/S10 income decile ratio	8.9	9.8	11.1	14.1	15.3	14.3
Relative poverty ²	12.4	13.2	13.1	14.7	14.8	13.8
"Anchored"poverty ³	8.6	13.2	18.5	24.5	29.3	27.4

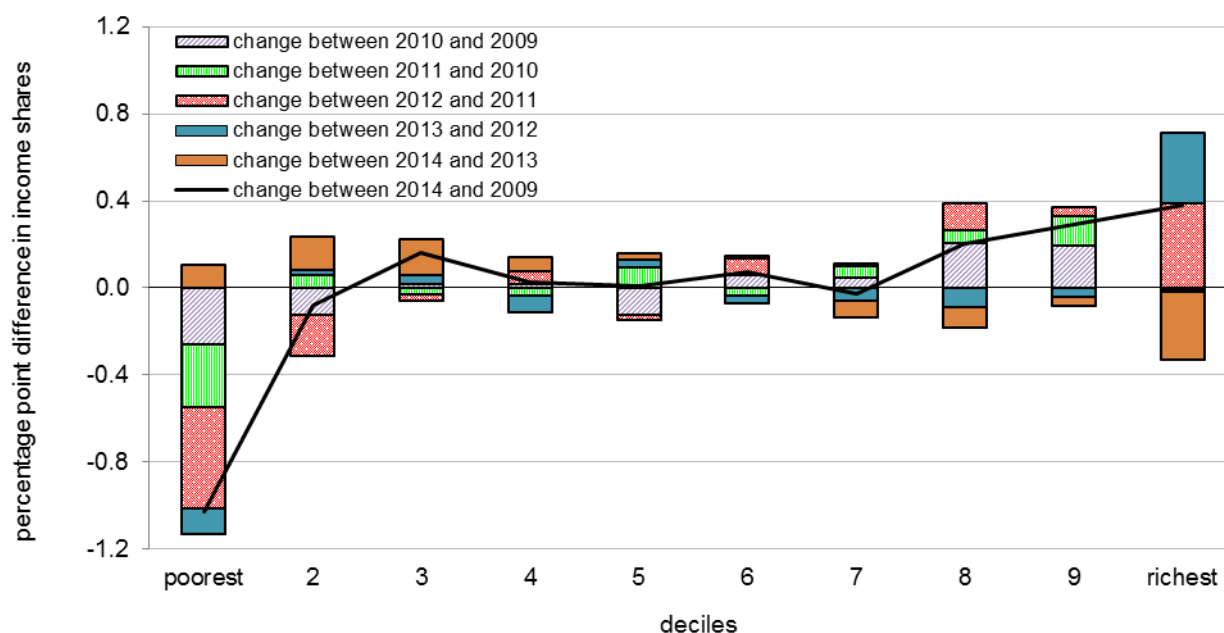
1. Based on micro-simulation analysis.
2. The poverty line is 50% of median equivalised disposable income in each year.
3. The poverty line is fixed at 50% of median equivalised household disposable income in 2005.

Source: EUROMOD estimates.

In 2014, the trend towards greater income dispersion was partly reversed: top decile lost over 0.3 percentage point of its relative income share, while the poorest 30% of population gained between 0.1 and 0.17 percentage points.

6. Note that the above are expressed in terms of relative income share. In absolute terms, the poorest decile by 2013 had lost 63.3% of its average income in 2009 (in real terms), while the richest decile had also lost, though less (37.0%). Note also that the composition of deciles is not fixed (acknowledging the fact that, as a rule, membership of the poorest 10% of population will be partly different each year). Matsaganis and Leventi (2014) reported a very similar pattern (although the actual figures were slightly different, given that the paper had applied Eurostat equivalence scales).

Figure 1. Changes in relative income shares since the onset of the crisis



1. Income deciles were constructed according to OECD equivalence scale (*i.e.* square root of household size). Household disposable income is defined as total income, from all sources, of all household members, net of taxes and social insurance contributions. Note that the composition of deciles is not fixed.

Source: EUROMOD estimates.

Relative poverty (50% of median equivalised income) seems to have increased in 2012, after remaining broadly unchanged in the previous two years (Table 2). In 2013 it appears to have stabilised, while in 2014 it fell below its level in 2012. Clearly, by construction relative poverty rates are obtained by reference to a moving threshold. In this case, that threshold decreased sharply in 2009-2013 (by 33% and 37% in nominal and real terms respectively).

When poverty is measured against an “anchored” benchmark (here: half the median real incomes observed in 2005), the pattern seen above – poverty rising in 2009-2013, and falling in 2014 – is more pronounced (Table 3). This is not surprising, however, given the sharp adjustment of the economy since 2009.

Not all population groups were affected evenly by the rise in relative poverty. According to micro-simulation results, the rise of poverty in 2010-2013 impacted especially the unemployed, the self-employed, the young (18-29 years), the middle-aged (45-64 years), families living in Athens and those paying rent or mortgage (rather than outright owning their dwelling).

Relative poverty also increased significantly among groups experiencing below-average poverty rates, such as the liberal professions and, to a lesser extent, public or bank employees. The same was true in the case of university graduates, whose relative poverty risk more than doubled, although remained lower than that for persons with a lower level of educational attainment. On the contrary, relative poverty actually fell among groups traditionally seen as ‘poor’, such as farmers and the elderly – although in the latter case the relative improvement in terms of income may have been offset by difficulties in access to health services (Table 2).

Table 2. Relative poverty rates among population groups¹

	2009	2010	2011	2012	2013	2014
All	12.4	13.2	13.1	14.7	14.8	13.8
Gender						
Men	11.9	13.0	13.4	15.4	15.4	14.5
Women	12.9	13.3	12.9	14.1	14.2	13.1
Age						
0-17	15.4	16.5	16.6	18.5	16.9	15.5
18-29	13.0	14.0	15.2	18.0	18.8	17.7
30-44	12.9	14.4	14.4	16.7	16.1	14.8
45-64	10.8	12.2	12.6	15.1	15.8	16.1
65+	10.6	9.3	7.4	5.8	6.7	4.9
Area						
Athens	10.0	11.5	12.2	15.7	15.1	14.4
Rural/semi-rural areas	14.2	14.5	13.8	14.4	14.9	13.9
Tenure						
Rent or mortgage	13.3	15.6	15.9	19.3	18.2	17.2
No housing costs	11.8	11.8	11.6	12.2	12.8	11.9
Educational attainment						
Not completed primary education	14.8	15.1	14.6	15.9	16.0	14.9
Upper secondary	11.7	13.4	13.8	16.3	16.5	15.4
Tertiary	3.4	4.2	5.2	6.2	7.0	7.1
Labour market status						
Unemployed	22.9	29.7	31.5	34.9	32.8	32.0
Employee (private excl. banking)	5.4	5.7	5.3	7.0	5.2	4.7
Employee (public incl. banking)	0.7	0.7	0.6	0.6	1.5	1.0
Liberal profession	4.6	4.8	4.9	6.6	6.9	6.9
Own account worker	13.0	15.5	14.5	15.0	20.3	18.8
Farmer	20.8	18.8	17.7	17.7	17.3	16.7
Student	16.1	16.8	17.1	18.2	17.1	15.4
Poverty threshold (€ per month, single person)	577	529	476	429	388	387

1. The relative poverty threshold is set at 50% of the median equivalised household disposable income in each year. Individuals are ranked according to their household disposable income, equalised by the OECD equivalence scale (*i.e.* square root of household size). Household disposable income is defined as total income, from all sources, of all household members, net of taxes and social insurance contributions.

Source: EUROMOD estimates.

In 2014, relative poverty rates declined⁷ for all population groups with almost no exception, although they remained extremely high in the case of unemployed workers (32%). The pattern is broadly similar when looking at the “anchored” poverty (Table 3).

7. The decline in poverty rates in 2014 can be almost entirely attributed to the social dividend, without which poverty in 2014 would have been at 15.0% and 29.2% (by reference to a relative and a fixed threshold respectively).

Table 3. “Anchored” poverty rates among population groups¹

	2009	2010	2011	2012	2013	2014
All	8.6	13.2	18.5	24.5	29.3	27.4
Gender						
Men	8.1	13.0	18.3	24.7	29.6	27.7
Women	9.2	13.4	18.7	24.4	29.0	27.1
Age						
0-17	11.7	16.5	21.1	28.4	31.6	29.8
18-29	8.8	14.0	21.3	30.2	35.0	34.3
30-44	9.5	14.4	19.2	24.8	29.5	27.8
45-64	7.6	12.2	17.6	24.4	28.4	28.1
65+	6.0	9.4	14.3	16.4	23.6	18.3
Area						
Athens	5.9	11.5	17.7	25.9	27.7	28.0
Rural/semi-rural areas	10.4	14.5	19.4	24.2	30.8	27.7
Tenure						
Rent or mortgage	9.7	15.6	21.2	29.2	33.8	32.7
No housing costs	8.0	11.9	17.0	21.9	26.7	24.4
Educational attainment						
Not completed primary education	10.9	15.2	20.8	26.6	33.1	30.4
Upper secondary	8.1	13.4	19.2	26.2	30.1	29.6
Tertiary	2.4	4.2	7.0	11.1	13.3	13.4
Labour market status						
Unemployed	16.3	29.8	41.9	48.2	52.7	51.2
Employee (private excl. banking)	3.2	5.7	8.9	14.8	17.3	16.8
Employee (public incl. banking)	0.2	0.7	1.2	2.2	2.9	2.8
Liberal profession	1.6	4.8	5.1	6.8	9.4	9.4
Own account worker	10.6	15.5	16.8	21.3	29.2	27.8
Farmer	14.2	19.0	23.0	25.3	32.0	28.0
Student	11.5	16.8	22.3	30.6	33.5	32.1
<i>Poverty threshold</i> (€ per month, single person)	508	531	549	557	552	545

1. The fixed poverty threshold is set at 50% of median equivalised household disposable income in the year 2005, adjusted for inflation. Individuals are ranked according to their household disposable income, equalised by the OECD equivalence scale (*i.e.* square root of household size). Household disposable income is defined as total income, from all sources, of all household members, net of taxes and social insurance contributions. For the adjustment of the poverty line inflation, the OECD price index was used.

Source: EUROMOD estimates.

How has the burden of the adjustment been distributed?

Distinguishing the effects of consolidation policies from recession

As discussed earlier, micro-simulation techniques allow to distinguish, to the extent possible (given their inter-relation), the impact of worsening of economic conditions and policy changes (in the current context, fiscal consolidation policies) on the distribution of incomes over the period 2009-2014 (Box 2). These simulations quantify the relative impact of consolidation measures on income distribution, *ceteris paribus* (the residuals being attributed to economic conditions). Although the estimates capture solely the first-order effects on poverty and inequality, leaving out both the potential behavioural responses and interactions between fiscal consolidation and the recession, they provide useful insights on the distributional impact of the fiscal consolidation measures.

Box 2. Estimating the distributional effects of fiscal consolidation versus recession

The following micro-simulations were undertaken to distinguish the *ceteris paribus* effects of fiscal consolidation (narrowly defined as a set of consolidation policies) on inequality and poverty from those of the wider recession (in the form of rising unemployment and falling earnings in the private sector). The exercise is equivalent to assuming zero fiscal multiplier, or that government policies in a specific year raised taxes and cut public sector pay, pensions and other social benefits, but left nominal pre-tax incomes and jobs in the private sector at the previous year's level). More specifically:

- For the production of the “fiscal consolidation alone” results, the micro-simulation model was run for year t on the basis of:
 - year t-1 dataset as input dataset (*i.e.* no labour market adjustments);
 - year t-1 uprating factors for (i) employment income variables of private sector employees outside banking and banking employees, and (ii) self-employment income variables of farmers, own account workers and liberal professions;
 - year t uprating factors for all other variables (*i.e.* employment income of public sector workers, non-simulated social benefits etc.);
 - year t tax and benefit policies.
- For the production of the “fiscal consolidation and recession” results, the model was run again for year t on the basis of:
 - year t dataset as input dataset (*i.e.* with labour market adjustments);
 - year t uprating factors for (i) employment income variables of private sector employees outside banking and banking employees, and (ii) self-employment income variables of farmers, own account workers and liberal professions;
 as well as:
 - year t uprating factors for all other variables (*i.e.* employment income of public sector workers, non-simulated social benefits etc.);
 - year t tax and benefit policies.

The difference (labour market adjustments plus change in incomes of employment and self-employment in the private sector) is an approximation of the effect of recession, over and above the effect of fiscal consolidation policies.

Note, however, that the approximation is imperfect. Firstly, changes in non-monetary incomes (such as those resulting from cuts in the funding of public services) are not taken into account. On the other hand, some developments in the wider economy are in reality directly attributable to government policy (e.g. changes in minimum wage legislation). Thirdly, the neat separation of ‘the recession’ from ‘the fiscal consolidation’ assumes zero effects of fiscal consolidation on output, which is clearly untrue. In fact, recent research has shown that the nature of the interaction between fiscal consolidation and growth depends on the size and content of fiscal consolidation, and on the characteristics of the economy in question, although the direction and magnitude of the relevant effects remains a matter of debate. For a fuller discussion, see Matsaganis and Leventi (2014).

On the basis of micro-simulations, early fiscal consolidation policies *per se* appear to have had a small impact on inequality and relative poverty, partly mitigating the effects of the recession (Table 4). As consolidation intensified in 2012, the measures appeared to have (slightly but significantly) contributed to rising poverty and inequality. From 2013, fiscal consolidation policies⁸ seem to have had a more equalizing effect, especially at the bottom of the distribution and in terms of its distance from the top. As for the proportion of population whose income fell below a poverty line anchored in 2005 in real terms, it increased with each round of fiscal consolidation, and was given a further boost by the rise in unemployment, until 2014 when it finally stabilised.

8. Note that consolidation policies as intended here include certain compensatory measures, such as for example single child benefit (introduced in 2013) and social dividend (introduced in 2014).

Table 4. **Disaggregating the first-order effects of fiscal consolidation and the wider recession**

	2009	2010	2011	2012	2013	2014
Income inequality						
Gini index						
Fiscal consolidation alone ¹	0.326	0.321	0.33	0.336	0.347	0.343
Fiscal consolidation + recession		0.332	0.336	0.346	0.349	0.342
S80/S20						
Fiscal consolidation alone	5.4	5.3	5.6	6	6.5	6.5
Fiscal consolidation + recession		5.7	5.9	6.7	6.8	6.5
S90/S10						
Fiscal consolidation alone	8.9	8.7	9.9	11.1	13.5	14.5
Fiscal consolidation + recession		9.8	11.1	14.1	15.3	14.3
Poverty						
Relative ²						
Fiscal consolidation alone	12.4	12.3	13	13.4	13.4	13.8
Fiscal consolidation + recession		13.2	13.1	14.7	14.8	13.8
'Anchored' ³						
Fiscal consolidation alone	8.6	10.5	16.2	20.1	25.9	27
Fiscal consolidation + recession		13.2	18.5	24.5	29.3	27.4

1. The impact of fiscal consolidation policies in year t is assessed relative to the state of the economy in t-1, which is equivalent to assuming that government policies altered public sector pay, public pensions, taxes and benefits, but left nominal pre-tax market incomes and employment levels as in the year before.

2. The poverty line is 50% of median equivalised disposable income in each year.

3. The poverty line is fixed at 50% of median equivalised household disposable income in 2005.

Source: Based on micro-simulation analysis (EUROMOD).

Disaggregating the impact of consolidation policies

The redistributive impact of each fiscal consolidation policy (for a detailed description see Annex A1) on inequality can be formally assessed with the change in the value of the Gini index. Table 5 shows the difference between the counterfactual value of the Gini coefficient in the absence of all consolidation measures being assessed, and its actual value after the implementation of each of these measures in turn (Leventi and Matsaganis, 2013).

Overall, the results from the micro-simulation suggest that measures which either placed a higher burden on high incomes, or mostly affected households at the top of income distribution (such as cuts in public sector pay and pensioners' solidarity contributions), cushioned the impact on inequality. On the contrary, policies adversely affecting low-income households (such as the 2012 cut in unemployment benefits), or easing the burden on higher incomes (such as the 2013 income tax changes) had an opposite, inequality-increasing effect.

More specifically, micro-simulation estimates for the period 2010 to 2014 indicate that changes in child benefits, pensioners' solidarity contribution (in effect, a rather steep levy on higher pensions), and cuts in public sector pay were progressive (Table 5). Furthermore, changes in personal income taxes (in 2010-2011 and 2014), cuts in pension benefits (in 2010), and reductions in property taxation (in 2013) also seemed to have a progressive effect, though weaker and/or intermittent.

On the other hand, the 2012 cuts in unemployment benefits (Table 5), and the 2014 changes in eligibility for EKAS were regressive, as were the 2010 VAT hikes⁹. Increasing social contributions for self-employed workers and members of the liberal professions also seemed to make the income distribution more unequal overall. Moreover, changes in income taxation (in 2013), cuts in pension benefits (in 2013), and changes in property taxation (in 2011 and 2014) had a regressive effect.

Table 5. Identifying the effect of individual policies on inequality
Changes in the Gini index (in percentage points)¹

	2010	2011	2012	2013	2014
income taxes	0.00551	0.00388	no change	-0.00520	0.00019
public sector pay	0.00165	0.00016	0.00079	0.00122	no change
pension benefits	0.00075	no change	no change	-0.00193	no change
pensioners' solidarity contributions ²	0.00041	0.00048	0.00180	0.00073	no change
social insurance contributions	no change	0.00008	-0.00005	-0.00010	-0.00004
self-employed & liberal prof. contribution	-0.00030	-0.00012	-0.00030	no change	no change
property taxes ³	no change	-0.00252	no change	0.00045	-0.00074
child benefits ⁴	no change	no change	no change	0.00661	no change
EKAS ⁵	no change	no change	no change	no change	-0.00080
unemployment insurance benefit	no change	no change	-0.00107	no change	no change

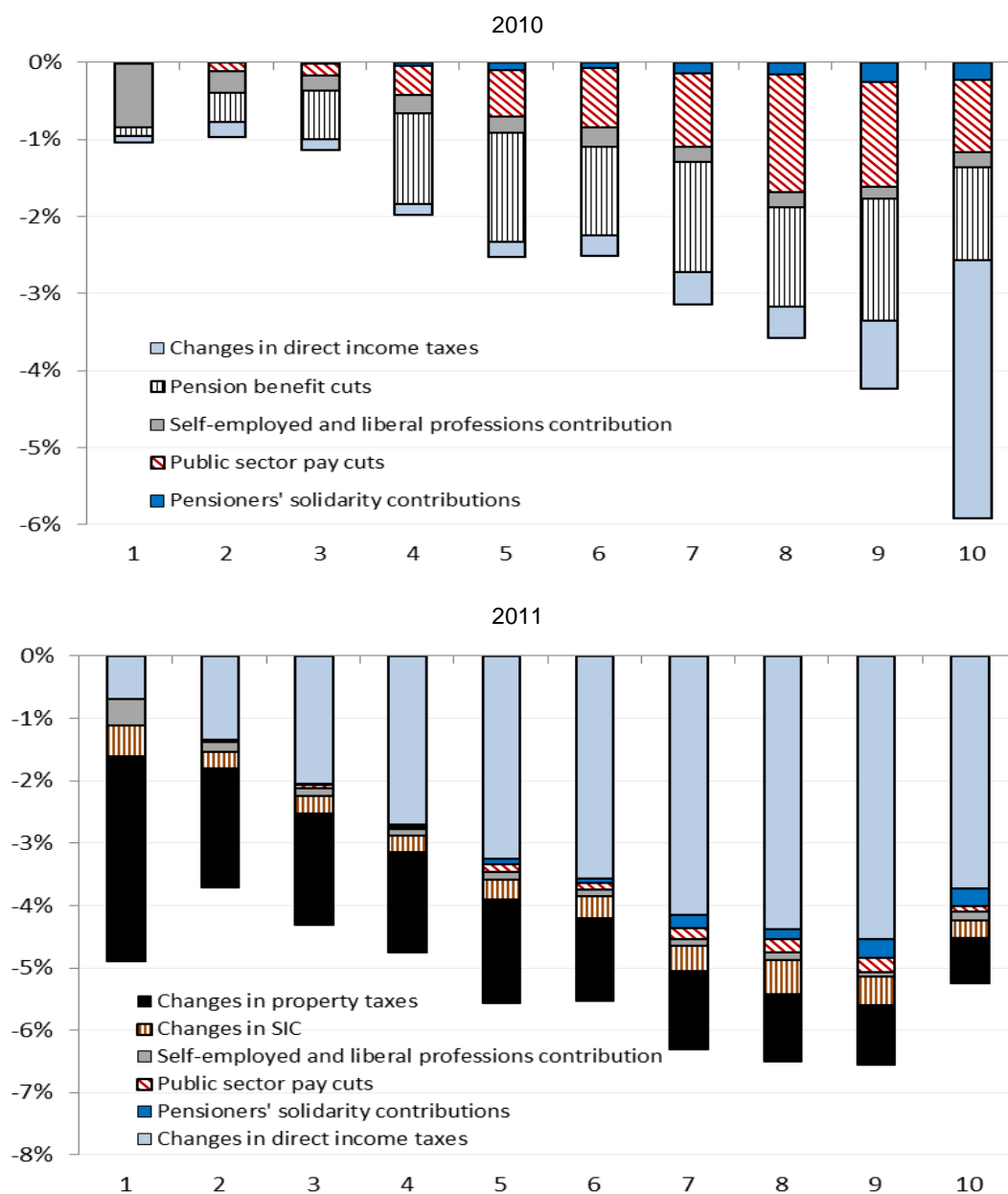
1. The table shows the percentage point difference between the counterfactual value of the Gini coefficient in the absence of all fiscal consolidation measures presented in the table for a specific year (i.e. on the basis of previous year's policies) relative to its value after the implementation of the fiscal consolidation measure in question. Positive (negative) values indicate progressive (regressive) impact. For a detailed description of policies, see Annex A1.
2. Solidarity contributions levied on main and supplementary pensions.
3. Emergency property tax introduced in 2011; reduced by 15% in 2013; replaced by "single tax on immovable assets" in 2014, when additional tax on rental income abolished. Information on second homes not available in the data.
4. 3rd child benefit, birth grant and lifetime pension for mothers of many children abolished, large family benefit became means-tested, single child benefit introduced in 2013.
5. EKAS: Income-tested supplement aimed at recipients of old age and survivor pension. Age threshold raised from 60 to 65 in 2014.

Source: Based on micro-simulation analysis (EUROMOD).

Detailed analysis of the impact of each consolidation measure by household income decile group tends to support the above findings (Figures 2, 3 and 4). A strong progressive impact can be seen for, example, in the case of direct tax changes in 2010, with the greatest losses incurred by the top decile, while public pension cuts affected mostly the middle of the distribution. On the other hand, some policies (such as the introduction of emergency property tax in 2011, the cut in unemployment benefits in 2012, the changes in personal income tax in 2013 and the changes in property taxation in 2014) had a larger negative impact on the lowest decile than on those further up the income scale.

9. The distributional impact of changes in indirect taxes, such as VAT, cannot be analysed in terms of income since these taxes affect consumption. For a separate analysis, confirming that the 2010 VAT hikes were highly regressive, see Matsaganis and Leventi (2013).

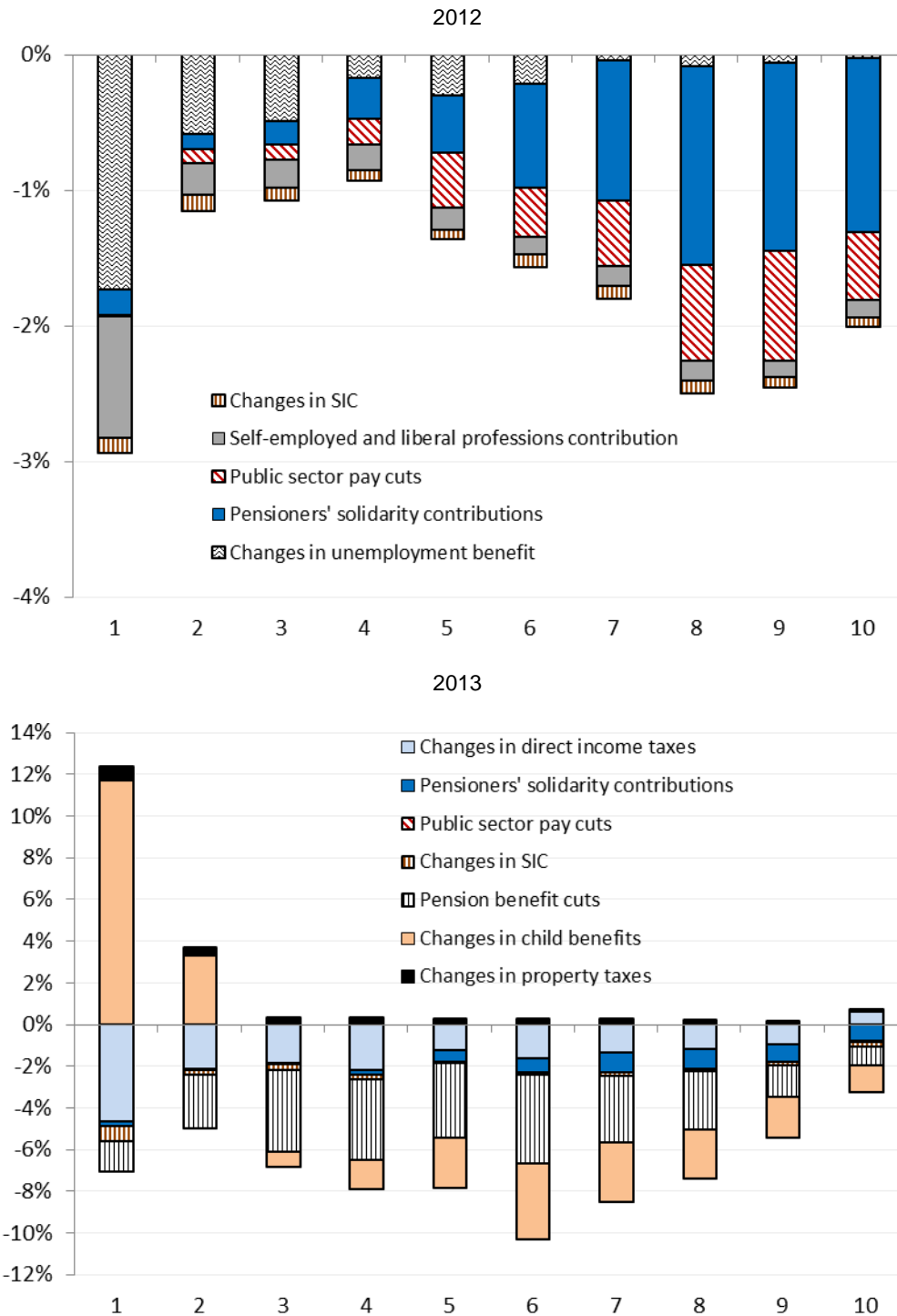
Figure 2. Change in household disposable income due to consolidation, 2010 and 2011



Note: Income deciles were equivalised according to the OECD equivalence scale (i.e. square root of household size). Household disposable income is defined as total income, from all sources, of all household members, net of taxes and social insurance contributions. For an analytical description of the policy measures see Annex A1.

Source: EUROMOD estimates.

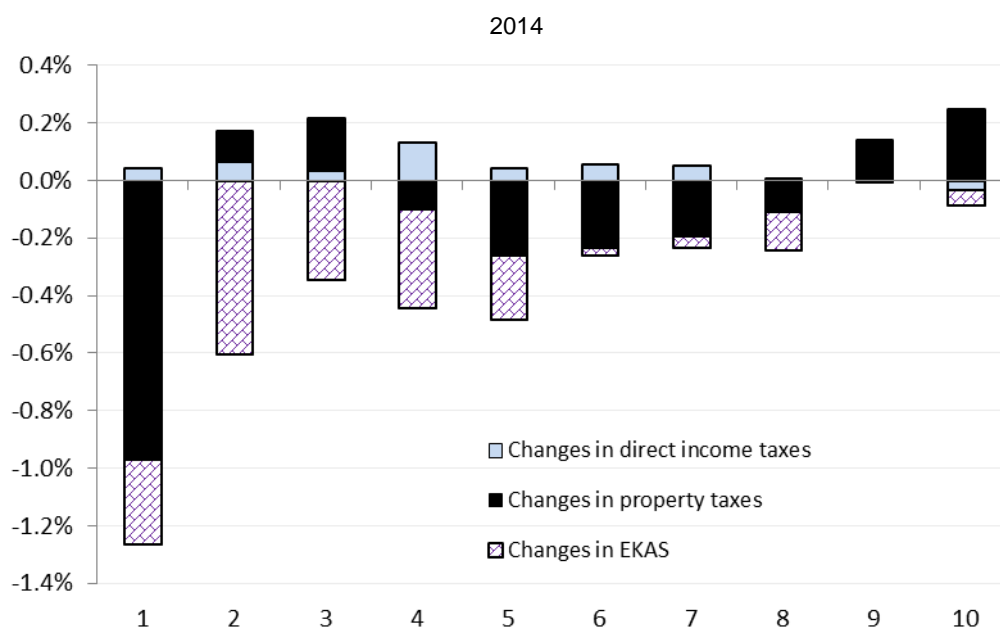
Figure 3. Change in household disposable income due to consolidation, 2012 and 2013



Note: Income deciles were equivalised according to the OECD equivalence scale (i.e. square root of household size). Household disposable income is defined as total income, from all sources, of all household members, net of taxes and social insurance contributions. For an analytical description of the policy measures see Annex A1.

Source: EUROMOD estimates.

Figure 4. Change in household disposable income due to consolidation, 2014



Note: Income deciles were equivalised according to the OECD equivalence scale (*i.e.* square root of household size). Household disposable income is defined as total income, from all sources, of all household members, net of taxes and social insurance contributions. For an analytical description of the policy measures see Annex A1.

Source: EUROMOD estimates.

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*ANNEX A1.***FISCAL CONSOLIDATION POLICIES IN GREECE (2010-2014)**

The 2010-2014 fiscal consolidation measures that affected household incomes comprised expenditure cuts and tax hikes and changes in labour laws. More specifically:

Public sector pay

- The 13th and 14th salaries paid to civil servants and public enterprise workers until the onset of the crisis were abolished in 2010. In their place, flat-rate vacation allowances totalling EUR 1 000 a year were introduced for public sector workers earning less than EUR 3 000 per month. These allowances were abolished in 2013.
- Special allowances paid to civil servants were reduced by 20% in 2010. Public enterprise workers, whose special allowances other than family allowances are part of base pay, had the latter cut by 10%.
- Public sector salaries were frozen at their 2009 level and capped at EUR 5 981 per month (to EUR 4 750 since 2013).

Pension benefits

The 13th and 14th pensions were abolished (save few exemptions) in 2010 and replaced by flat-rate vacation allowances totalling EUR 800 a year (payable only to pensioners aged over 60 receiving a pension below EUR 2 500 per month). In January 2013 flat-rate vacation allowances were also abolished.

Social benefits

The payment of housing benefit (OEK rent benefit for private sector employees, the main housing benefit in Greece) was suspended for 2010 and completely abolished in 2012.

The 13th and 14th payment of EKAS (an income-tested supplement aimed at recipients of old age and survivor pension) was also abolished in 2010. Moreover, as a result intensified efforts against benefit fraud, some ineligible recipients of EKAS and the social pension (a non-contributory, income-tested pension, reserved for people over 65 years of age who lack independent means of support) had inevitably their benefit suspended. The age limit was raised to 65 (from 60) in 2014.

In March 2012 the unemployment insurance benefit was reduced by 22% (from EUR 454 to EUR 360 per month).

Social pension: the 13th and 14th month payments were abolished in 2013; the age condition was raised to 67 (from 65) in 2014.

Social dividend: a lump-sum benefit, ranging from EUR 500 to EUR 1 000 (depending on family size), paid to households passing a test of incomes and assets in 2014. The benefit receipt was cash-limited to approximately €450 million.

Family benefits: 3rd child benefit, lump sum EUR 2 000 birth grant and lifetime pension for mothers of many children were abolished; large family benefit became means-tested; a new (means-tested) child benefit was introduced (all in 2013).

Unemployment assistance for older workers: the income threshold was raised from EUR 5 000 to EUR 12 000 per year in 2013. In 2014 it fell to EUR 10 000 and the age limits were increased from 45-65 to 20-66.

Direct taxation

- **Personal income tax (PIT).** In 2010-2014 personal income tax was restructured three times (April 2010, October 2011 and December 2012). The most important changes of the first two reforms are shown in Table A1.1. The third PIT reform affected incomes earned in 2013 and beyond. A new tax schedule with three tax brackets was introduced for income deriving from employment and pensions. Self-employment income is taxed by a separate tax schedule with two tax brackets. A different tax schedule for rental income (two tax bands) was introduced. The zero tax bracket was abolished and an employment tax credit was introduced. The tax credit is equal to EUR 2 100 if employment income is up to EUR 21 000 per year. It is capped to the amount of people's actual tax liability (i.e. no negative tax applies). The tax credit is decreased by EUR 100 for each additional EUR 1 000 of employment income over EUR 21 000. Farmers were taxed according to the tax schedule used for income deriving from employment and pensions. Tax credits for rent, education expenses, mortgage interest, private insurance contributions, and installation of eco-friendly energy systems were abolished. Disability tax allowance was turned into a tax credit. In 2014 a flat tax of 13% was introduced for farmers, the taxable income threshold above which certain benefits are taxed fell from EUR 30 000 to EUR 10 000 per year and the tax rate of the first band of rental income was increased by one percentage point.
- **Emergency tax on large incomes.** In 2010 personal incomes over EUR 100 000 earned in 2009 were made subject to a one-off emergency tax at 1%.
- **Interest income tax.** Its rate was increased from 10% to 15% in 2013.
- **Solidarity contribution.** An emergency tax introduced in 2010, paid by individuals with taxable incomes exceeding EUR 12 000 per year, with contribution rates rising from 1% (for incomes between EUR 12 000 and EUR 20 000 per year) to 4% (for incomes over EUR 100 000 per year). The tax rates apply to the entire amount of income (not just the part exceeding the threshold).

Table A1.1 Changes in personal income tax

	2009	2010	2011-2012
Tax bands	5	9	8
Max tax rate	40% (for annual incomes over €75 000)	45% (for annual incomes over €100 000)	same as in 2010
Zero tax bracket	<ul style="list-style-type: none"> • €12,000 for employees and pensioners • €10,500 for all others 	<ul style="list-style-type: none"> • €12,000 for all 	<ul style="list-style-type: none"> • €9,000 for persons aged below 30 or above 65 • €5,000 for all others
Increase in zero income tax bracket due to children	<ul style="list-style-type: none"> • 1st child: €1,000 increase • 2nd child: €2,000 increase • 3rd child: €10,000 increase 	<ul style="list-style-type: none"> • 1st child: €1,500 increase • 2nd child: €3,000 increase • 3rd child: €11,500 increase 	<ul style="list-style-type: none"> • 1st child: €2,000 increase • 2nd child: €4,000 increase • 3rd child: €7,000 increase
Tax allowances / credits	spending on private insurance / installation of eco-friendly energy systems eligible for tax allowance	spending on private insurance / installation of eco-friendly energy systems eligible for tax credit	tax credits: 50% reduced tax allowances: abolished

1. In 2009 a further EUR 1 000 increase in the lowest income bracket is applicable for each subsequent child after the third. In 2010 (2011-12) a further EUR 2 000 (EUR 3 000) increase in the lowest income bracket is applicable for each subsequent child after the third.
2. Since 2010 the tax base was extended to include unemployment benefits, large family benefits and non-contributory disability benefits, when taxable income exceeded EUR 30 000 a year.

Self-employed and liberal professions contribution

- A special levy on self-employed and liberal professions was introduced in 2010, with the tax set to EUR 300 per year. In 2011 (2012-2014) it amounted to EUR 500 (EUR 650) for those self-employed and liberal professionals working more than five years in areas with population exceeding 200 000 inhabitants and EUR 400 (EUR 650) for those working more than five years in areas with population between 500 and 200 000 inhabitants. No tax was levied for self-employed and liberal professionals working in areas with less than 500 inhabitants.

Pensioners' solidarity contributions (main and pensions)

- The first special levy on pension incomes (labelled 'Pensioners' solidarity contribution') was introduced in August 2010. Since then, main old-age pensions exceeding EUR 1 400 per month are subject to taxation with the rates rising from 3% for pensions between EUR 1 400 and EUR 1 700 per month to 10% (14% in 2011-2014) for pensions over EUR 3 500 per month.
- An additional levy on main old-age pensions was introduced in August 2011. The contribution applies to pensioners below 60 (except from mothers of underage children) with main pensions exceeding EUR 1 700 per month. The contributions' rates rise from 6% for pensions between EUR 1 700 and EUR 2 300 per month to 10 % for pensions over EUR 2 900 per month. The tax rates apply to all pension income minus the 'pensioners' solidarity contribution'.
- Since November 2011 all pensioners below 55 with main old-age pensions exceeding EUR 1 000 are subject to 40% taxation. Persons aged above 55 with main old-age pensions exceeding EUR 1 200 are subject to 20% taxation. The tax rates apply to the pension amount exceeding the above thresholds after all other solidarity contributions concerning main pensions have been deducted.
- Since January 2012 all main old-age pensions exceeding EUR 1 300 are subject to an extra 12% taxation. The tax rate applies to the pension amount exceeding EUR 1 300 after the deduction of all the above mentioned solidarity contributions. Pensions are not allowed to fall below EUR 1 300.

- Since August 2011 *supplementary* pensions exceeding EUR 300 per month are also subject to taxation, with tax rates rising from 3% for pensions between EUR 300 and EUR 350 per month to 10% for pensions exceeding EUR 650 per month. In January 2012 an additional tax for supplementary pensions was introduced with rates increasing from 10% for pensions up to EUR 250 to 20% for pensions over EUR 300 per month.
- Since January 2013 if the sum of main and supplementary pensions exceeds EUR 1 000 they are subject to an additional levy varying from 5% to 20%.

Property taxation

- In 2011-2013 all owners of commercial or residential property in Greece were subject to an emergency property tax. The tax, varying from EUR 3 to EUR 16 per square meter, was a function of the cadastral value of the building and its size. A specific factor varying from 1 to 1.25 according to the age of the building was also applicable (property tax = tax rate × square meters × age factor).¹⁰ A reduced rate of €0.50 per square meter applied to vulnerable population groups (that is, families with more than three children and yearly taxable income below EUR 30 000 per year or persons with severe disability). Long term unemployed or recipients of unemployment benefit for more than 6 months, with family income not exceeding EUR 12 000 per year (plus EUR 4 000 for every dependent child) were exempted from the tax. In 2013 the tax was reduced by 15%. In 2014 the additional tax on rental incomes was abolished and emergency property tax was replaced by the ‘Unified Property Tax’. In addition to commercial and residential properties, land is also subject to the latter.

Social insurance contributions

- In August 2011 private sector employees’ and employers’ social insurance contributions for unemployment protection were increased by 0.5%. The respective civil servants’ and self-employed workers’ contributions were increased by 2% and EUR 10 per month respectively. Contributions for liberal professionals working as self-employed (i.e. doctors, lawyers, engineers) increased in 2012; the upper earnings threshold for the calculation of contributions of employees first insured before 1993 increased in 2013.
- Employers’ contributions for sickness insurance and other benefits were reduced in June 2014 (-0.55% and -1.25% respectively). Employers’ and employees’ contributions for family benefits (1% respectively) were abolished.
- Farmers’ contributions for sickness insurance were increased in January 2013. Contributions for supplementary pension for banking employees, civil servants and public enterprise workers were unified for people first insured before and after 1993 in December 2013. The new rate is equal to 3%.

10. Due to the lack of information on the age of buildings, in EUROMOD the age factor was set to 1 for all of the tax payers. The tax rates per square meter used, taken from Leventi and Matsaganis (2013), were the average rates for urban and rural/ semi-rural areas according to a large tax data sample provided by the Greek authorities (i.e. EUR 5.30 per square meter for those residing in urban areas and EUR 3.70 per square meter for those residing in rural/ semi-rural areas). The use of average tax rates introduces a first source of bias. Moreover, the fact that the simulation of the emergency tax is based on EU-SILC data on home ownership of main residence, which does not provide information as to whether the household also owns a second home, introduces a second source of bias.

Indirect taxation

- The standard rate of VAT was increased from 19% to 23% in two steps between March and May 2010. Base and reduced rates were increased from 4.5% to 5.5% and from 9% to 11% respectively. Excise duties on alcohol, tobacco, luxury items, and especially heating oil, also went up.

Labour market regulation

- In 2010 entry wages for workers aged below 25 were allowed to be set 20% below the statutory minimum for a maximum duration of one year. Moreover, in February 2012 minimum wage was cut by 22% for workers aged above 25 and 32% for workers below 25. These changes were captured indirectly in EUROMOD by using Bank of Greece estimates for earnings growth.

ANNEX A2.

EUROMOD UPDATING FACTORS AND LABOUR MARKET ADJUSTMENTSTable A.2.1 **EUROMOD updating factors: incomes**

	2009	2010	2011	2012	2013	2014
employment earnings						
dependent employment earnings	1.000	0.954	0.938	0.876	0.819	0.807
public sector employees	1.000	0.923	0.918	0.884	0.873	0.873
workers in public enterprises	1.000	0.945	0.870	0.788	0.709	0.709
private sector employees excl. banking	1.000	0.971	0.955	0.866	0.797	0.785
banking employees	1.000	0.982	0.983	0.909	0.818	0.767
self-employed earnings						
Farmers	1.000	0.958	1.019	1.055	1.018	1.000
own account workers	1.000	0.954	0.938	0.876	0.819	0.807
liberal professions	1.000	0.954	0.938	0.876	0.819	0.807
investment - property income						
investment income	1.000	1.069	1.165	1.256	1.326	1.295
property income – rent	1.000	1.024	1.033	1.012	0.943	0.871
other income						
private transfers	1.000	0.954	0.938	0.876	0.819	0.807
non-cash income	1.000	0.954	0.938	0.876	0.819	0.807
income received by children <16	1.000	0.954	0.938	0.876	0.819	0.807

Source: El.Stat., Bank of Greece.

Table A2.2 **EUROMOD updating factors: assets and expenditure items**

	2009	2010	2011	2012	2013	2014
Assets						
loan value	1.000	1.047	1.082	1.098	1.088	1.074
financial capital	1.000	1.047	1.082	1.098	1.088	1.074
expenditure items						
rent paid	1.000	1.024	1.033	1.012	0.943	0.871
education expenses	1.000	1.047	1.082	1.098	1.088	1.074
housing cost	1.000	1.069	1.165	1.256	1.326	1.295
interest on mortgage payment	1.000	1.047	1.082	1.098	1.088	1.074
other housing costs	1.000	1.069	1.165	1.256	1.326	1.295
medical expenses	1.000	1.047	1.082	1.098	1.088	1.074
expenses for new heating systems	1.000	1.047	1.082	1.098	1.088	1.074
alimony expenditure	1.000	0.982	0.982	0.975	0.953	0.950
other maintenance payments	1.000	0.982	0.982	0.975	0.953	0.950
expenditure on private pensions	1.000	1.047	1.082	1.098	1.088	1.074
nominal GDP deflator	1.000					
harmonised consumer price index	1.000	1.047	1.080	1.091	1.082	1.067

Source: El.Stat., Bank of Greece.

Table A2.3 EUROMOD uprating factors: non-simulated social benefits

	2009	2010	2011	2012	2013	2014
main old age pension						
supplementary old age pensions	1.000	1.000	1.000	1.000	1.000	1.000
other minor pensions	1.000	1.000	1.000	1.000	1.000	1.000
survivors pensions	1.000	1.000	1.000	1.000	1.000	1.000
orphans pensions	1.000	1.000	1.000	1.000	1.000	1.000
private pensions	1.000	1.000	1.000	1.000	1.000	1.000
minor unemployment benefits	1.000	1.000	1.000	0.793	0.793	0.793
minor family benefits	1.000	1.026	1.014	1.014	0.957	0.957
contributory maternity benefits	1.000	1.000	1.000	1.000	1.000	1.000
health benefits	1.000	0.954	0.938	0.876	0.819	0.807
disability pensions	1.000	1.000	1.000	1.000	1.000	1.000
disability benefits	1.000	1.082	1.168	1.168	1.168	1.168
housing benefits	1.000	1.000	1.000	1.000	1.000	1.000
scholarships and grants	1.000	1.000	1.000	1.000	1.000	1.000

Source: El.Stat., various benefit agencies.

Table A2.4 Effect of labour market adjustments on employment rates (2009-2014)

year	employment rates (15-64) %			EUROMOD/LFS ratio of employment rates	
	LFS	EUROMOD		adjusted	unadjusted
		adjusted	unadjusted		
2009	60.8	59.5	59.5	0.98	0.98
2010	59.1	57.9	59.5	0.98	1.01
2011	55.1	54.1	59.5	0.98	1.08
2012	50.8	49.8	59.5	0.98	1.17
2013	48.8	47.9	59.5	0.98	1.22
2014	49.4	48.5	59.5	0.98	1.20

Source: Labour Force Survey, EUROMOD.