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The Greek crisis in focus:
Austerity, Recession and paths to Recovery

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Introduction

Fourteen months since the agreement for the first national bailout in EMU history, the Greek crisis keeps unfolding at a mesmerising pace. In June 2011 things took a dramatic turn, as the poor evaluation of the government's efforts to deliver on the obligations it had undertook under the Memorandum for the €110bn loan, especially with regard to the programme of privatisations, the tackling of tax evasion, the liberalisation of closed professions and the consolidation of public bodies, triggered a new mini-crisis. The open questioning by the Eurozone and IMF officials of the continuation of funding under the €110bn loan led to an almost-farcical political crisis, with the PM announcing his willingness to step down in exchange for the formation of a coalition government and a few hours later backtracking to form a new partisan cabinet aiming to calm within-party and wider public opposition to the policies pursued by the government.

A fast-track procedure of negotiations with the eurozone partners and the IMF followed, leading to a new re-specified austerity programme which finally went through parliament allowing for the continuation of funding from the EU-ECB-IMF 'troika'. The severity of this mini-crisis seems to have constituted a wake-up call for Greece's eurozone partners who adopted quite swiftly a somewhat more proactive and, to some extent, accommodating approach, taking important initiatives to avert the full collapse of the Greek economy and its eventual default. The eurozone leaders agreed to pursue a deal with private Greek-bond-holders for voluntary participation in a restructuring of the Greek debt. They committed to providing a new loan (a second bailout) for 2012 and, crucially, started looking for ways to combine the austerity-minded fiscal consolidation measures with an injection of funds aiming at stimulating growth – although austerity and fiscal consolidation remain very much the central objectives.

Barring a destabilisation of the political situation in Greece, the combination of these initiatives – if indeed followed through – has the potential to halt the continuous deterioration of Greece's debt and GDP figures, putting at last the country on a (slow, but at least now possible) path to recovery.

The events of June 2011, and those that are to follow in the months ahead, have a pace that academic inquiry, due to its own nature, finds it very difficult to follow. Before a full analysis of the consequences of any given policy initiative is performed, new developments and new policies are put in place that make the forthcoming analysis seem dated, if not obsolete. A consequence of that is that as analysis follows the pace of day-to-day commentary, very little space and attention is allocated to a substantive analytical discussion, as opposed to a journalistic debate conducted in blogs and newspaper websites, of the issues at hand.

The papers included in this special volume of GreeSE Papers unavoidably suffer from the first of these caveats. Although the papers were all written in the last few months, some of the issues they examine seem to fast become "yesterday's news". Reflecting however on the second caveat, we feel that the publication of these papers still makes an important contribution and is thus not only necessary but also very timely. What is more, although the papers were written independently, they seem to complement each other in a very constructive way.

The first paper, by Matsaganis and Leventi, examines the logic and distributional consequences of the austerity measures implemented since 2010. Based on a micro-simulation analysis, the authors examine how the rise in direct and indirect taxation and the public sector pay-cuts affect the rates of poverty and the levels of inequality in the country. The paper does not provide a normative set of policy recommendations but, at least implicitly, makes the case for a more careful and socially sensitive design of measures aiming at fiscal consolidation. It is rather unfortunate that the news that came out of last weekend's Eurogroup meeting,

about a new austerity package to be negotiated before the end of the summer, do not seem to move to this direction but rather to build on the June 2011 Medium-term Programme which provided for a clearly regressive lowering of the non-taxable income threshold and rise in taxation for basic goods.

The second paper, by the current author, shifts the focus to the geographical and developmental implications of the austerity measures. Through a compositional analysis the paper alerts the reader to the fact that seemingly horizontal measures can have very heterogeneous effects across space; and that under certain conditions this can generate a pattern of cumulative divergence which can compromise future growth and socio-spatial cohesion in the country. The paper takes a more prescriptive approach and calls for a different design of policy, which will seek to combine the necessary austerity measures for fiscal consolidation with a pro-growth and spatially equitable strategy. Quite naturally, such a strategy will have to rely on an external stimulus, likely to be provided by the European Investment Bank and the EU's Cohesion Fund. The very recent developments at the EU level, with Commission President Mr Barroso pushing exactly for such a strategy[1] (although, quite disappointingly, with the Greek government still not fully appreciating and seizing the opportunity), may be seen as a vindication of this policy proposal.

The third paper, by Christodoulakis, takes a more macro-economic view but remains very much focused on the austerity-recovery discussion. The paper examines, under a much-needed analytical approach, the conditions that led to spiralling debt despite the relative success with stabilisation and fiscal consolidation. It highlights in particular the role played by indecision (and slow action), by both Greece and the EU, and how the particular IMF-EU programme that was put in place led inevitably to a more-than-anticipated decline in national GDP. Although the paper offers an interesting and succinct discussion of the

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[1] See http://www.reuters.com/ article/2011/06/21/eu-greece-funds-idUSLDE75K1C420110621.

"how we got here" question, we have decided to place it last in the special volume by merit of its careful analysis of alternative policy scenaria for a successful 'path to recovery' and the concrete policy recommendations that stem from it. In them, the importance of a firmly implemented privatisation programme stands out, as does the importance of a carefully designed architecture for the post-Memorandum fiscal stabilisation efforts.

We should note that the publication of these papers does not imply an endorsement – by the Hellenic Observatory or indeed by the authors of the other papers– of the policy proposals stemming from each of the papers. Differences of opinion about the relative importance of progressive taxation, spatial redistribution, or privatisation may exist to one degree or another. Indeed, there is an on-going discussion –among the authors, around the Hellenic Observatory (see, in this regard, the recent launch of the HO Blog) and more broadly– about these and surrounding issues. As with much else regarding the ever-unfolding "Greek crisis", everything is open. Neither the Hellenic Observatory nor the authors of the papers included here claim the possession of 'magic solutions' that can turn the situation around overnight. But we do hope that this publication, with its emphasis on the analytical examination of at least a subset of the issues relating to the Greek crisis, will make a visible contribution to the debate about what could be labelled as Greece's "slide to austerity" and, hopefully, "glide to recovery". Our aim with this special volume is to add to this debate and inform policy-making and the wider audiences of this crisis alike, about the policy options and policy challenges lying ahead. We are open to –and very much welcome– comments, suggestions and criticisms, not least through our blog entry at http://blogs.lse.ac.uk/greeceatlse/2011/07/05/greese_special/.

Vassilis Monastiriotis, 6 July 2011

The Distributional Impact of the Crisis in Greece

Manos Matsaganis and Chrysa Leventi[#]

Abstract

The severe economic crisis affecting Greece is widely expected to have a significant social impact in terms of greater inequality and increased poverty. We provide an early assessment of whether (and to what extent) this is the case. More specifically, we distinguish between two inter-related factors: on the one hand, the austerity measures taken to reduce fiscal deficits; on the other hand, the wider recession. Using the European tax-benefit model EUROMOD we attempt to quantify the distributional implications of both. With respect to the austerity measures, we focus on the changes introduced in spring 2010 affecting income tax, pension benefits and public sector pay. With respect to the wider recession, we model the effects of rising unemployment and inflation, as well as of lower earnings for self-employed workers and for employees of private firms. In simulating the impact of these changes on the distribution of incomes (and in estimating how the total burden of the crisis is shared across income groups), we take into account tax evasion and benefit non take up. We end by discussing the methodological pitfalls and policy implications of our research.

Keywords: Austerity, Greece, inequality, poverty, microsimulation

JEL classification: C81, H55, I3

1. Introduction

From the beginning of 2010 Greece has been in the throes of a severe financial and economic crisis – without doubt, the worst in living memory. After a decade of fast growth, the underlying weakness of the Greek economy was made evident in October 2009, when the incoming government announced that earlier fiscal

data had been misreported. The fiscal deficit and public debt estimates for 2009 were radically revised[2]. Financial markets reacted by increasing spreads on Greek bonds and by lowering credit ratings (Meghir et al. 2010, Featherstone 2011).

In an effort to bring public finances back under control, the government announced a first round of austerity measures in March 2010, followed by tax reform in April 2010. When these failed to placate the markets, in May 2010 the government negotiated an unprecedented €110 billion rescue package with the EU, the ECB and the IMF. In return for the rescue package, the government signed up to a three-year Memorandum of Economic and Financial Policies, which commits the Greek government to sweeping spending cuts and revenue increases (IMF 2010). At the same time, a second round of austerity measures was also announced.

Under the terms of the austerity measures, public sector pay and pension benefits were cut. Nominal reductions were compounded by rising inflation, caused by VAT hikes as well as rising oil prices internationally and product market rigidities domestically. In the context of tax reform, the government changed the schedule of personal income tax, raised the top rate and announced a clampdown on tax evasion. The measures took place when the Greek economy was already in recession, and made it deeper still. After a negative growth (-2.0%) in 2009, GDP shrank by a further 4.5% in real terms in 2010. As a result, jobs and wages in the private sector suffered considerably. The estimated reduction in employee compensation in private firms outside banking in 2010 was 7.3% on average in real terms, while the official unemployment rate was forecast to climb to 14.6% in 2011 (from 7.7% in 2008). Furthermore, self-employment earnings have also been affected.

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[2] Deficit and debt projections have been revised from 3.7% to 15.4% of GDP and from 99.6% and to 126.8% of GDP respectively (Bank of Greece 2011).

The crisis (taken here to signify both austerity measures and the economic recession) are widely expected to cause poverty and inequality to rise. However, predicting the distributional effects of the crisis is not as straightforward as it may appear at first sight. Its consequences on the most vulnerable individuals may vary substantially, depending on the interaction between their labour market participation, the income and employment status of other household members, and the capacity of the tax-benefit system to absorb macroeconomic shocks (Atkinson 2009, Nolan 2009).

In this paper we provide an early assessment of whether (and to what extent) this is the case. Specifically, we attempt to quantify the distributional implications of the crisis using the European tax-benefit model EUROMOD. The paper's structure is as follows. Section 2 introduces the austerity measures and wider changes in incomes and employment. Section 3 discusses the various methodological issues. Section 4 presents our tentative estimates of the distributional effects of the crisis. Section 5 reflects on the policy implications of our findings, on the limitations of our approach and on issues for further research.

2. The Crisis

The focus of this paper is on changes in the income distribution in 2010 (the year of austerity measures and the bailout package) relative to 2009 (the last year before the onset of the crisis). This is not to say that the effects of the crisis were limited to the year 2010. At the time of writing (June 2011), the economy showed no signs of recovery as GDP fell once again and unemployment continued to rise, while a further round of austerity measures was being debated in Parliament under the terms of the Medium-Term Fiscal Plan (2012-2015) negotiated with the EU, the ECB and the IMF. The impact of more recent

developments on the distribution of incomes in 2011 falls outside the scope of the current paper, but is the subject of ongoing research.

For analytical purposes, the paper distinguishes between austerity measures and the wider recession. This distinction is to some extent artificial. For example, the fact that the incomes of civil servants and pensioners were cut contributed to lowering the demand for goods and services provided by private firms, as a result of which private sector workers' wages and self-employment earnings declined, while unemployment rose. In making the distinction we take no position on the debate as to whether the Greek economy would have been in recession in the absence of the austerity measures. Where we refer to the effects of austerity measures we imply first-order rather than full effects (i.e. excluding those mediated by the recession).

In the above spirit, the term "austerity measures" covers policies introduced by the government in an attempt to reduce fiscal deficits, either under the provisions or in the context of the Memorandum of Economic and Financial Policies agreed with the EU, the ECB and the IMF in May 2010. In contrast, the wider recession indicates other changes in the economy, not directly under the government's control, such as those affecting jobs and wages in private firms.

2.1 The austerity

Specifically, the austerity measures of spring 2010 were a combination of increases in indirect taxes, introduction of new direct taxes, personal income tax reform, cuts in public sector pay and in pensions. Later in the year, the fiscal squeeze affected other social benefits and public services.

Public sector pay

Until recently, wages and salaries in Greece (in the public as well as in the private sector) were paid in 14 monthly instalments. In 2010, the 13th and 14th salaries paid to civil servants and public utilities employees were abolished. In their place, flat-rate vacation allowances totalling €1,000 a year were introduced for public sector workers earning less than €3,000 per month. Moreover, special allowances paid to civil servants[3] were reduced by 20%. Public utilities employees, 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 €5,981 a month. As a result of the above, average gross earnings in 2010 declined in real terms relative to 2009 by an estimated 13.6% for civil servants and 9.7% for workers in public enterprises (Bank of Greece 2011).

Indirect taxation

The standard rate of VAT was raised from 19% to 23% in two steps between March and May 2010. Base and reduced rates were also increased from 4.5% to 5.5% and from 9% to 11% respectively. Other indirect taxes also went up: excise duty on tobacco, alcohol and fuel by 30%, taxes on luxury items by 20%.

Direct taxation

Personal income tax was restructured in April 2010. The new schedule is rather more progressive (with 9 tax bands instead of 5), and provides for a personal tax allowance of €12,000 per year and a higher top rate of 45% (for annual incomes over €100,000). Moreover, the tax base was extended to include unemployment benefits, large family benefits and non contributory disability benefits, when taxable income exceeds €30,000 a year. Various tax allowances and credits were

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[3] Family allowances, and extra allowances for seniority, post-graduate studies and in case of hard and arduous occupation, were not affected by the cuts.

also revised. Also, personal incomes over €100,000 in 2009 were made subject to a one-off emergency tax at 1%, while a similar (and much resented) tax was retrospectively levied on firms who had registered large profits in 2009.

Pensioners' solidarity contribution

A special levy on pension incomes (labelled "Pensioners' solidarity contribution") was introduced in May 2010. Pensions under €1,400 per month were exempted. Above that level, tax rates rise steeply from 3% to 10% (the latter applies to pensions over €3,500 a month).

Pension benefits[4]

Retirement pensions in Greece also used to be payable in 14 monthly instalments. The 13th and 14th pensions have now been abolished[5], replaced by flat-rate vacation allowances totalling €800 a year (payable only to pensioners aged over 60 receiving a pension below €2,500 per month). Pensions were also frozen at their 2009 level.

Social benefits

Funding cuts, in some cases aggravated by a significant drop in social insurance organisations' income from contributions, undermined the regular payment of social benefits. In one instance (OEK rent benefit for private sector employees, the main housing benefit in Greece), payment of benefit was entirely suspended for 2010. In another instance (pensioners social solidarity supplement ΕΚΑΣ), the effort to weed out ineligible claimants intensified, with the inevitable result that some eligible recipients had their benefit suspended.

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[4] The pension reform law, approved by Parliament in July 2010, is not discussed here, as its effects on pension incomes will be felt in future years. For more information and an analysis, see Matsaganis & Leventi (2011).

[5] Invalidity pensions, social pensions and farmer basic pensions were exempted.

Public services

As a result of the fiscal squeeze, health and personal social services (such as child care and social care for the elderly), as well as education, have also suffered funding cuts, which to some extent have affected the quantity and quality of services provided.

Labour law

Finally, changes in labour law allowed collective agreements at industry- and firm-level to set lower wages than those agreed under the National General Collective Wage Agreement, while entry wages below the statutory minimum were introduced for workers aged below 21.

2.2 The recession

In 2010 the Greek economy plunged into deep recession (GDP growth -4.5% compared to -2.0% the year before). The most significant developments were as follows:

Unemployment

The overall unemployment rate has risen sharply from 7.7% in 2008 (and 9.5% in 2009), to 12.5% in 2010 (and a forecast 14.6% in 2011). Until very recently, labour market institutions and norms in Greece appeared to favour primary earners, especially male breadwinners, at the expense of secondary earners. For instance, unemployment among men aged 30-44 in 2008 was a mere 3.9%, while for women aged 20-29 it was as high as 20.5%. One implication of the traditional pattern was that unemployment and poverty rarely overlapped, affecting different population groups.

As a result of the current crisis, unemployment has risen across the board: to 8.2% for men aged 30-44 and to 29.0% for women aged 20-29 in 2010. The significant rise in unemployment among primary earners introduces a new pattern, more reminiscent of that in western and northern Europe. It also constitutes prima facie evidence that the unemployed (especially households with unemployed head) account for a higher share of the population in poverty. We will return to this point later on in the paper.

Private sector wages

In 2010 average gross earnings in private firms declined in real terms, relative to 2009, by an estimated 6.2%% in banking and by 7.3% outside banking (Bank of Greece 2011).

Business closures

An unknown number of small businesses had to close as a result of the recession. Also, some larger employers, mostly in light manufacture and typically in North Greece, relocated to other Balkan countries where labour costs and taxes are lower.

Self-employed earnings

Many more small businesses stayed afloat, muddling through even though trade was less than brisk. As a result, earnings from self-employment (including the more prestigious "liberal professions" of medical doctors, engineers and lawyers) were lower than before the recession.

Inflation

In spite of the recession, VAT hikes plus rising oil prices abroad and product market rigidities at home caused the harmonised Consumer Price Index to rise to 4.7% in 2010 (from 1.4% in 2009).

3. Methodology

Our analysis makes use of EUROMOD, a multi-country tax-benefit microsimulation model that provides measures of direct taxes, social contributions, cash benefits and market incomes in a comparable way across EU member states. EUROMOD simulates non-contributory cash benefit entitlements, direct tax and social insurance contribution liabilities on the basis of the tax-benefit rules in place and information available in the underlying datasets. The components of the tax-benefit systems that cannot be simulated (e.g. those depending on prior contributions) are taken from the data along with information on original incomes[6]. Baseline systems in EUROMOD have been validated at micro level (i.e. case-by-case validation), as well as at macro level (Figari, Iacovou, Skew & Sutherland 2010). Furthermore, the model has been tested in numerous applications (e.g. Bargain 2006).

EUROMOD enables us to compute the disposable income of individuals under different scenarios, taking account of the operation of tax-benefit systems and the way these interact with market incomes and personal/household characteristics. In this paper, the underlying micro data for Greece are provided by both the European (UDB) and the national (PDB) version[7] of EU-SILC 2007. The use of the national version allows us to exploit all information collected in the national questionnaires, which is closer to the level of detail required for accurate tax and benefit simulations.

Estimating the effects of the crisis on the income distribution in 2010 using a dataset (EU-SILC 2007) originally reporting incomes earned in 2006 is clearly unsatisfactory. Due to the complexity of income surveys (including those - like EU-SILC - specifically designed to provide prompt information), income data

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[6] For further information see Sutherland (2007) and Lietz & Mantovani (2007). EUROMOD is currently undergoing a major updating process. The aim is to have EUROMOD run on EU-SILC in all EU-27 member states by 2012.

[7] We are grateful to El.Stat., and especially to George Ntouros, for providing us with the data of the national version of EU-SILC.

only become available after considerable delay. For instance, the EU-SILC 2011 survey data (reporting incomes earned in 2010) will not be released before March 2013 (cross-sectional component) and August 2013 (longitudinal component).

A tax-benefit model like EUROMOD can fill the gap, providing timely estimates of the effects of the crisis on the income distribution. To do so, it is necessary to update the model to 2010. This involves three separate steps: (a) updating tax and benefit policies, (b) uprating incomes, and (c) accounting for changes in the characteristics of the population, namely the rise in unemployment.

Furthermore, EUROMOD, in common with most tax-benefit models, works under the default assumption of full compliance (i.e. that tax and benefit rules are fully adhered to). This is an obvious oversimplification - most clearly so when tax evasion and non-take up of benefits are present. In order to enhance the accuracy and credibility of our estimates, we have addressed tax evasion and benefit non take up.

Other issues we have also considered concern indirect taxation and benefits in kind. A final issue concerns the choice of the poverty and inequality indicators we used to assess distributional effects. Below we explain how we dealt with the above issues in turn.

Updating tax and benefit policies

We simulated the tax-benefit system of Greece for every single year from 2006 to 2010. In particular, we directly simulated as many of the policy changes described in section 2 as was possible. These changes included cuts in public pensions via the elimination of the 13th and 14th monthly payments, their replacement by pensioners' vacation allowances, the introduction of pensioners' solidarity contribution, the new personal income tax schedule, the 1% one-off emergency tax on high incomes, the extension of the tax base, and most changes in tax credits and allowances (e.g. changes in tax relief for dependent children,

for installation of eco-friendly power systems, and for private insurance contributions).

Furthermore, we took full account of the fact that provision of OEK rent subsidy, a contributory income-tested housing benefit for dependent workers, was suspended in 2010.

Uprating incomes

We separately modelled the fall in earnings suffered by different groups of workers. We accounted for the cuts in public sector pay by uprating civil servants' and public utility workers' incomes from dependent employment on the basis of the latest estimates of average rates of income growth provided by the Bank of Greece. With respect to changes in private sector wages, we used the average rates of growth in the relevant incomes over the relevant period (from 2006 to 2010), separately for banking and non-banking firms, as estimated by the Bank of Greece (2011). Farmers' earnings were uprated on the basis of data on gross value added by industry provided by El.Stat. As regards self-employment earnings, no reliable information is available on recent changes. In view of that, we assumed that incomes from self-employment moved in tandem with incomes from dependent employment (i.e. -5%)[8]. We uprated all other market incomes (such as property incomes, investment incomes and the like) on the basis of the most reliable information available. All uprating factors can be seen in the Appendix (Table A.1)[9].

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[8] Later in the paper, we discuss the impact of assuming that the reduction in self-employment earnings was twice as large as the reduction in income from dependent employment, i.e. -10% rather than -5% (see section 4).

[9] Note that the nominal rates of income growth shown in Table A.1 are exactly equivalent to the real rates reported in section 2.

Accounting for the rise in unemployment

Standard practice in microsimulation is simply to ignore changes in the demographic composition or in the labour market characteristics of the relevant population. This is less unwise than it may seem, since such changes are likely to be negligible in the short term over which policy changes are typically assessed. Nevertheless, given the magnitude of the rise in unemployment in recent years in Greece, from 8.3% in the data year (2007) to 12.5% in the year of interest (2010), assuming away such a change would clearly have been inappropriate for this paper.

We accounted for the rise in unemployment by changing the employment status of the required number of cases in the dataset. In other words, our approach draws on Figari, Salvatori & Sutherland (2010)[10]. Specifically, we first identified the relevant sub-sample (workers in dependent employment other than tenured civil servants; self-employed workers were also excluded). Then we split the sub-sample into 56 groups defined by gender, age and education. Furthermore, we moved a number of cases within each group from employment to unemployment in order to replicate as closely as possible the pattern of unemployment shown in the 2010 Labour Force Survey[11]. The earnings from dependent employment of those made unemployed in the dataset were set to zero. Some of these workers (depending on their previous employment record) would be eligible for unemployment benefit, which we simulated. Finally, we assumed no changes in labour supply. The resulting adjustment is shown in Table A.2.

An alternative way to deal with changes in employment status might have been to re-weight the EU-SILC sample by increasing the weights of households containing unemployed workers at the time of the survey, while at the same time reducing the weights of other households so as to keep constant the composition

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[10] For a similar technique, see Baldini & Ciani (2010).
[11] Unlike income surveys, labour force surveys usually release data within two or three months from collection.

of the dataset (Immervoll et al. 2006). The drawback with that approach is that re-weighting would amount to implicitly assuming 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. In the case of Greece this can be quite misleading, as all available evidence indicates that the characteristics of those made unemployed in 2010 are quite different from the characteristics of those made unemployed in earlier years.

Accounting for tax evasion

Under-reporting of personal incomes for the purposes of tax evasion is known to be rife in Greece (OECD 2009). As a consequence, to ignore tax evasion when estimating the distributional impact of the crisis would be seriously to undermine the validity of our results. By assumption, and building on the findings of an earlier study of tax evasion in 2004 (Matsaganis & Flevotomou 2010)[12], we introduce rates of under-reporting equal to 1% for salaries and wages, 0% for public pensions, 25% for self-employment earnings and 55% for farming incomes (see Table A.3).

In accounting for tax evasion in EUROMOD we assume that individuals reveal their real total net income (say N) to survey interviewers (in this case, EU-SILC). Let G denote individuals' real gross income (which includes the part of income which is not reported to the tax authorities), and r the rate of income under-reporting. Further, let T(G) denote the personal income tax function. In the presence of tax evasion, it follows that:

$$G = N + T((1-r)* G)$$

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[12] We implicitly assume that patterns of income under-reporting for tax evasion did not change between 2004 and 2010. As a matter of fact, it is widely thought that tax evasion intensified under conservative rule (2004-2009), and that was kept in check in 2010 as the incoming socialist government made threatening noises against suspected tax evaders. However, no hard evidence exists on the real extent of tax evasion in recent years. We are currently involved in on-going research analysing a large panel of income tax returns since 2005.

By solving this recursive problem iteratively[13] and for each income source separately, we obtain the values of real gross income, G. The rates of under-reporting are then 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.

Accounting for benefit non take up

EUROMOD by default assumes full benefit take up. However, not all social benefits are claimed by those eligible. Recent evidence shows that the extent of non-take up in many countries (including Greece) is considerable[14].

In this paper, correction for non-take up was carried out for two income-tested benefits: social pension, aimed for non-recipients of a contributory pension aged over 65; and unemployment assistance for older workers, targeted at the long-term unemployed on low income.

In the former case, the social pension was only assigned to people who declared receipt in the original dataset (part simulation). Regarding unemployment assistance for older workers, the benefit was randomly assigned to 5% of eligible recipients[15] (see Table A.4).

Accounting for indirect taxation

We could not directly account for VAT changes, as the underlying dataset does not include information on consumption patterns (EU-SILC is not an expenditure survey). To provide an indirect measure of the incidence of VAT hikes, we

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[13] We thank Kostas Manios for providing us with the relevant code.

[14] For a recent analysis of non-take up in Greece and in Spain, see Matsaganis et al. (2010). For a review of non-take up in several other EU countries, see Matsaganis et al. (2008).

[15] In the original EU-SILC dataset, eligibility rules for unemployment assistance for older workers (under the assumption of full take up) appeared to be met in 38 cases, whereas receipt was reported by only 2. The latter, projected from the sample to the population, is roughly equivalent to the known number of actual recipients from administrative data. The implicit non take up rate (2/38) is approximately equal to 5%.

applied the methodology established in earlier work (Decoster et al. 2010), using data from the 2004 Household Budget Survey[16]. We were thus able to incorporate - albeit indirectly - VAT increases in our analysis of the relative contribution of each austerity measure to overall fiscal consolidation, and of their incidence by income quantile (Figure 3). Nevertheless, we were unable to account for the distributional effects of changes in VAT rates elsewhere in the paper.

<u>(Not) accounting for benefits in kind</u>

A significant aspect of the austerity is that the fiscal squeeze may affect the quality and quantity of public services. Capturing the distributional impact of social benefits in kind is not a common feature of most tax-benefit models. In spite of the substantial progress made recently towards incorporating non-monetary components into EUROMOD (see Paulus et al. 2010), the relevant module is not yet generally available. In view of the above, changes in the provision of social benefits in kind (such as publicly-funded health care, education, care for the elderly, child care and so on) are ignored in this paper.

<u>Inequality indicators</u>

To assess inequality effects we use three indicators. The first is the Gini coefficient, probably the widest used inequality indicator, taking values ranging from 0 (total equality) to 1 (max. inequality). The second inequality indicator is the coefficient of variation, a measure of income dispersion (Duclos & Araar 2006). The third indicator is the S80/S20 income quintile share ratio, measuring the (equivalised disposable) income received by the richest 20% of the population divided by that received by the poorest 20% of the population[17].

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[16] We thank Dirk Verwerft (University of Leuven) for simulating for us the recent VAT changes in Greece.
[17] In the terminology of the European Commission, the S80/S20 income quintile share ratio is a structural indicator (key indicator 12) and an OMC indicator. The latter are "instruments for monitoring the

<u>Poverty indicators</u>

To assess poverty effects we use three so-called Laeken poverty indicators (Atkinson et al. 2002). The first indicator is the standard poverty rate, measured in terms of the proportion of the population with an equivalised income below 60% of the median equivalised disposable income[18]. The second indicator may be termed the extreme poverty rate, measured in terms of the proportion of the population with an equivalised income below 40% of the median equivalised disposable income.

Both of the above indicators measure poverty by reference to a poverty line that is a function of median incomes. In other words, it goes up as median incomes improve, and it goes down as median incomes fall. This is quite consistent with the concept of "relative poverty", and may not matter much when income growth is slow either way. Nevertheless, at times of rapid change in living standards, individuals may compare their condition not so much with that of "the average person" in the society in which they live, but with their own condition in a previous period.

In view of that, it may be more appropriate to use an indicator measuring poverty by reference to a poverty threshold anchored at a fixed moment in time. Accordingly, our third indicator reports the proportion of population with equivalised income in 2010 below 60% of the median of the 2009 distribution, adjusted for inflation[19]. By introducing this indicator, we classify as poor all those with income above the standard poverty threshold in 2010, but with purchasing power below the standard poverty threshold of 2009. In other words, we try to capture the experience of those unable to purchase in 2010 the goods

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overarching objectives within the Open Method of Coordination on social protection and social inclusion". See EC (2010).

[18] The standard poverty rate (At-risk-of-poverty rate after social transfers) is a structural indicator (key indicator 13b) and an OMC indicator.

[19] The proportion of population with equivalised income in 2010 below 60% of the median of the 2009 distribution, adjusted for inflation, is a specification of another OMC indicator (At-risk-of-poverty rate anchored at a fixed moment in time).

and services which were affordable to someone with income exactly equal to the poverty threshold in 2009. Arguably, a poverty threshold anchored at a fixed moment in time is better suited to periods of rapid change in living standards. In this sense, our third indicator may be thought better to approximate the experience of impoverishment when nominal incomes fall and prices rise.

4. Results

What were the effects of the 2010 austerity measures and the wider recession on the income distribution? Did they cause inequality and poverty to rise? How equitably was the burden of the crisis shared between income groups? In this section we attempt to provide some tentative answers to these questions.

Inequality effects

The estimated effect of austerity measures and the recession on income inequality is shown in Table 1. On two out of the three indices we selected, inequality seems to have increased. In the case of the Gini index, the increase is a mere 0.05%. In terms of the S80/S20 index, the income share of the richest 20% of the population appears to have risen (relative to that of the poorest 20%) from 6.11 in 2009 to 6.19 in 2010, or by 1.4%. On the contrary, the coefficient of variation seems to have actually declined by 1.7%, implying that the distribution of disposable income in 2010 became somewhat less dispersed relative to 2009 (i.e. pre-crisis).

Figure 1 offers a visual representation of changes in relative income share by decile. It can be seen that the two poorest deciles actually lost ground in relative terms, even though as a proportion of total disposable income their loss was small (less than 0.1%). The greatest loss was suffered by the top decile (from 26.8% to 26.5% of total income). Otherwise, income deciles 5-9 seem to have

improved their position a little. On the whole, changes in relative income share were rather limited.

Poverty effects

Tables 2-4 show how our three poverty indicators were affected by the crisis. Results are shown by age and by employment status of the household head[20].

Using the standard poverty line (at 60% of median), the overall poverty rate seems to have risen a little: from 20.1% in 2009 to 20.9% in 2010. Looking at effects on specific population sub-groups, poverty rates vary widely; from nearly 0% for households whose head worked in the public or banking sector, to over 40% for households whose head was unemployed or a farmer. Households with an unemployed head appeared to be worst hit by the crisis: their poverty rate went up by 9 percentage points (from 51.1% to 60.1%). With respect to age, the rise in poverty was more pronounced for persons aged 30-44, the age group worst affected by the rise in unemployment (see Table 2).

With reference to a lower poverty standard at 40% of median equivalised disposable incomes, our results reveal a similar pattern: overall poverty increased from 7.3% in 2009 to 8.0% in 2010 (Table 3). In the case of households with an unemployed head, the extreme poverty rate reached 38.5% (from 34.8% in 2009).

Using a poverty threshold anchored at a fixed moment in time (at 60% of the median of the 2009 distribution, adjusted for inflation), alters results quite drastically (Table 4). Overall poverty rises by more than 5 percentage points to 25.5%. The increase is pronounced for all age groups and for most occupational

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[20] Household head is defined as the person owning or renting the household's dwelling. If two or more persons share this responsibility, the head of household is the person with the highest disposable income.

categories. Once again, households whose head was unemployed[21] fared worst, experiencing an increase in their poverty risk from an already very high 51.1% in 2009 to 63.7% in 2010.

By way of a quasi-sensitivity analysis, we tested the impact of assuming that the drop in self-employment earnings was twice as large as initially assumed, i.e. -10% rather than -5%. Recall that, as discussed in section 3, no reliable data on recent changes in such earnings are available yet. By reference to a poverty line at 60% of median incomes, the poverty rate rose from 20.9% to 21.0%. By reference to a poverty line at 40% of median incomes, the poverty rate went up by another half percentage point, from 8.0% to 8.1%. Using a poverty line anchored at its 2009 level and adjusted for inflation caused the poverty rate to rise more markedly from 25.5% to 26.0%. On this evidence, our results seemed rather robust[22].

Income loss

Figure 2 presents our estimates of the effects of the crisis by income decile, both in absolute terms (in equivalised euros per year, in 2009 prices) and in relative terms (as a proportion of each decile's disposable income in 2009, adjusted for inflation). Note that our estimates focus on income alone, i.e. the effects of changes in indirect taxation are ignored. Note also that the composition of income deciles has been fixed in pre-crisis terms, i.e. individuals were ranked according to their equivalised disposable income in 2009.

In absolute terms, a rather steep gradient can be observed. Households in the top decile appear to have lost €4,344 per year per "equivalent adult" in 2009 prices (i.e. as much as €9,122 per year for a couple with two children). By contrast,

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[21] Note that following the adjustment to the dataset described in section 3, the population share of households headed by unemployed workers rose from 2.0% in 2009 to 3.4% in 2010.

[22] We also experimented with excluding from our analysis the effects of one-off measures, such as the 1% emergency tax on high incomes described in section 2; this made no difference whatsoever to our results.

those in the poorest decile were left €313 worse off (€657 per year for a family of four).

However, in relative terms the pattern of income loss looked a lot less progressive. Households in the poorest decile lost an estimated 8.7% of their income; those in the next poorest decile 8.6%. Around the middle of the distribution (deciles 3-7), relative income loss fluctuated around 9.5%. Further up, income loss reached 10.1% (decile 8), and peaked at 11.6% for households in the richest decile.

The burden of austerity

We now turn to a crucial (and politically contested) question: how was the burden of austerity shared between income groups? Figure 3 shows the relative contribution of the main austerity measures (including increases in VAT rates) to the Greek government's overall fiscal consolidation effort, by income decile, as a proportion of total savings.

An important finding, at first surprising, is that cuts in public sector pay and pension benefits were almost exactly offset by increased spending on unemployment benefits and lower income tax proceeds. The most effective (in terms of contribution to fiscal consolidation) of all the austerity measures, and the one to have made a difference, is the increase in VAT rates.

In distributional terms, a significant factor is the actual design of each measure. For example, pensioners' solidarity contribution was created with the explicit aim of placing a much higher burden on high pension than on low ones[23]. It can be clearly seen that this was achieved, since this measure hardly affected anyone

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[23] The estimated contribution of the top three deciles to total savings from the introduction of pensioners' solidarity contribution is estimated at 78%. The richest decile alone accounted for 45% of total savings from this policy measure.

in the bottom half of the income distribution. To a lesser extent, this is also the case with cuts in pension benefits[24].

Furthermore, much also depends on the income position of those affected by each measure. For instance, most public sector workers tend to be located towards the top of the income distribution. In fact, further analysis confirms that 74% of civil servants and 65% of public utility workers were located in the top 30% of the income distribution (Table A.5). As a result of that, even assuming a proportional reduction in public sector pay (as we do here), the top 30% of the income distribution provided an estimated 84% of the total fiscal savings from cuts in public sector pay[25].

Paradoxically, in spite of the changes in the structure of personal income tax, three factors combined to make the changes less effective (in terms of tax proceeds) and at the same time less progressive (in terms of distributional effects). The austerity reduces the taxable incomes of public sector workers and pensioners. The recession reduces other taxable incomes (i.e. wages and salaries of private sector employees and earnings of own account workers and the liberal professions). Tax evasion places a significant share of real incomes from farming and self-employment beyond the control of the tax system, distorting the latter's intended distributional effect.

Redistributive effects of each austerity measure can be more formally assessed by calculating the values of index of residual progression proposed by Reynolds and Smolensky (1977). The index shows the difference between the actual value of the Gini coefficient and its counterfactual value in the absence of changes in the policy being assessed, keeping all other effects constant (see also Duclos and Araar 2006). The results are shown in Table 5.

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[24] We estimated that 53% of the total savings from cuts in public pensions concerned the top three deciles. In contrast, the bottom three deciles accounted for 7% of the relevant savings.
[25] Own calculations, available on request.

The values of the Reynolds-Smolensky index confirm that the redistributive effect of cuts in public sector pay was considerably progressive. Moreover, changes in personal income tax and the introduction of pensioners' solidarity contribution also seem to have been (mildly) progressive. On the other hand, the redistributive effect of cuts in pension benefits was shown to be weakly regressive.

VAT changes (analysed separately) have been unambiguously regressive[26]. In spite of the fact that different rates may apply to different expenditure items (as is the case with VAT in Greece), the structure of all indirect taxes remains largely proportional. Moreover, as income falls the propensity to consume tends to rise, exceeding 1 at low incomes (where families spend more than they earn, either by borrowing or by drawing on past savings). As a result of both, poor households contribute a significant proportion of the total tax take, which amounts to a very high proportion of their own income.

On the whole, the rich appear to have shouldered most of the burden of the fiscal consolidation effort: those in the top decile contributed 21.5% of total savings; those in the next richest decile 14.3%. Nonetheless, the contribution of lower incomes was far from negligible: those in the bottom decile accounted for 4.3% of total savings; those in the next poorest decile for 6.1%. Since the relative income share of the two lowest income deciles was respectively 2.5% and 4.3% (and leaving for a moment aside the objection that our estimate of the impact of VAT changes is imperfect), we can conclude that the poor contributed a clearly greater proportion of their income than the rich to the government's fiscal consolidation effort.

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[26] Specifically, the bottom three deciles contributed 18.5% of the total savings from VAT rate increases. The poorest decile alone accounted for 5% of total savings. Further analysis, based on data from the 2004 Household Budget Survey (results available on request), shows that the increase in VAT corresponded to around 2.5% of each decile's total consumption expenditure across the distribution. On the contrary, as a proportion of each decile's disposable income it ranged from 2.5% for the richest decile to 6.5% for the poorest decile, rising monotonically as income fell.

5. Concluding remarks

Our results can be summarized as follows. As a result of the austerity measures and the wider recession in Greece, relative poverty (as measured conventionally, by reference to a poverty threshold of 60% of median incomes) has increased from 20.1% in 2009 to 20.9% to 2010. Extreme poverty (measured by reference to a threshold of 40% of median incomes) has followed a similar pattern, rising from 7.3% to 8.0%. While these increases may appear unimpressive, poverty was shown to have risen to 25.5% if anchored in pre-crisis terms (measured by reference to a threshold of 60% of median incomes in 2009, adjusted for inflation). We argue that the latter indicator is better suited to periods of rapid change in living standards, better approximating the experience of impoverishment when nominal incomes fall and prices rise (as was the case in Greece in 2010 relative to 2009).

Looking at poverty by category, the situation of households headed by unemployed workers emerges as clearly alarming. On the one hand, because of the sharp rise in unemployment among primary earners, the relative weight of such households in the population has increased considerably. On the other hand, the risk of poverty within this group has risen further: of all individuals living in a household whose head was unemployed, 38.5% had an income of less than 40% of median, while the proportion of those with income below 60% of median was 60.1%!

Taking into account that the maximum duration of unemployment insurance benefit is 12 months, that unemployment assistance benefit has narrow eligibility conditions and suffers from massive non take up, while the rate of unemployment (and of long-term unemployment) is expected to remain high in the immediate future, poverty among the unemployed is certain to become the new social question par excellence.

Changes in inequality were less pronounced, while their general direction was rather indeterminate: on the basis of available evidence, we cannot say with any degree of safety whether the income distribution in Greece became more or less compressed as a result of the crisis. In terms of relative income share, although the richest decile appeared to have lost ground, so did the two poorest deciles.

Income losses were far greater for the rich than for the poor in absolute terms (i.e. in euros). However, in relative terms (i.e. as a proportion of their income), lower income groups suffered a significant loss of income. For instance, households in the bottom quintile (i.e. the poorest 20% of the population) lost an estimated 9% of their income, compared to an income loss of 11% for households in the top quintile.

Some of the government's austerity measures seem to have had a progressive effect: either because special care was taken to make a particular policy "fair" by design (e.g. changes in income tax, introduction of pensioners' solidarity contribution), or because those most affected were located towards the top of the income distribution (e.g. public sector pay cuts). However, this was partly offset by the regressive effect (albeit weak) of pension benefits cuts. Taking into account VAT rate increases would tilt the balance decisively in the latter direction: as a proportion of their income, the poor have contributed more than the rich to the government's fiscal consolidation effort.

A certain amount of caution is called for when interpreting our results. The main issues - to do either with the data we had to rely upon, with our assumptions, or with our approach - are briefly discussed below.

With respect to data, the original database offers an imperfect representation of reality. The Greek dataset of EU-SILC 2007 over-samples some population sub-groups (civil servants, public utility workers, banking employees), while it under-samples others (the self-employed, farmers, pensioners). If, as is often the case,

the former have higher income than the latter, a composition effect arises, with the implication that poverty and inequality in the population could be higher than in the sample.

Moreover, uprating incomes from an earlier date to the present amounts to assuming that everybody's income from a given source has risen by the same rate over the relevant period. This is clearly unrealistic, and could well understate distributional changes. On the other hand, uprating some incomes (e.g. self-employed earnings, incomes from farming, etc.) is subject to an even greater degree of uncertainty.

On the other hand, the simulation of the tax-benefit system may be imperfect when e.g. income tax rules are too complex to be accurately simulated, or when eligibility for means-tested benefits depends on income in previous years. Furthermore, as discussed earlier, our approach to accounting for tax evasion, based on earlier work (Matsaganis & Flevotomou 2010), even though a clear improvement over standard practice, remains rather simplistic. Assuming that (a) rates of under-reporting have not changed since 2004, that (b) they only vary by income source, and (c) that everyone's income from a given source is under-reported by the same rate, leaves much to be desired.

The same holds for the treatment of indirect taxation. In this paper, we have drawn on findings from earlier research (Decoster at al. 2010) in order to account for the likely impact of VAT changes, albeit in a rather crude manner. This was inevitable to some extent, since EU-SILC is not an expenditure survey and contains no information on consumption patterns. Nonetheless, given the salience of indirect taxes in the Greek tax system, correctly estimating their distributional impact would greatly enhance the accuracy of our results.

On another register, the fiscal squeeze undermines the proper funding of the public sector, adversely affecting essential public services and the "social wage".

However, social benefits in-kind (e.g. publicly-funded health care, child care, social care, education etc.) are ignored here. This issue has been addressed in recent work on incorporating non-monetary components into EUROMOD (Paulus et al. 2010). However, we know too little about the actual effect of funding cuts on the quality and quantity of social services. While collecting the relevant information and relating inputs to outputs is impossible without a substantial amount of further research, the gains could also be substantial.

Although we have made progress towards accounting for the rise in unemployment, much remains to be done in order to capture the impact of the recession more fully. In particular, we have implicitly assumed that the reduced demand for the goods and services provided by the self-employed has resulted in loss of earnings but not in loss of jobs. To some extent, this is a reasonable assumption: small businesses muddle through even when trade is less than brisk, while some of those whose business does fail are not classified as unemployed but either as involved in some other activity (e.g. in farming) or as inactive (e.g. pensioners). Nevertheless, the assumption that no self-employed worker was made unemployed as a result of the crisis seems rather problematic.

While we are fully aware that these weaknesses affect the accuracy of our results, we are confident that our research offers a good approximation of the distributional effects of austerity measures and the wider recession in Greece. Given the topicality of the questions addressed, and the public interest in the answers, we believe that work based on microsimulation is a good alternative to waiting until future waves of EU-SILC are released. Furthermore, if the research question involves identifying the effect of different factors, distinguishing between progressive and regressive items within the same policy package (as is the case here), there really is no alternative to micro simulation[27].

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[27] For a good example of a recent application of microsimulation to estimating the impact of the austerity in the UK, see Browne & Levell (2010).

Our research is part of collaborative work, involving other European countries as well (Leventi et al. 2010). In the immediate future we hope to improve our methods, study more countries, and make use of better data as soon as they become available.

In the meantime, our findings show that, in order to share the burden of austerity more equitably and to minimise losses for lower income groups, policies to reduce Greece's deficit need to be redesigned. In particular, the importance of fighting tax evasion cannot be overstated: it is crucial from a fiscal point of view (improving tax collection would help reduce budget deficits), as well as from a political point of view (restoring distributional justice would go a long way towards making austerity measures more acceptable).

Quite apart from the effects of the austerity, the wider recession (and, in particular, the sharp rise in unemployment) has raised the demand for social benefits. So far, the Greek government's response has been inadequate (Matsaganis 2011). Even though the number of unemployed workers rose by 45.1% in December 2010 compared to the same month a year earlier, the number of unemployment benefit recipients over the same period went up by only 9.6%. Rather perversely, housing benefit was suspended in 2010, partly because the crisis slowed the flow of social contributions into the relevant scheme. The frantic search for fiscal savings has not spared social services, some of which (e.g. the successful Home Help programme) suffered significantly. On the whole, the supply of social benefits seems to have been reduced rather than increased. And yet, to prevent the economic crisis from turning into a social catastrophe, a concerted effort is needed to tighten the social safety net and to compensate the weakest groups from its adverse effects.

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Appendix

TABLE 1 - Inequality indices

	2009	**2010**	difference (%)
Gini coefficient	0.349	0.350	+0.05
coefficient of variation	0.800	0.786	-1.68
S80/S20 income share ratio	6.109	6.193	+1.39

Source: EUROMOD version F4.0.

TABLE 2 - Poverty rates: poverty line at 60% of median incomes

	2009	**2010**	difference (p.p.)
all	20.06	20.88	+0.82
gender			
men	19.04	20.01	+0.97
women	21.02	21.70	+0.68
age			
0-15	21.41	22.31	+0.90
16-29	19.02	20.12	+1.10
30-44	16.44	17.93	+1.49
45-64	19.02	19.81	+0.79
65+	24.61	24.53	-0.08
household head is:			
unemployed	51.09	60.14	+9.05
employee (public sector or banking)	0.31	0.42	+0.11
employee (private sector excl. banking)	12.69	12.31	-0.38
liberal profession	3.79	3.72	-0.07
own account worker	16.63	17.39	+0.76
farmer	46.88	45.56	-1.32
pensioner	24.74	24.72	-0.02
other	20.65	20.56	-0.09

Note: The poverty threshold for a person living alone was €570 per month in 2009 vs. €543 per month in 2010. In the case of a family of four (couple with two children) the poverty threshold was €1198 per month in 2009 vs. €1140 per month in 2010. Individuals are ranked according to their household disposable income, equivalised by the "modified OECD" equivalence scale. Household disposable income is defined as total income, from all sources, of all household members, net of taxes and social insurance contributions.

Source: EUROMOD version F4.0.

TABLE 3 - Poverty rates: poverty line at 40% of median incomes

	2009	**2010**	difference (p.p.)
all	7.28	7.95	+0.67
gender			
men	7.04	7.54	+0.50
women	7.50	8.33	+0.83
age			
0-15	8.51	9.74	+1.23
16-29	8.30	8.90	+0.60
30-44	6.35	7.55	+1.20
45-64	8.27	8.74	+0.47
65+	5.29	5.30	+0.01
household head is:			
unemployed	34.77	38.53	+3.76
employee (public sector or banking)	0.00	0.00	+0.00
employee (private sector excl. banking)	3.32	2.87	-0.45
liberal profession	0.99	0.97	-0.02
own account worker	5.78	6.69	+0.91
farmer	24.26	22.70	-1.56
pensioner	5.56	5.46	-0.10
other	9.74	9.59	-0.15

Note: The poverty threshold for a person living alone was €380 per month in 2009 vs. €362 per month in 2010. In the case of a family of four (couple with two children) the poverty threshold was €799 per month in 2009 vs. €760 per month in 2010. Individuals are ranked according to their household disposable income, equivalised by the "modified OECD" equivalence scale. Household disposable income is defined as total income, from all sources, of all household members, net of taxes and social insurance contributions.

Source: EUROMOD version F4.0.

**TABLE 4 - Poverty rates: poverty line at 60%
of 2009 median incomes adjusted for inflation**

	2009	2010	difference (p.p.)
all	20.06	25.45	+5.39
gender			
men	19.04	24.52	+5.48
women	21.02	26.34	+5.32
age			
0-15	21.41	27.87	+6.46
16-29	19.02	25.27	+6.25
30-44	16.44	22.04	+5.60
45-64	19.02	23.53	+4.51
65+	24.61	29.39	+4.78
household head is:			
unemployed	51.09	63.71	+12.62
employee (public sector or banking)	0.31	1.40	+1.09
employee (private sector excl. banking)	12.69	16.36	+3.67
liberal profession	3.79	3.72	-0.07
own account worker	16.63	21.32	+4.69
farmer	46.88	50.87	+3.99
pensioner	24.74	29.06	+4.32
other	20.65	28.57	+7.92

Note: The poverty threshold for a person living alone was €570 per month in 2009 vs. €597 per month in 2010. In the case of a family of four (couple with two children) the poverty threshold was €1198 per month in 2009 vs. €1254 per month in 2010. Individuals are ranked according to their household disposable income, equivalised by the "modified OECD" equivalence scale. Household disposable income is defined as total income, from all sources, of all household members, net of taxes and social insurance contributions.
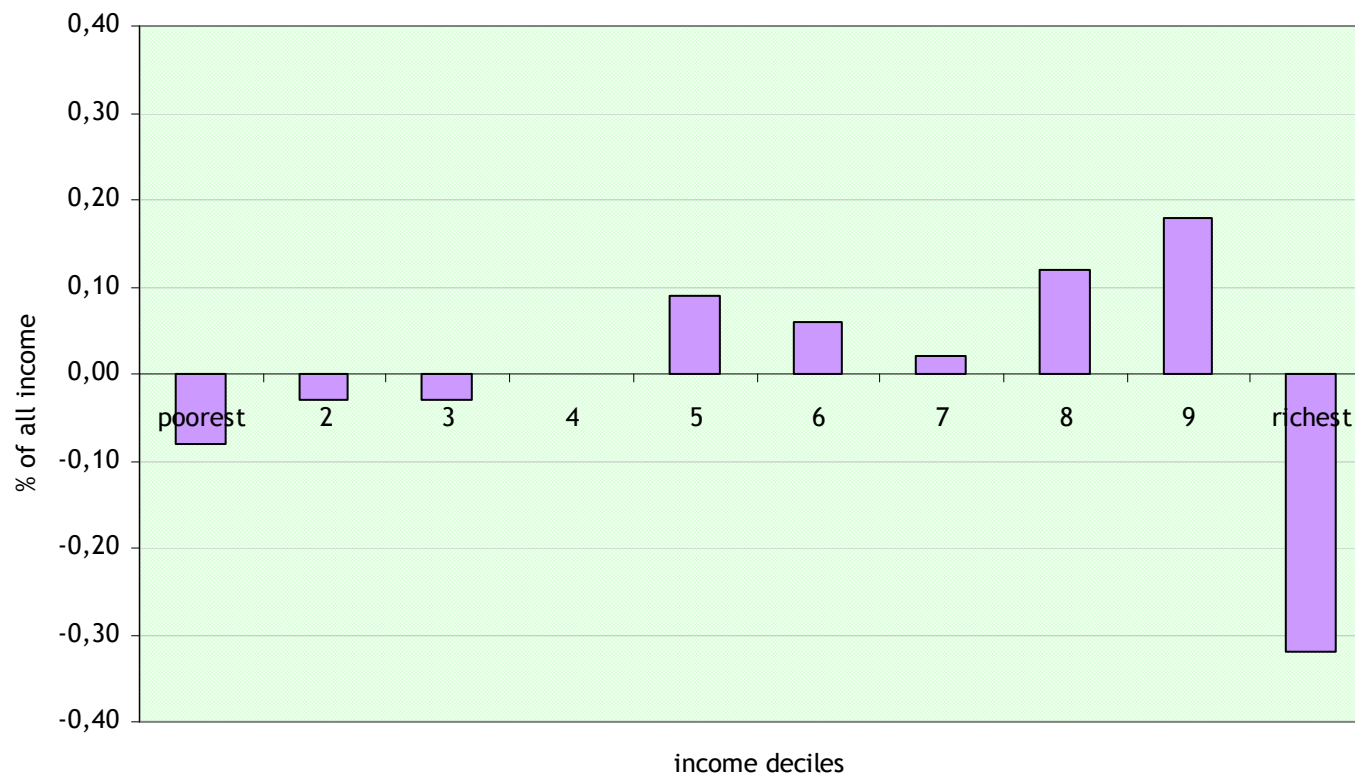
Source: EUROMOD version F4.0.

TABLE 5 - Redistributive effect of austerity measures

	values of Gini coefficient		Reynolds-Smolensky index
	actual	counterfactual	
income tax	0.34962	0.35007	+0.00045
pension benefits	0.34962	0.34959	-0.00003
public sector pay	0.34962	0.35250	+0.00288
pensioners' solidarity contribution	0.34962	0.35021	+0.00059

Note: The Reynolds-Smolensky index shows the difference between the actual value of the Gini coefficient in 2010 and its counterfactual value in the absence of the policy changes being assessed, keeping all other effects constant.
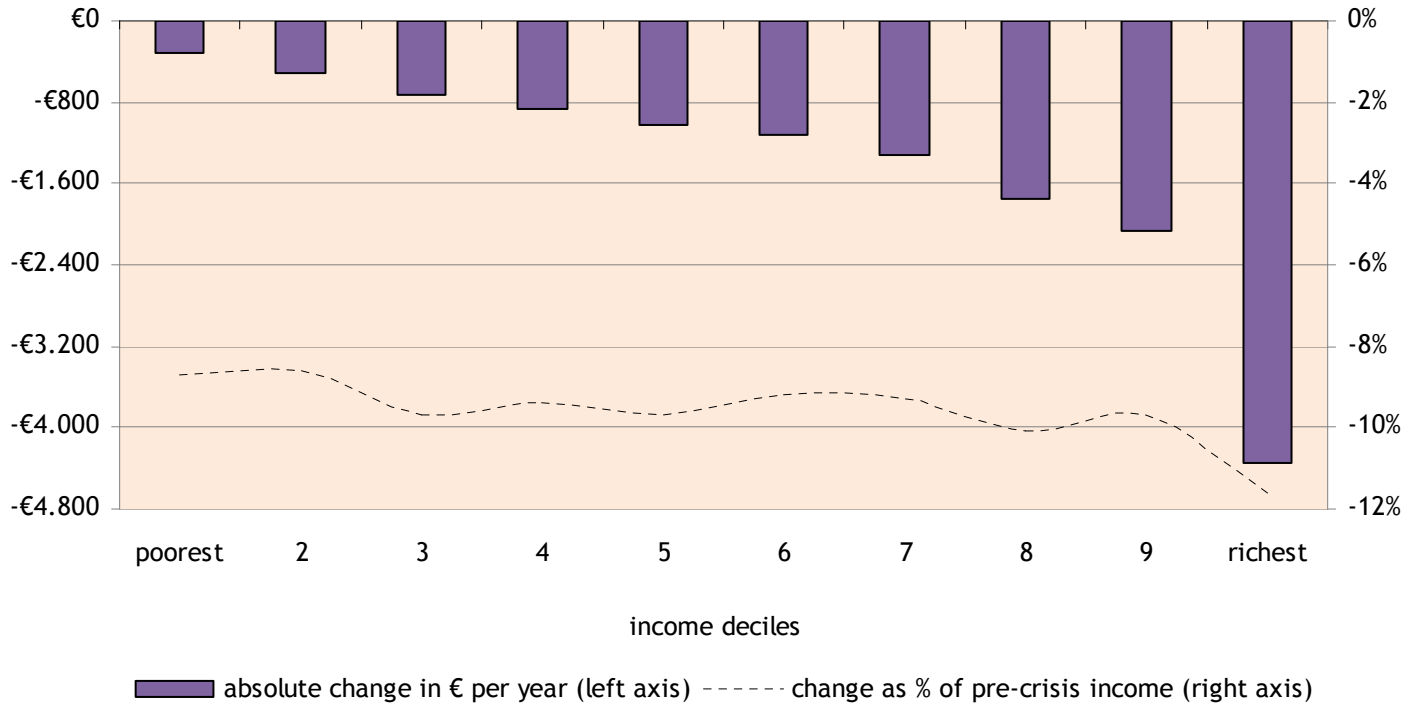
Source: EUROMOD version F4.0.

FIGURE 1 - Changes in relative income share by decile

Note: Income deciles were constructed according to the "modified OECD" equivalence scale, based on equivalised disposable income in the counterfactual scenario.
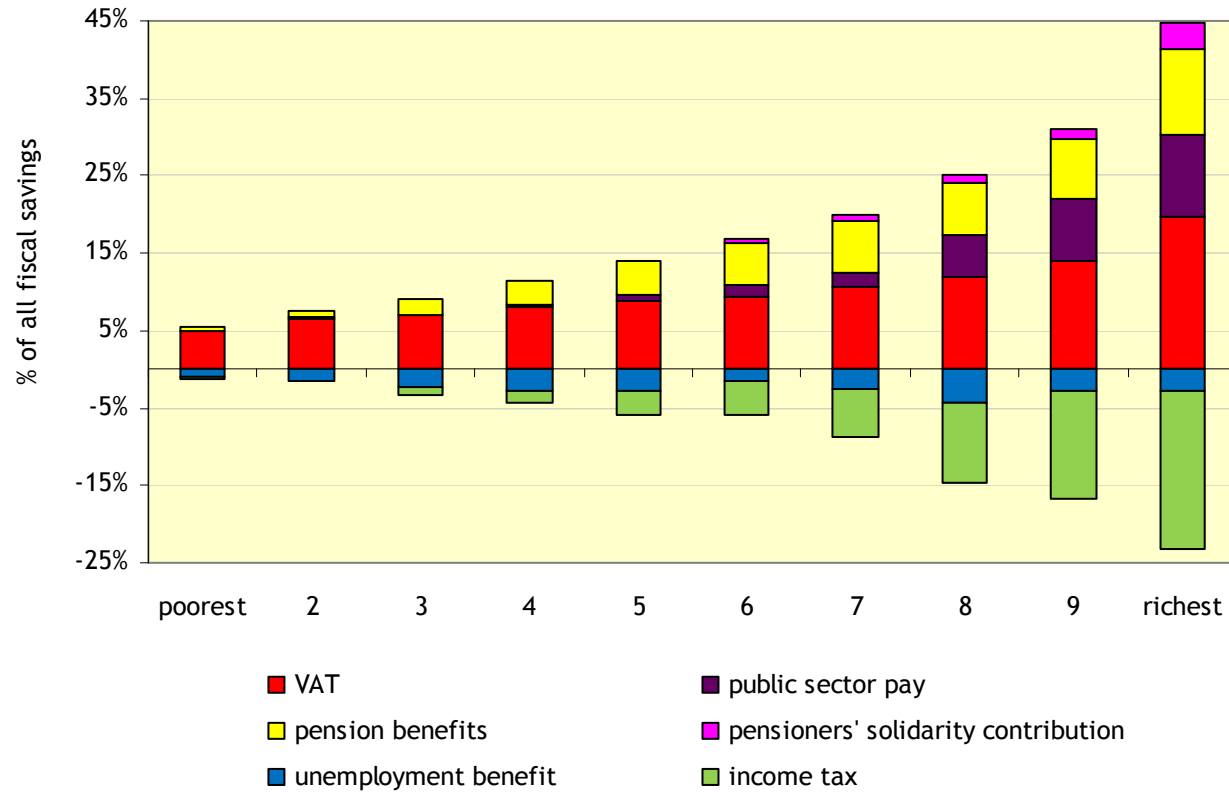
Source: EUROMOD version F4.0.

FIGURE 2 - Absolute and relative income loss by decile

Note: Income loss is measured in real terms (i.e. adjusted for inflation), averaged for each decile. Income deciles were constructed according to the "modified OECD" equivalence scale, based on equivalised disposable income in the counterfactual scenario.

Source: EUROMOD version F4.0.

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FIGURE 3 - Distribution of fiscal savings by income decile

Note: Income deciles were constructed according to the "modified OECD" equivalence scale, based on equivalised disposable income in the counterfactual scenario.

Source: EUROMOD version F4.0.

TABLE A.1 - EUROMOD uprating factors

	2006	2007	2008	2009	2010
Income from dependent employment					
civil service	1.000	1.038	1.112	1.170	1.058
public utilities	1.000	1.071	1.159	1.248	1.179
banking	1.000	1.089	1.089	1.129	1.109
non-banking private firms	1.000	1.061	1.130	1.162	1.128
Income from self employment					
farming	1.000	1.008	0.946	0.920	0.899
own account workers	1.000	1.052	1.117	1.169	1.110
liberal professions	1.000	1.052	1.117	1.169	1.110
Investment / property income					
Investment	1.000	1.031	1.119	1.089	1.164
property and rents	1.000	1.045	1.086	1.125	1.152
Other income					
private transfers	1.000	1.052	1.117	1.169	1.110
non-cash income	1.000	1.052	1.117	1.169	1.110
income received by people aged under 16	1.000	1.052	1.117	1.169	1.110
Retirement pensions / benefits					
main old age pension	1.000	1.040	1.071	1.071	1.071
supplementary old age pension	1.000	1.040	1.071	1.071	1.071
other minor pensions	1.000	1.040	1.071	1.071	1.071
survivors pension	1.000	1.040	1.071	1.071	1.071
orphans pension	1.000	1.040	1.071	1.071	1.071
pensioners' social solidarity benefit	1.000	1.218	1.436	1.436	1.436
social pension	1.000	1.220	1.449	1.449	1.487
private pension	1.000	1.030	1.074	1.088	1.139
Unemployment benefits					
unemployment insurance	1.000	1.181	1.299	1.459	1.459
unemployment assistance	1.000	1.000	1.000	1.000	1.000
minor unemployment benefits	1.000	1.181	1.299	1.459	1.459
Family benefits					
3rd child benefit	1.000	1.029	1.069	1.091	1.119
large family benefit	1.000	1.029	1.069	1.091	1.119
lifetime pension to many-children mothers	1.000	1.029	1.069	1.091	1.119
civil servants' family benefit	1.000	1.000	1.000	1.000	1.000
support to families of children at school	1.000	1.000	1.000	1.000	1.000
minor family benefits	1.000	1.000	1.000	1.000	1.000
Sickness / maternity benefits					
contributory maternity benefits	1.000	1.052	1.117	1.169	1.110
health benefits	1.000	1.052	1.117	1.169	1.110

TABLE A.1 (cont'd) - EUROMOD uprating factors

	2006	2007	2008	2009	2010
Disability benefits					
invalidity pensions	1.000	1.040	1.071	1.071	1.071
disability benefits	1.000	1.045	1.127	1.218	1.318
Other benefits					
housing benefits	1.000	1.000	1.000	1.000	1.000
scholarships and grants	1.000	1.000	1.000	1.000	1.000
minor social assistance benefits	1.000	1.000	1.000	1.000	1.000
large property tax	1.000	1.000	1.000	1.000	1.000
Tax relief					
loan value	1.000	1.030	1.074	1.088	1.139
financial capital	1.000	1.030	1.074	1.088	1.139
rent paid	1.000	1.045	1.086	1.125	1.152
education expenses	1.000	1.030	1.074	1.088	1.140
housing cost	1.000	1.031	1.119	1.089	1.164
interest on mortgage payment	1.000	1.030	1.074	1.088	1.139
other housing costs	1.000	1.031	1.119	1.089	1.164
medical expenses	1.000	1.030	1.074	1.088	1.139
expenses for new heating systems	1.000	1.030	1.074	1.088	1.139
alimony expenditure	1.000	1.029	1.066	1.080	1.093
other maintenance payments	1.000	1.029	1.066	1.080	1.093
expenditure on private pensions	1.000	1.030	1.074	1.088	1.139
nominal GDP deflator	1.000	1.029	1.066	1.080	1.093
harmonised consumer price index	1.000	1.030	1.074	1.088	1.139

Source: El.Stat., Bank of Greece and various benefit-providing agencies.

TABLE A.2 - Unemployment rates: by age, gender and education attainment (%)

	original database	LFS 2010	adjusted database
men all (aged 20-64)	6.3	9.9	10.0
20-24	20.2	25.4	26.1
25-29	12.0	16.4	15.3
30-44	3.7	8.7	8.4
45-64	4.9	6.8	7.1
PhD or Master's	4.2	6.7	7.1
university	4.7	6.1	6.1
technical and post secondary	8.0	10.3	10.3
upper secondary	6.7	10.2	10.2
lower secondary	6.4	12.2	12.2
primary (completed)	6.1	10.0	10.0
incomplete primary / no schooling	8.3	19.0	18.7
women all (aged 20-64)	13.0	15.6	15.7
20-24	38.1	39.7	40.6
25-29	18.6	23.0	24.3
30-44	11.7	15.0	13.8
45-64	6.0	9.1	8.3
PhD or Master's	22.5	9.4	22.5
university	7.6	10.5	10.5
technical and post secondary	13.3	19.2	19.2
upper secondary	15.5	17.7	17.7
lower secondary	16.7	17.7	17.7
primary (completed)	11.4	13.4	13.4
incomplete primary / no schooling	6.4	18.3	14.2

Note: EUROMOD originally relied on data from EU-SILC 2007. To account for the rise in unemployment, the underlying database was adjusted using data from LFS 2010.

Source: EUROMOD version F4.0.

TABLE A.3 - Correction for tax evasion

income source	assumed rate of under-reporting (%)
salaries and wages	1
pension benefits	0
self-employment earnings	25
farming incomes	55

Note: Stylised rates on the basis of the findings of Matsaganis & Flevotomou (2010).

TABLE A.4 - Correction for non-take up

	number of recipients		
	full take up	admin data	correction
social pension	102,842	63,806	71,694
unemployment assistance for older workers	33,523	1,089	784

Source: Various benefit-providing agencies; EUROMOD version F4.0.

TABLE A.5 - Income position of earners by occupational group (2009)

	Position in the distribution		
	low income	middle income	high income
farmers	50	38	12
own account workers	20	37	43
private sector excl. banking	18	45	37
liberal professions	4	11	85
civil servants	2	24	74
public enterprises	1	34	65
banking employees	0	25	75
unemployed	47	40	13
pensioners	31	48	21

Note: "Low income" refers to the bottom 30% of the distribution (i.e. covers deciles 1-3). "High income" refers to the top 30% of the distribution (i.e. covers deciles 8-10). "Middle income" covers deciles 4-7 (inclusive).

Source: EUROMOD version F4.0.

The geographical dimension of austerity

Vassilis Monastiriotis[#]

Abstract

The paper examines the geographical impact of the Greek austerity measures, focusing on two types of effects: those that are essentially compositional and those that concern longer-run processes of cross-regional adjustment. It finds a potentially large and spatially uneven impact, which can enhance existing disparities in the country. Owing to deep-rooted spatial imbalances, under certain conditions this can trigger a cumulative divergence process that may be hard to address in the future. To correct for this spatial asymmetry policy efforts should concentrate on raising revenues from a more progressive income tax system and relaxing the conditions for the absorption of EU funds to facilitate a badly-needed fiscal stimulus.

1. Introduction

Although in the initial stages of the global financial crisis Greece did not seem to be particularly affected –and, indeed, it was considered to be rather insulated, due to its low openness and Eurozone membership– by the end of 2009 Greece entered an unprecedented fiscal and sovereign debt crisis, which is still threatening the stability of the country and of the EMU at large. In response to these developments, and pushed by its European partners and – since May 2010 – lenders of last resort, the Greek government set out to

implement an extensive package of austerity measures. As with elsewhere in Europe, the austerity measures undertaken by the Greek government are geographically horizontal, lacking an explicit spatial dimension. This does not mean however that the measures are spatially neutral. Due to regional differences in specialisations, incomes, and economic capacities, geographically horizontal measures can have significant spatial effects, affecting different regions disproportionately.

This composition issue is of course not unique to Greece[28] – but it is particularly important there, due to the country's acute and multi-faceted inequalities and weak cross-regional equilibration mechanisms (Petrakos and Saratsis, 2000; Christopoulos and Tsionas, 2004; Monastiriotis, 2009). In Greece, more than elsewhere in Europe, economic activity is highly concentrated in a few regions, with Attica, the broader region of the capital city of Athens, accounting for some 40% of population and just short of 50% of national GDP. Industrial activity is also largely concentrated there, as is the incidence of foreign-owned and export-oriented manufacturing (Petrakos and Psycharis, 2004; Fotopoulos et al, 2010; Monastiriotis and Jordaan, 2010). The remaining regions have very low specialisations, mainly in tourism (island regions, especially the South Aegean and Crete), agriculture (accounting for over 30% of employment in Thessaly, Peloponnese, Eastern Macedonia and Thrace, Western Greece and parts of Central Greece and Central Macedonia), and light manufacturing (Central Greece and Central Macedonia), with financial and other business services accounting for less than 5% everywhere in the country outside the main urban regions of Athens and Thessaloniki.

Such structural imbalances across the Greek regions, and the developmental weaknesses that they manifest, can raise concerns that the austerity measures may have significantly differentiated implications across space – not only in

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[28] For example, Rowthorn (2010) has recently argued that the public-sector cuts announced by the coalition government in Britain in 2010 will affect disproportionately the north of the country, for which public sector employment represents a higher proportion of total employment and employment growth. Inversely, deficit reduction measures focusing on the revenue side (tax rises) will hurt disproportionately the higher-income regions of the south.

relation to compositional income effects but also with regard to more structural and more permanent effects to the real economy. In countries with strong cross-regional equilibrating mechanisms (migration, capital mobility, price adjustments) and a history of effective policy interventions to address regional or other imbalances, such a differentiation may not matter in the long run – especially if the demand shock induced by the austerity measures is considered to be transitory, with measures applied only for a short period of time. But in a country like Greece, and in the context of a prolonged fiscal consolidation programme which is already expected to last at least until 2015 if not well beyond (Monokroussos, 2011), this differentiation may lead to more permanent divisions across space – perhaps in a cumulative fashion.

Of course, as the implementation of these measures is still unfolding, it is not possible to provide here an accurate measurement of the spatial consequences of these measures and of their long-run implications. Given however the lack of attention from the side of policy to the spatial dimension of these issues, a preliminary examination of the geographical effects of the austerity measures is particularly important. This is not only in order to provide an early warning to regional policy, about the future challenges that it may face, but also for evaluating the suitability and effectiveness of the measures at the national level. Although fiscal consolidation is an unquestionable priority in the face of a national default and a possible exit from the Eurozone, it is important that the means for achieving this do not compromise the future economic cohesion of the country by intensifying already pronounced regional imbalances.

With this in mind, in this paper we pursue two complimentary pieces of analysis. First, we undertake an ex-ante accounting evaluation of the geographic composition of the income effects of the austerity measures announced and implemented in Greece since March 2010.[29] We rely on information from a variety of sources about the distribution of public sector

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[29] Consistent with its tradition of ad hoc policy design (Monastiriotis and Antoniades, 2011), Greece has not made so far any efforts to undertake an ex-ante impact analysis of the austerity measures that it implements.

employment, the incidence of low- and high-pay and of tax evasion, and the relative importance for each region of funds distributed through public investment and public transfers. Second, we offer an exploratory discussion about how the asymmetric income effects may be translated into longer-run structural imbalances across the Greek regions, by elaborating on the relevance and mechanics of a cumulative causation process that can be triggered by these asymmetries. As mentioned already, the purpose here is not to predict with any claimed accuracy the regional evolutions of the future, but to identify the possible threats to regional and economic cohesion that the horizontal implementation of the austerity measures may entail. Although this discussion is by its nature specific to the Greek context, some of the issues raised are expected to be of wider relevance to Europe, as the wave of fiscal consolidation measures extends to other countries in the European south and beyond.

The remainder of this paper is structured as follows. Section 2 examines briefly how the economic crisis spread to Greece and reviews the austerity measures implemented. Section 3 examines the direct spatial impact of the austerity measures (compositional effects). Section 4 explores the longer-run implications of these measures while the last section concludes with some implications for policy.

2. The Greek crisis and the austerity programme

As has been discussed extensively in the popular literature, what started in 2007 as a *mortgage crisis* in the USA soon extended to most of the rest of the developed world in the form of a *financial crisis*, as uncertainty about who holds 'toxic assets' and 'bad debt' spread. The *liquidity crisis* that this translated to led to an all-out *economic crisis*, with firms in the real part of the economy facing increasing difficulties in financing their everyday activities and wider investment plans. In this global context, Greece appeared initially to be well protected from the economic fallout. The country had very low exposure

to international trade (with goods exports representing a mere 8% of national GDP), a rather vibrant banking system with low exposure to toxic assets, and a history of strong growth for over a decade. Participation in EMU seemed at first a blessing, as currency pressures hit mainly countries at the vicinity of the eurozone, while the common currency appeared until the second half of 2009 to provide a safe haven for countries with traditionally weak currencies and fundamentals.

Underneath this, however, there were two important structural constraints that were soon to expose Greece to an unprecedented fiscal crisis. First, Greece's chronic inability to control its public expenditures and generate sufficient revenues in line with countries elsewhere in Europe. Especially on the revenue side, Greece significantly underperformed relative to the European average, with tax revenues as a share of GDP being about 7 percentage points lower (around 32%) and declining since the early 2000s (Servera and Moschovis, 2008). Weak tax collection mechanisms and pervasive corruption and tax evasion are deep-rooted problems that have systematically contributed to this (Featherstone, 2003; Matsaganis and Flevotomou, 2010; Skouras and Christodoulakis, 2011; Kalyvas et al, 2011). Second, systemic problems in the EMU design which created a structural asymmetry within the Eurozone, resulting in real currency appreciation and continuous loss of competitiveness in the European south.[30] Low interest rates, partly due to suppressed wage growth in Germany, led to fast consumption expansion in less competitive countries such as Greece and to asset-price inflation (including a housing bubble). Owing to Greece's weak industrial base and high product market rigidities, these developments led in turn to accelerating inflation, rather than accelerating productivity growth (Mitsopoulos and Pelagidis, 2011). As EMU does not allow for national currency devaluation, this in turn pushed unit labour

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[30] In the first eight years since the introduction of the euro Greece is estimated to have experienced a real currency appreciation of over 20% (Arghyrou and Kontonikas, 2011). To some extent, the design of the EMU architecture also allowed for an imperfect monitoring and enforcement of EU rules, which made early action to correct emerging imbalances less likely, thus also contributing to the subsequent crisis.

costs upwards, contributing to a continuously deteriorating current account deficit (which, at 14% of GDP in 2008, had surpassed that experienced by Argentina before its default in 2001) and putting further pressures on the country's public finances.

Irrespective, however, of these structural imbalances, the crisis was triggered by a more subtle event that had to do with another Greek particularity, that of weak monitoring and apparent mis-reporting of its fiscal data. Starting from a forecasted budget deficit of 3.7% of GDP (as reported in the 2009 Convergence Programme in December 2008), successive revisions of the deficit forecasts around the period of the October 2009 elections brought the deficit to 5.4% (October), 10.6% (November) and later 12.7% of GDP (December 2009). The official figure was finally confirmed by Eurostat in November 2010 to run at the spectacular rate of 15.4% of GDP. In a climate of international financial instability, and at least partly owing to the lack of a robust response by the EU institutions and member states to the unfolding crisis, this turmoil created first a *credibility crisis* that pushed Greek government bond spreads to unattainable levels (over 1,000 basis points in March 2010). Naturally this destabilised further the Greek economy, as economic confidence collapsed and fears of a deep recession materialised, putting additional pressures on the government debt and the budget deficit. The situation got out of control by spring 2010 leading to an acute *fiscal (sovereign debt) crisis*, with a possible default becoming seemingly inevitable.

Under the fear of the implications that a Greek default, inside the Eurozone, would have politically for the EMU project and economically for the other member states, the European Union agreed, together with the IMF and the ECB (the so-called, troika), literally on the 11th hour[31], an emergency rescue package in the form of a €110bn loan to the Greek government (paid in instalments over a two-year period). The rescue package entailed a set of provisions for the

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[31] The rescue package was officially announced on Sunday 8 May, a few hours before the markets opening and the Greek debt becoming non-serviced, thus leading to a de facto default.

implementation of a range of austerity measures and accompanying structural reforms aiming at recovering public finances and helping the economy regain some of its lost competitiveness. As the public-financial situation worsened and the economy kept sliding into an ever-deepening recession, the austerity measures became gradually more severe and more encompassing, raising significant public discontent but also weakening further domestic demand and investor confidence. Indeed, rumours about a Greek default continue today, even after an agreement in the March 2011 European Council to extend the repayment period of the Greek loan and to reduce the interest rate charged, and the intensifying efforts since late June 2011 to achieve a roll-over of the Greek debt with voluntary participation from the private sector. If anything, this partial debt restructuring has so far been taken by the markets as a signal of increased default risk leading to a further downgrading of Greece by the international credit rating institutions.

It is in this context that the Greek government announced, first in March 2010 and at various stages subsequently, a series of austerity measures aiming at reducing its excessive budget deficit to below the 3% threshold by 2015. The original fiscal consolidation measures of 2010, which aimed at creating savings to the value of 7.4% of GDP, were gradually amended with measures representing a fiscal adjustment equal to €14.4bn (6.3% of GDP) in 2011 and an additional €23bn for the period 2012-2015.[32] A failure to fully meet the 2010 deficit targets, as GDP declined faster than initially hoped and government revenues continued to grow anaemically, combined with increasing pressures from the 'troika' for tough adherence to fiscal consolidation to fend-off market speculation against the other ailing Eurozone

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[32] As announced in the Greek Medium-Term Fiscal Adjustment Programme (MFAP) on 15 April 2011. Subsequent revisions in May and June 2011 brought this figure to above €28bn. The revised MFAP was finally approved by parliament (with a marginal majority) on 29 June 2011. The plan introduces a large number of additional measures, most notably the reduction of the non-taxable income threshold from €12,000 to €8,000 and the launching of an extensive privatisation programme. The paper does not take into account these additional measures, but focuses largely on measures introduced in 2010 and until the spring of 2011. It should be noted that the new measures under the MFAP remain spatially-horizontal and largely tax-based and in this sense they continue to be in the direction of the measures discussed and analysed here.

economies, are responsible for this. On the revenue side, the main measures include a rise in VAT (from 19 to 23% for the standard and from 9 to 11% for the basic rate and an expansion to product categories not previously taxed) and in taxes on fuel, tobacco and alcohol, an one-off tax levy of 1% on very profitable firms and high-income households (complemented, more recently, with additional tax levies to households most, but all, of which have some degree of progressivity) and the introduction of a new income tax scale – which however has minimal budget effects. More important are the measures on the expenditure side, which included initially a 7% reduction in the budget of the public investment programme (and further reductions in an ad hoc fashion more recently), various cuts in social transfers and benefits, perhaps to a value of well-above 5%, and more significant cuts in pensions and the public sector. The latter include: a nominal freeze in pensions and public sector wages until 2012; abolishing across the public sector the so-called 13th (and 14th) salary and replacing it with two flat payments of €500 (€400 for pensions); a variable reduction in benefits in the so-called 'narrow public sector' (mainly, civil servants), ranging from 8% for earnings below €14,000 pa to 13% for earnings over €27,000 pa, representing on average a 10% reduction in nominal take-home pay; a horizontal 10% salary cut for employees in the so-called 'wider public sector' (utilities and other state owned enterprises and public bodies) which was later extended and made more progressive; a "five out – one in" rule for hiring in the public sector and abolition of fixed-term contracts; and, prospectively, compulsory dismissals in parts of the 'wider public sector' and in local government. Savings from the rationalisation of expenditures are also envisaged (by improving public management, rationalising health expenditure, the consolidation of local authority budgets and reduced military procurements), as are increased revenues from tackling tax evasion (although the latter was removed from the MFAP, as the ineffectiveness of the Greek government in this front made budgeting for savings from tackling tax evasion elusive).

Crucially, with this policy approach, the strategy for stimulating growth as an exit-route out of the crisis has been left to reforms aiming at market liberalisation and to wage-depression aiming at restoring international competitiveness – while public consumption and investment are being significantly retrenched. This needed not be the only policy option – but, at least until very recently, it very much appeared to be so given two very real constraints. On the one hand, the evident inability of the Greek government to mobilise resources either internally (due to the recessionary impacts of taxation) or from abroad.[33] On the other, the unwillingness of the EU to address the Greek (and Eurozone) crisis in a more holistic and systemic way (e.g., by devising a mechanism for debt restructuring within the Eurozone and for stimulating growth in the European periphery). Moreover, as the possibility of an EU-induced fiscal stimulus is effectively ruled out, some less drastic policy instruments that could help with stimulating internal demand were also discarded, at least until the end of June 2011. First, a front-loaded absorption of Cohesion Funds with a temporary waiver on the requirement for national co-financing. Such an option was considered by the European Commission in the early stages of the crisis but, largely due to fears of compromising the credibility of Greece and of EMU towards the markets, has been subsequently abandoned (Brunsden, 2009). It was only on 23 June 2011 that the European Commission brought this issue back on the table – and, as it seems, a partial release of such funds, with a reduced Greek participation to co-financing, will now take place in the second half of 2011.[34] Second, the provision by the European Investment Bank of specially designated loans to 'pre-finance' the national contribution to funds absorbed under the Cohesion Funds – a vehicle which allows to maintain performance incentives while removing the acute

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[33] As mentioned previously, spreads for Greek bonds are prohibitive; the efforts of the Greek government to generate revenues from donations by the Greek Diaspora have also not proven particularly fruitful. An extensive privatisation programme to the value of €50bn, agreed with the 'troika' in March 2011, is also not directed towards stimulating internal demand, as the prospective revenues are already earmarked for the reduction of the country's external debt (Monastiriotis, 2011).

[34] Source: http://news.yahoo.com/s/ap/20110623/ap_on_bi_ge/eu_europe_financial_crisis_57.

budgeting constraints. Greece already received – but not used[35] – a €2bn loan under this scheme in 2010. Owing to its poor absorptive capacity but also being cautious about signalling a lack of commitment to structural reforms and fiscal consolidation, both the 'troika' and the Greek government had until June 2011 opted to abandon this route to dealing with the crisis – thus entering into what is apparently a negative spiral of depressed growth and ever more pervasive austerity measures. It remains to be seen how and by how much this will be rectified in the future.

3. The geographical dimension of the austerity measures

It is clear that the measures included in the Greek austerity programme will have variable effects on the Greek regions as long as the latter have different compositions of public sector employment and different income distributions. To examine these differences we focus on three broad categories of measures, namely: changes in public expenditures (income transfers and public investment), changes in public sector employment and pay, and changes in direct and indirect taxation (including measures aiming at tackling tax evasion).

As mentioned already, in 2010-11 public investments are being reduced officially by 7% but in reality (accounting for absorption rates) by multiples of this.[36] Moreover, as the 'troika' pressures Greece to accelerate its public investment programme in order to make use of EU funds, public investment is shifted towards 'soft' interventions (e.g., on entrepreneurship than on infrastructure) and becomes more concentrated.[37] Both developments suggest a greater concentration of resources to the main urban areas and in particular

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[35] See http://www.eib.org/about/press/2010/2010-114-eib-bolsters-key-investments-in-greece-with-eur-2-billion-loan.htm?lang=-en. Curiously, by June 2011 Greece had only advanced 25% of this money.
[36] According to newspaper reports, in the first quarter of 2011 Greece had released only 8% of the €8.5bn earmarked for public investments in its annual budget. (Source: http://www.skai.gr/news/finance/article/167754/pagosan-oi-dimosies-ependuseis/)
[37] According to latest reports in the press ten large infrastructure investments to the value of €4.65bn are planned for the next period, five of which concentrate in the metropolitan regions of Athens and Thessaloniki (Eleftherotypia, 21/12/2010 – http://www.enet.gr/?i=news.el.article&id=234965).

around Athens and Thessaloniki at the expense of allocations to the north and west of the country. As 'soft' interventions tend to be allocated in a less redistributive fashion (following more the distribution of population than the inverse of regional incomes), it appears that more peripheral areas that have traditionally relied more on 'hard' public investments may lose out dearly. On the basis of past allocations (for the period 2005-08 – see Figure 1), the worst affected regions seem to be those of Western Macedonia (which, with public investment representing 5% of local GDP, may lose up to 0.5% of its GDP in foregone public investment), Ipeiros, and the North Aegean. In contrast, in regions such as Attica, Athens, Crete and Thessaloniki the impact will be minimal (less than 0.05% of local GDP).

FIGURE 1 - Public investment and income transfers by region
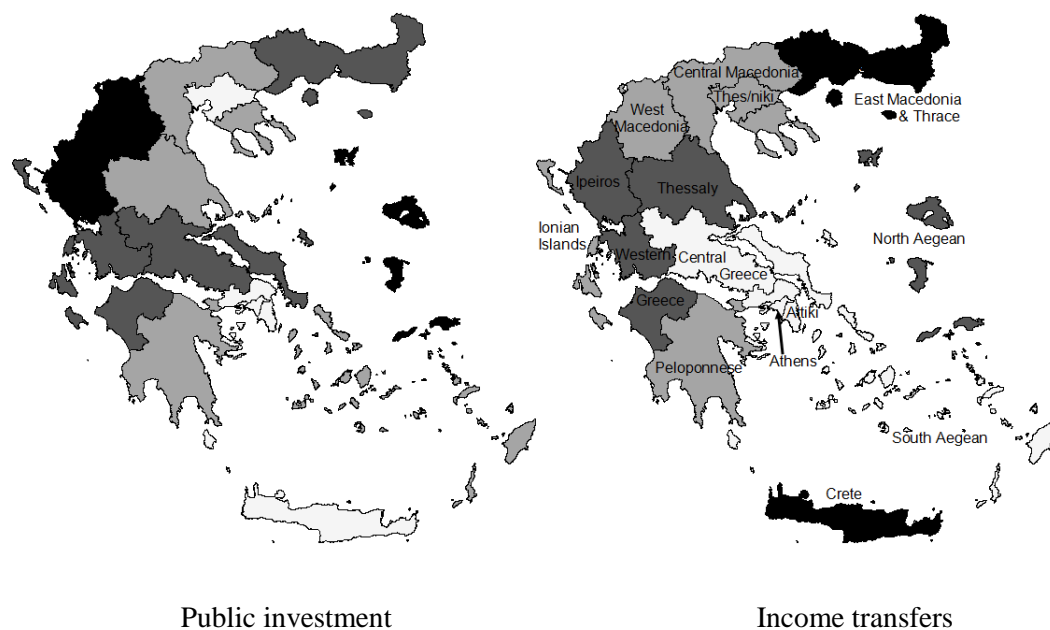
Public investment   Income transfers

Note: The maps categorise regions along four quartiles, with darker shades representing higher values. Public investment data (as a share of regional GDP) refer to average 2005-08 values and are derived from Monastiriotis and Psycharis (2011). Income transfers (state benefits as a share of average household incomes) are derived from the 2004-05 Greek Household Budget Survey (ELSTAT).

Similarly, on the basis of the most recently available household income data (right panel of Figure 1), the effects of the cuts in benefits and other income transfers to households, which are in the area upwards of 5%, seem also to affect more strongly regions in the northern and north-western periphery (as

well as, in this case, Crete and Thessaly). Attica, Athens and the South Aegean remain the least affected regions. Again, the effect is projected to be a disproportionate decline in incomes in the periphery, with East Macedonia and Thrace being by far the most affected region (experiencing a projected decline by over 0.5% of household incomes).

Despite their notable spatial variation, however, these effects are not particularly sizeable, relatively speaking. Indeed, the main effects on private consumption and household incomes are anticipated to come from the significant reductions in public sector pay and in pensions. Using salaried income data from the Greek Labour Force Survey and data on salaried and total household income from the Greek Household Budget Survey (HBS) we calculate that before the crisis the public sector accounted for close to 20% of total disposable household incomes in the country, while another 20% was accounted for by pensions.[38] On the basis of this, the implemented cuts in public sector pay and in pensions, and the additional prospective cuts for high-earners in the public sector, amount to an income reduction of over 4% nationally. Adding to this the impact of the public sector employment cuts (almost universal abolition of fixed-term contracts, '5 out – 1 in' rule, and further downsizing of employment in public utilities), suggests a much more significant effect than that of the cuts in pubic expenditures (in static terms – not accounting for possible multiplier effects). As is shown however in Table 1, this effect can be particularly uneven across space. Combined, public sector pay and pensions constitute close to or over 50% of household incomes in the north and north-west of the country (Ipeiros, Western Macedonia and North Aegean), while they are less than 35% in South Aegean and Crete (close to 40% in Athens and Central Greece). Assuming a similar geographical allocation of cuts, this implies a reduction in household incomes by some 40% more in the northern periphery than in the south.

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[38] Full calculations can be made available upon request.

The effects however can be even more pronounced owing to the composition of public sector employment in each region. The three most affected regions in the north and west of the country also possess by far the highest shares of incomes generated by fixed-term contracts in the public sector – where the cuts are even more drastic as such jobs are simply being lost. Together with the regions of Thessaloniki and Western Greece (again in the north and west of the country), these three regions also possess the highest shares of incomes accounted for by high-salary earners in the public sector (e.g., 2.2% in Ipeiros versus 1.3% in the Peloponnese), who also experience the most severe cuts.[39] Of them, the North Aegean and especially Western Macedonia also have unusually high shares of incomes generated in public utilities, which are also disproportionately affected. All in all, the three regions that stand out to be more severely affected by the austerity measures in the public sector are those of Western Macedonia the North Aegean and Ipeiros – which incidentally have the lowest shares of employment in the private sector (including self-employment) and the weakest industrial bases. According to the figures presented in Table 1, the measures taken in the public sector can induce a negative income effect of between 6.5-8.0% in these regions, which contrasts vividly with the estimated effect in the southern and metropolitan parts of the country, which is projected to be closer to 4.5%.

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[39] According to current plans, by up to 25% in 2012 (see www.enet.gr/?i=news.el.article&id=264850). Despite the high shares of high-salary public sector employees observed there, these regions also possess the highest shares of low-paid employment, as discussed later.

TABLE 1 - Selected components of household income by region

| Region	All public sector	Pensioners	All affected incomes	Public sector temps	Central govt high-wages	Public utilities	Projection of total effect
North-west							
West Macedonia	28.40%	20.30%	48.70%	2.70%	1.90%	9.20%	7.97%
Ipeiros	23.80%	29.70%	53.50%	1.60%	2.20%	1.00%	6.90%
North and north-east							
East Mac. & Thrace	15.10%	20.20%	35.30%	0.70%	1.30%	0.30%	4.25%
Central Macedonia	16.30%	22.70%	39.00%	1.10%	1.20%	1.10%	4.96%
North Aegean	22.80%	27.10%	49.90%	1.50%	2.40%	2.10%	6.61%
Western							
Ionian Islands	16.90%	27.00%	43.90%	1.00%	0.30%	0.80%	5.22%
Western Greece	16.90%	27.10%	44.00%	0.90%	1.90%	0.80%	5.40%
Central							
Thessaly	19.50%	22.10%	41.60%	1.20%	1.10%	0.90%	5.26%
Central Greece	17.60%	22.40%	40.00%	1.10%	1.10%	1.70%	5.11%
Attiki	18.80%	20.50%	39.30%	1.00%	1.30%	1.60%	4.99%
South							
Peloponnese	16.00%	24.40%	40.40%	0.80%	1.30%	1.90%	4.99%
South Aegean	16.30%	18.60%	34.90%	1.40%	0.00%	0.80%	4.55%
Crete	12.80%	21.90%	34.70%	1.00%	1.40%	0.50%	4.43%
Metropolitan							
Athens	18.80%	20.50%	39.30%	0.70%	1.80%	1.70%	4.86%
Thessaloniki	16.30%	22.70%	39.00%	0.60%	2.50%	0.70%	4.77%

Notes: Shares show income generated by the specific category as a proportion of total disposable household income. Data are derived from the 2004 and 2005 waves of the Greek Quarterly Labour Force Survey and the 2004/05 Household Budget Survey (ELSTAT), based on author's calculations. The projection of the total effect (last column) is based on the following calculation: 20% cut in public utilities plus 80% cut in fixed-contract incomes plus 25% cut in high-wage incomes in central government plus 10% cut in pensions and in the remaining public sector.

Turning to the examination of the impact of taxation, we start with the changes in indirect taxes. We rely on national-level estimates of the effects of these changes by income decile (from the micro-simulation study by Matsaganis and Leventi, 2011) and combine these with geographical information on the

distribution of household incomes from the HBS. Unsurprisingly, the incidence of low incomes, for which rises in indirect taxation (consumption levies and VAT) and the recently announced reduction in the non-taxable income threshold constitute a greater erosion of disposable incomes, is highest in the same regions previously projected to suffer most from the public sector cuts (see left panel of Figure 2). Nationally, without taking into account the additional measures included in the MFAP in June 2011, Matsaganis and Leventi (2011) predict a drop of purchasing power for the median household of about 4.5% (10% for incomes at the bottom decile and less than 3% for incomes at the top decile) – or about 3.8% of average household incomes. Simply projecting these estimates to the regional shares of incomes falling inside each decile of the national distribution of household incomes produces projections for the drop in purchasing power which range from 3.5% in Attica to 4.3% in Ipeiros and above 4% in North Aegean, Western Macedonia, East Macedonia & Thrace, Western Greece and the Peloponnese. The effect is again smallest in the metropolitan, central and southern regions.

FIGURE 2 - Income shares to total regional household income
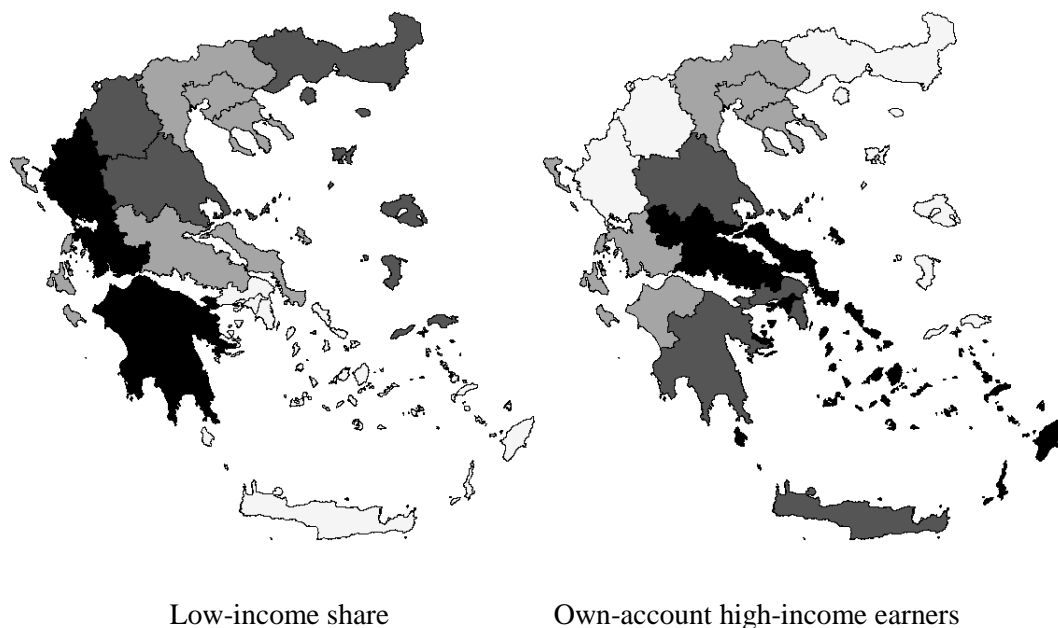
Low-income share   Own-account high-income earners

Note: The maps categorise regions along four quartiles, with darker shades representing higher values. All data are from the 2004-05 Greek Household Budget Survey (ELSTAT).

Given the geographical distribution of household incomes, a progressive income tax, in contrast to the effects of indirect taxation, would seem able to counterbalance some of the disproportionality of the effects observed previously. In their analysis of the redistributive effects of the new income tax scales, however, Matsaganis and Leventi (2011) find overall very minor effects and, in fact, even some small positive effects (reducing the tax burden) for households on higher incomes. As such households are disproportionately located in the metropolitan and southern regions, the effect of the new income tax appears also to lack spatially progressivity. As already mentioned, the recently announced income-tax measures are likely to have effects in the same direction, despite the fact that some of them (e.g., an income-based 'solidarity contribution' in the form of a progressive tax-levy) have indeed a progressive character.

Among all the measures considered here, measuring the geographical impact of the attempts to tackle tax evasion is of course the most challenging. The only available estimates at the sub-national level in Greece come form another recent micro-simulation study (Matsaganis and Flevotomou, 2010), which found tax evasion to be highest in southern mainland Greece (at 16%) and lowest in the large metropolitan area of Athens (at 5.6%) – with northern mainland Greece and the island regions all ranging between 12-14%.[40] On the face of this, assuming for illustration purposes a 50% success rate in taxing undeclared incomes[41] at an effective tax rate of 35%, the government efforts will reduce disposable household incomes by between 1% (in Athens) and about 2.5% in the rest of the country (including the north-western periphery). If, however, as the government emphasises, efforts to curb tax evasion concentrate on particular occupational categories (private doctors, lawyers and other professionals) and especially on headline cases in the Greek capital, then the results may be drastically different. In the right panel of Figure 2 we depict

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[40] The differences are mainly compositional, as income under-reporting was found to vary significantly with the type of activity (53% for farmers, 25% for the self-employed and 1% for salaried workers).
[41] Despite reasonable scepticism about Greece's ability to tackle this chronic problem, the government has taken already some notable headline actions targeting the so-called 'large-scale tax evaders'.

the spatial distribution of the regional income shares generated by self-reported high-income own-account workers (from HBS microdata). As can be seen, such incomes are largely concentrated in central and southern Greece, including Athens. If the government was to concentrate its efforts to undeclared incomes from this group, then the spatial effects of these efforts would be most dissimilar to those of most of the measures examined above. As it turns out, however, the government's efforts on this front seem to be subsiding, not intensifying, after the developments of June 2011.

4. Does it matter? Exploring longer-run threats

The finding that the austerity measures in Greece may have income effects that will differ systematically across regions is not particularly surprising.[42] Poorer and more backward regions, which rely more on public sector employment and public transfers are bound to be more affected by these measures. This of course does not mean that policy measures should be taken to correct this asymmetry. If the Greek regions were sufficiently integrated and cross-regional equilibration mechanisms were operating efficiently, the effects of these measures, no matter how asymmetric, would eventually diffuse more or less evenly across space. Weakened demand in the 'north' would reduce product demand in the 'south', where much of industry and tradable services are located, thus also reducing incomes there. Reduced activity in the 'north' would be eased by out-migration to the 'south', pushing downwards wages there until equilibrium is achieved.

It is however difficult to argue that such conditions exist in Greece. In the ten years before the crisis (1998-2007), unemployment rates in the high unemployment regions (northern and north-western Greece) averaged values 3.5 higher than the regions located in the southern parts of the country. A rank

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[42] It is however important given the lack of discussion in Greece about the spatial dimension of the austerity measures.

correlation of sub-regional unemployment rates between the start and end of this period returns a Spearman coefficient of 0.63, showing notable persistence in unemployment rankings across regions. And although unemployment disparities did indeed decline during the early phases of the crisis (with unemployment rising faster in the south, by over 60% between 2007-2010), more recently unemployment growth resumed faster in the north (rising between January 2010 and January 2011 by 130%, 77% and 40%, respectively, in the North Aegean, East Macedonia & Thrace, and Central Macedonia and by 78% and 92%, respectively in Western Macedonia and Western Greece between March 2010 and March 2011) and disparities have been following again an upward trend returning to their pre-crisis level since January 2011.[43]

This picture of regional unemployment performances reflects of course the weak cross-regional equilibrating capacity of the product and labour markets. Regional migration in the country is extremely low, estimated at 0.5% in 2007 (for working age population – Monastiriotis and Pissarides, 2011). Self-employment (mostly in family businesses and geographically-bound closed professions) represents almost 40% of total employment, while the share of dependent salaried employment outside the public sector is a dismal 30%. With manufacturing (including energy) representing a mere 12.5% of GVA nationally and only two regions having shares above 20% (Western Macedonia, where the main energy plants are located, which are publicly-owned, and Central Greece), the majority of goods and services consumed in Greece are either imported (goods) or locally produced (services).[44] Under these circumstances, it seems unsurprising that regional equilibration remains limited – and the effects of any region-specific shocks are likely to be largely localised, with very limited spillovers to other regions.

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[43] Calculations from ELSTAT data released 14 April 2011 (www.statistics.gr/portal/page/portal/ESYE /BUCKET /A0101/PressReleases/A0101_SJO02_DT_MM_01_2011_01_F_GR.pdf). The data for March 2011 show a continuation in the rise of regional disparities in unemployment rates, but this time with a substantial rise in unemployment in the South Aegean.

[44] Quite tellingly, the value of imports of goods in 2007 was over double the gross value-added of domestically produced goods in agriculture, forestry, manufacturing and energy combined. (Source: ELSTAT, http://www.statistics.gr/portal/page/portal/ESYE/BUCKET/A0702/Other/A0702_SEL30_ TS_AN_00_2000 00_2010_01_P_BI_0.xls)

In these circumstances, it is possible that the austerity measures may produce important equilibrium changes in economic activity across the Greek regions, besides their static compositional effects. In the remainder of this section we trace this possibility, focusing on four processes that we consider to be of relevance in the Greek context: (a) the circular nature of declining demand; (b) the workings of economic behaviour under risk; (c) the importance of scale (agglomeration) for productivity and growth; and (d) the role of economic diversity and internationalisation as a buffer to asymmetric shocks. As noted in the introduction, the purpose is not to speculate on future economic developments in the country but to identify possible cumulative effects that may be triggered under the severity (section 2) and apparent asymmetry (section 3) of the negative demand shock induced by the fiscal crisis and the austerity measures.

Our starting premise is that these measures do not only constitute a negative demand shock but, as they come to add to an existing recession, also create a demand deficiency – to which the Greek economy cannot respond not necessarily because it lacks flexibility but because it is resource/budget constrained. Given the relative closure of the regional economies in Greece, as discussed above, and the asymmetry of the austerity effects towards the most backward and resource-constrained regions in the country, this depressed demand nationally can possibly trigger a more permanent process of regional divergence, which may be difficult to break even when national economic performance recovers. We can think of the following mechanism. First, rising unemployment and lower incomes weaken disproportionately the consumption base of the most affected economies. In a recessionary environment this will lead to declining investment and job creation rates (even with unemployment raising technically the marginal product of labour). As capital becomes scarcer nationally (due to the substantial rise in borrowing costs), it is improbable that a sufficient amount of capital will flow into these regions from the more developed ones, in order to take advantage of the reduced costs and rising

unemployment there. Weakened demand and rising unemployment, especially in the relatively high-skill public sector, may instead create tendencies for out-migration of a brain-drain type, thus lowering productivity in these regions and evaporating any investment incentives accruing from unemployment. A Myrdalian-type circular causation effect may well kick-in, at least in the most heavily affected regions, where internal demand recedes the most.

Rational economic behaviour under heightened risk may come to add to this circular effect. It is well-established in the finance literature (see Kimball, 1990; Eechhoudt and Schlesinger, 1994) that increased income risk raises financial prudence, leading to a *disproportionate* decline in risk-taking (nationally).[45] Recently, Broll et al (2010) have followed the spatial implications of this, showing that rising financial prudence leads to greater concentration of private capital, so that investments are redirected to areas of high agglomeration, even if risks are distributed more or less *evenly* across space. For Greece this suggests that, as the austerity measures intensify economic contraction and uncertainty, 'prudent' businesses will cut down on their investments in areas of low demand, weak physical connectivity and poor infrastructure – even irrespective of the actual size of the negative demand shock experienced in each region – and in contrast concentrate their investments in the main metropolitan areas and especially in the Capital, where large segments of the population, as well as of political power, reside. Thus, investment in peripheral areas, such as those in the less developed northern and north-western parts of the country, will decline further.

Similarly, with rising unemployment nationally, mobile workers will have an incentive to concentrate in the big urban agglomerations, to benefit from the larger pool of jobs available there. In fact, migration towards the main urban centres may increase even if unemployment rises faster there than in the periphery, as long as disinvestment and subsiding demand reduces productivity

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[45] This is the same process that led to the liquidity crisis in 2008, as heightened risk led to a disproportionate reduction in lending.

faster in peripheral areas.[46] As a result, economic activity will become increasingly concentrated in better-off areas, areas with specialisations in internationally competitive sectors (mainly tourism) and areas of higher agglomeration (mainly the broader region of Athens and a few other metropolitan areas).

If such a circular causation mechanism is put in place, then a further weakening of the economic potential of the less prosperous regions can follow in a rather short period of time – in a way that, even if demand differences are restored, the cumulative process of regional differentiation may remain. Consistent with the Kaldorian view of cumulative causation (but also with the endogenous growth literature for knowledge- rather than demand-generated spillovers), a drop in the mass (Angeriz et al, 2008) or density (Ciccone and Hall, 1996) of economic activity in these regions will lead to an increasingly slower rate of productivity growth. Slower productivity growth will lead to a relative reduction in economic efficiency and in private returns (wages and profits), thus reinforcing the tendency for out-migration (brain-drain) and disinvestment (capital flight). As a result, growth differentials between the better-off and the less well-off regions will tend to become permanent, even if the initial conditions that generated them (i.e., the austerity measures) disappear.

Of course, the extent to which a negative demand shock in any given region translates into a more structural demand deficiency, which may then trigger a cumulative causation effect, depends at least partly on the economic resilience of this region (Pike et al, 2010). More diversified regions and those specialising in products of national or international comparative advantage will be in a better position to overcome the negative effects of the national austerity measures. In the context of the Greek economy, this adds another reason to

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[46] There are two theoretical arguments supporting this. On the one hand, owing to Marshallian externalities attributed to labour-pooling, a higher density of jobs tends to create lower unemployment durations thus increasing the probability of finding a job for any given level of unemployment. On the other, consistent with the Harris-Todaro model of urban migration, faster productivity growth in the urban centres induces migration from the periphery, even if one assumes that wage movements allow the peripheral labour markets to clear.

believe that the impact of the austerity measures may have a cumulative effect of the type discussed above. With depressed demand keeping wage and price inflation nationally at low levels (barring the temporary effects of tax rises on inflation), thus producing effectively an internal devaluation, the regions specialising in tourism and manufacturing exports (mainly Athens, Thessaloniki, the South Aegean and Crete, i.e., those least affected by the composition effect), may benefit from an external stimulus to their economies (increased exports and international tourist arrivals).[47] In contrast, in regions with weak export bases (such as those in the northern and western peripheries) an internal devaluation will be felt more as an increase in relative import prices (in purchasing power terms) – thus further strengthening the circular mechanism discussed above.[48]

Overall, in the scenario presented above, a clear disparity can emerge between the higher-income and less affected by the austerity measures economies of the south and the less dynamic and more heavily affected economies of the north. Of course, if such a scenario materialises, it will not be solely the outcome of the geographical asymmetry of the austerity measures, but rather of the interaction between this asymmetry and the regional imbalances and weak equilibration mechanisms that characterise Greece. The point made with this scenario is that, with collapsing demand nationally, an additional negative shock directed to the least competitive and perhaps least resilient regions may trigger a cumulative process of divergence, with investment and external demand concentrating in the more extrovert and dynamic regions of the south, especially in and around Athens, at the expense, perhaps even in absolute terms, of the more heavily affected periphery. In such a case, Greece's regional

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[47] It should be acknowledged, however, that the tourism industry is also extremely sensitive to problems of political stability. For example, the recent political upheaval and widespread street protests have contributed to a slow-down of tourist arrivals and spending, which is partly reflected in the rising unemployment in the region of the South Aegean.

[48] Although an internal devaluation may in theory improve demand for agricultural products produced in these regions, this is unlikely to have a substantial effect as agricultural production is highly distorted by CAP subsidies and the structure of production (small farms, low mechanisation) is such that export penetration is constrained more by technology and information problems (including access to distribution networks abroad) than by uncompetitive prices.

imbalances will become even more acute, putting serious questions on the country's ability to achieve balanced and sustainable growth even after it recovers from its current crisis.

5. Conclusions

An embedded north-south asymmetry in the Eurozone, together with the chronic misreporting of, and lack of prudence in, public finances in Greece, have led to an unprecedented fiscal crisis in the country as the global financial crisis unfolded. Threatened by a seemingly inevitable default, the country is obliged, counter-intuitively, to implement a series of austerity measures that come to add dearly to the recession already experienced by the economy. The situation does not afford Greece the luxury, or time, to devise measures that will address issues of regional imbalance and spatial fairness. Despite that, in this paper we have argued that the spatial implications of the crisis and the austerity measures may be too big and, more importantly, may have too structural a character to be ignored – even at the current conjunction.

On the basis of the direct compositional effects of the austerity measures, three types of regions can be broadly identified. Some northern and north-western regions are out to lose the most, with a projected reduction in real disposable incomes (accounting also for the impact of indirect taxation) of well above 10%. Other peripheral and less developed regions of the country (including the non-metropolitan parts of Central Greece and Central Macedonia) will probably experience a negative shock closer to 8-9% of disposable incomes. Finally, the more central and high-income regions of Attica, Thessaloniki, Crete and the south Aegean will experience a significantly smaller shock, perhaps in the area of 6-7%. The overall effect will be an amplification of existing inequalities, with the least developed regions suffering the most and the most dynamic regions suffering the least. Owing to the weak cross-regional adjustment mechanisms in Greece and the existing imbalances in regional

structures, it is possible that under specific conditions the asymmetry of these effects will trigger a cumulative process of divergence and further regional differentiation.

Of course, whether such a process materialises depends crucially on the implicit assumptions made above about how the austerity measures, combined as they are with the already strong impact of the recession, will alter the behaviour of risk-averse economic agents, thus transforming a temporary asymmetric demand shock into a permanent cumulative causation mechanism. Although we have no way of testing for the validity of these assumptions at this stage, we contend that they do not appear to be particularly implausible. In this sense, devising regionally-sensitive austerity policies, even if this appears as a tough call for policy in the current climate, may be essential in order for the country not to compromise its future spatial-economic cohesion.

As with elsewhere (e.g., Rowthorn, 2010, for the UK), it appears that policy measures that can correct for the observed asymmetries while being consistent with the fiscal consolidation programme can in fact be found. Domestically, this would require a shift of the fiscal consolidation efforts towards raising revenues from income taxation (of a much more progressive character), which can be fairer not only in a geographical but also in a societal sense. Given the scale of tax-evasion in the country, however, the government may find it difficult to raise revenues from this source even with a more progressive income tax system. In any case, the new income tax scales introduced recently do not appear to have a strong redistributive effect – at least not in the context of declining incomes across the entire distribution (Matsaganis and Leventi, 2011) – while the recently announced reduction of the non-taxable income threshold will obviously have the opposite effect. The expenditure cuts that come largely to substitute for this inability to target the right incomes, end up affecting disproportionately the most vulnerable regions and income groups, thus compromising social and economic cohesion in the country and creating additional spatial asymmetries that will be hard to rectify also in the future.

Interestingly, in this context, an externally-supported fiscal stimulus, with an easing in the flow of Cohesion Funds in the country and a mechanism for national debt restructuring within the Eurozone, could well be a solution to this. The very recent developments, with the mini-political crisis and the cabinet reshuffle in June 2011, seem to have started to push this issue of pro-growth measures more centrally in the policy agenda (Strupczewski, 2011). Despite this, the Greek government still appears too slow in seizing the opportunity and placing the issue of complementary pro-growth measures in the agenda of future fiscal consolidation negotiations; while it shows so far no evidence for an attention to the spatial and, through this, developmental dimension. Perhaps due to the urgency of the situation, in the current conjunction emphasis remains centred on inducing structural reforms, not stimulating growth through public investment, as the objective is still very much the restoration of Greece's (and EMU's) credibility against the markets. Adherence to the painful austerity measures that Greece has committed to is still seen as a major condition for this. It remains to be seen whether policy-making, both in Greece and in Europe, will manage to find a balance between the two objectives (credibility – recovery) in a way that does not compromise the economic prospects and socio-spatial cohesion of the country – and even the legitimisation of the EMU project at large.

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From indecision to fast-track privatisations: Can Greece still do it?

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Abstract

The paper explains how the collapse of growth after 2008 in combination with soaring public and external deficits led to the escalation of Greek debt, while the Government's delay to respond to the crisis increased the cost of borrowing and necessitated the bail-out agreement with the IMF and the European Union. One year later, Greece is struggling to harness fiscal deficits still amid a deep recession and with rising social tensions. Debt sustainability is not yet ensured and another trance of loans is negotiated under heavy new terms and conditions, including higher taxes and extensive privatizations of public companies and property. The paper discusses the main failures of the bail-out agreement and why the lack of growth has so far undermined stabilization efforts. As an alternative, the paper suggests that a modest return to growth in combination with a moderate program of fast-track privatizations can substantially improve the prospects of debt sustainability. In light of the recent debate on the European Stability Mechanism, the paper suggests that the bail-out facility should avoid the debt seniority condition, so that Greece returns to normal market borrowing after 2013 without raising new fears of haircuts on private sector obligations.

Keywords: Debt, Fiscal Policy, Greece

JEL Classification: H60, H61

1. Introduction

Last year the European Union (EU) in coordination with the IMF and the European Central Bank (ECB) launched a rescue operation to salvage the faltering Greek economy and - by doing so - insulate its frightening reverberations from reaching the banking system of the Euro area. One year after the EU-IMF bailout, Greece continues to be haunted by the specter of insolvency amid a deep recession - third year

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in a row - that has fed waves of social unrest and severely undercut the political stamina for accelerating reforms. In the meanwhile, Ireland and Portugal were subjected to similar programs to stem a peripheral debt crisis and this has made Greece to be part of a more general problem in the Eurozone and worldwide.

As witnessed by an ever-growing volume of CDS transactions on Greece defaulting, current market opinions are overwhelmed by the view that Greek debt is not sustainable and that sooner or later the country is bound to renege on obligations. Many in Greece and abroad are nervously wondering whether a *Deus ex machina* is going to appear or else the end of the game is quickly approaching.

In spite of the doom-saying literature, the present paper adopts a different line. It argues that the current lack of sustainability in Greek debt dynamics, rather than being a long time predicament, it was mostly the result of recent fiscal episodes of dramatic proportions, combined with the global recession after 2008 and further exacerbated by a stunning delay in taking timely and appropriate action. The implication is that Greek debt could be stabilized again, if drastic action is undertaken by implementing fast-track privatizations to repay part of the obligations and help growth to resume. This is broadly in line with currently negotiated new terms and conditions between Greece and the bail-out partners, but a number of alternative assumptions are introduced regarding feasibility and likely effects of the new policies.

With hindsight, the mechanics of excessive debt accumulation are easy to explain. The main reason for the fiscal collapse was the fact that primary surpluses at first were practically vanished after 2004 and then turned to big deficits after 2008 as a result of a steep rise in public consumption and a collapse in revenues. As a result of the global crisis, public debt increased further by the emergency finance that was deemed necessary to safeguard the smooth functioning of the Greek banking system. In a final stroke, the economy started falling into recession and a typical debt trap was created causing the debt to output ratio to explode, thus raising serious doubts on long term sustainability.

The delay in decision-making both in Greece and the European Union was another factor for making the situation uncontrollable. Although the crisis was looming all year 2009, no serious fiscal action was undertaken by the authorities until borrowing activity was no longer feasible and the country asked for the rescue operation in April 2010. The bail-out calmed the bond holders in foreign banks, but ushered in a new period of domestic challenges.

Despite the huge loan facility of €110bn granted to Greece for a period of two years, the bail-out decision was not sufficiently detailed and effective so as to produce a quick rehabilitation of public finances. The terms and conditions set in the agreement (commonly named as the '*Memorandum*') envisaged restoring sustainability by increasing taxation and pushing for structural reforms so as to eventually invigorate competitiveness and lead the economy on a growth path. One year after its implementation, the Memorandum is hardly considered as successful or adequate. The reason is that with recession unabated, stabilizing the debt-to-output ratio requires enormous primary surpluses which the Government will find increasingly difficult to generate in an environment of rising social pressure and political fatigue. As a matter of fact, Greece is currently negotiating a new trance of financial facility from IMF-EU to cover its borrowing needs after 2012, in exchange for a new round of policy reforms and extensive privatizations as described in the Medium Term Fiscal Program (MTFP).[49] At this stage, it is crucial that the importance of getting the economy out of recession is not missed for yet another time and it is encouraging that EU has recently started, at last, to explore the possibility of releasing more structural funds for Greece and other indebted countries in order to stimulate economic activity.

Restoring growth will have a substantial descaling effect on the debt to output ratio, which can be brought further down through quick privatizations. In this case, the debt-to-GDP ratio is found to be immediately stabilized and then reduced to levels close to those before the 2008 crisis. For such an outcome to be sufficient to calm markets it is advisable that new uncertainties are not fuelled with regards to the loan repayment

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[49] At the time of writing the paper, the Medium Term Fiscal Program (MTFP) was submitted to Parliament. It was later approved on 29 June 2011.

provisions envisaged by the European Stability Mechanism (ESM). Practically, this implies that the EU loans are repaid without seniority clauses after the Mechanism becomes operational in 2013.

The rest of the paper is organized as follows. Section 2 describes the origins of the fiscal crisis in the years before and after the global crisis in 2008. Section 3 develops a simple theoretical model to portray the effects of policy indecision on the Greek yield curve and thus explain why the borrowing capacity was exhausted and the country asked for the bail-out. Section 4 assesses some critical parts of the IMF-EU conditionality program and examines how alternative policies could enhance growth and restore solvency. Section 5 concludes with some policy suggestions concerning the way that ESM is going to apply.

2. A tale of twin deficits and recession

The explosiveness of Greek finances had three causes: prolonged deficits during good times, prolonged indecision during crisis time and prolonged recession that eroded the prospects of fiscal rehabilitation. To describe how the situation reached such an uncontrollable state, the period following Greece's participation to EMU in 2000 is divided into three sub-intervals: it begins with 2000-2003 to represent the first four years under the common currency, continues with 2004-2008 that started with the Olympic Games and ended with the global crisis, while the third includes years 2009 and 2010 in which Greece was driven out of international markets and sought the IMF-EU bailout. Table 1 summarizes some key macroeconomic and fiscal variables so that one can see how they were deteriorating from one period to another.

As depicted in Fig. 1, Greek public debt was over or close to 100% of GDP for most of the last twenty years. When the economy was hit by both big deficits and deep recession after the 2008 crisis, an upward surge in debt made the already high stock to get out of control. To examine which factors primarily affected the debt-to-output ratio the following accounting formula is used:

$$\Delta b = (ipay) - nb_{-1} - [surplus + privat] + (other)$$

<div align="right">(1)</div>

where (*b*) is the ratio of debt to GDP and Δ denotes the period difference. The debt-augmenting factors are the interest payments (*ipay*) and various one-off obligations (*other*) such as defense orders or payments of loan guarantees to public enterprises, all expressed as ratios to output. Apart from the primary surpluses, the debt-to-output ratio is reduced by the amount of privatizations (*privat*) and is adjusted downwards by the effect that nominal GDP growth (*n*) has on the previous period debt-to-output ratio (b_{-1}). The profile of the above factors during the last decade is shown in Fig 2. Expressed as a ratio to output, interest payments experienced a rise since 2008, but were nevertheless kept below the level they had at the beginning of the decade when Greek debt was regularly serviced without any concern of default. The one-off items did not show any major change either, and in any case they were of a magnitude around 1% of GDP per year. It is, thus, obvious that the main debt-augmenting factors have been the reversal of primary surpluses into deficits, the decline in privatisations and the disappearance of growth as discussed below.

2.1 More fiscal deficits and no growth

The fiscal snowball started with a gradual fall in revenues after 2003 and ended up with a rocketing expenditure in 2009. As shown in Fig. 3 and Table 1, revenues fell by an average of 4.30% of GDP per annum in the post-Olympics period, as a result of a major cut in corporate tax rate from 35% to 25% in 2005 and extensive inattention on the collection of VAT. Public consumption (i.e. excluding public investments) was basically kept under control and rose by a marginal 0.50% of GDP in the second period. Public investment deficit was on the rise in the years of Olympic preparation reaching 3.70% of GDP, but then declined below 2.50% after the Games.

Primary surpluses were at an average of 2.54% of GDP and led to a mild reduction of the debt to output ratio by 4.6 GDP units in 2000-2003, but in the second period they turned to deficits of -0.80% of GDP in average and ushered in the period of debt-

escalation. In 2007 a spiral of elections and fiscal uncontrollability was set in motion. In the summer that year the Government, worrying for the rising deficits and paralyzed from wild forest fires across the country, sought a fresh mandate. Despite being awarded with a clear victory, no action was taken afterwards to redress public finances and debt continued to accumulate. At the end of 2008 public debt was up by 10.71 GDP units as compared with the situation in 2004, thus severely limiting the room for policies aiming to combat the effects of the global crisis that erupted that year.

In the aftermath of the crunch, the Greek Government remained for a long period indecisive on what exactly to do in the fiscal front. Swaying between fiscal stimulus to raise demand and higher taxation to control the deficit, weakened from internal divisions and subjected to a major defeat in the European elections of June 2009, it finally opted for yet another election in October 2009. By letting policy inaction to mix with pre-electoral largesse in a last-ditch attempt to serve special interest groups, fiscal consequences were stunning: public consumption was pumped up by almost 6 percentage units of GDP in a single year reaching 27% of GDP at the end of 2009, while revenues went tumbling. The deficit of General Government initially set to be 6.7% of GDP for that year, was revised to 11% in June, to 12.4% in October 2009 and finally jumped to 15.4% of GDP by the end of the year triggering the fiscal collapse.

The second front of neglect was privatization policy. In the past, proceeds form privatizations used to repay part of public debt both before and after country's accession to EMU. Proceeds peaked at 3.4% of GDP in 1999, but subsequently remained below 2% as a result of the capital markets contraction after the dot.com bubble, the global recession in 2003 and the reform-fatigue that prevailed after EMU.[50] The privatisation process was further slowed down after the elections of 2004 and proceeds surfaced below 1% of GDP per year, despite the fact that the then Government had made a strong pre-electoral pledge for far-reaching changes in the economy and a radical restructuring of the public sector. The privatisation process

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[50] For an extensive discussion of privatisations and reforms in Greece over the period 1990-2008 see Christodoulakis (2011).

nearly ceased in 2007 and, proceeds turned negative after 2008 as the Government had to finance the emergency capitalisation of Greek banks, thus directly augmenting public debt; see Fig. 4.

Finally, the explosive dynamics of the Greek debt-to-output ratio were crucially affected by the disappearance of nominal GDP growth. With a stock of debt serially above nominal GDP, its ratio to output was in the past substantially diminishing every year as a result of real growth rates around 4% and inflation rates exceeding 3% per annum in average. As shown in Fig. 2 the GDP effect was so strong that it more than compensated for the interest payments until 2008. The output effect disappears completely after 2009 when recession deepens and GDP growth stops in nominal terms.

2.2 External deficits

Before 2008 Greece was able to borrow at a cost exceeding the German 10-year bund by no more than half percentage point, but after the crisis the cost was raised sharply and the reason was not just the swollen state finances. Against conventional views, sovereign spreads after the 2008 crunch also peaked in economies with very low public debt or deficits, only because they happened to have large external imbalances.[51] The effect is by now well-documented[52] and formal evidence covering exclusively the Euro area economies is presented in Appendix A for the period considered in this paper.

The estimation reveals that Current Account deficits exert a strong upward pressure in borrowing spreads, comparable to that due to public debt and deficits. As Greece happened to have the worst record among Euro area countries on all three fronts, it came as no surprise to be so badly exposed to the credit crisis and the first to seek for

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[51] Such as, for example, Ireland, Portugal, Spain and the Baltic countries. For an interesting discussion of the effects of the credit crunch on emerging markets with large Current Account deficits see Shelburne (2008).

[52] Similar studies for different periods include, among others, Alexopoulou et al. (2009), Attinasi et al. (2009), and Barrios et al. (2009).

a bail-out. Greece chronically suffered from a Current Account deficit that was around Euro -8bn or -5.55% of GDP in the first period of examination; see Fig. 5 and Table 1. After a strong import boom in the post-Olympics euphoria the deficit widened to Euro -34.8bn, or 14.55% of GDP in 2008, by far the largest external imbalance worldwide as a proportion to output. Though it was manifold higher than in the beginning of the decade, neither a counter-cyclical action was considered domestically[53], nor any voice of concern was raised by European authorities.

The same neglect was shown for other countries as well, as attitudes in Europe and elsewhere held at that time that the cost of borrowing reflects exclusively the fiscal situation in each particular country, since Balance of Payments crises are comfortably ruled out in a monetary union.[54] It was only in the aftermath of the crisis that policy bodies in the European Union started emphasising the adverse effects that external imbalances may have on the sustainability of the common currency.[55] In fact, Greece was perceived as an existential threat to the Eurozone not just because of its own internal and external imbalances, but - as Lachman (2010) dramatically put it - *"rather …because similar imbalances are shared to a disturbingly high degree by the very much larger Spanish economy as well as by the economies of Portugal and Ireland"*.

3. The cost of prolonged indecision

As if the perilous state of public finances and external imbalances were not enough, the situation was further aggravated by the lack of appropriate action to tackle the deficits both before and after the occurrence of the global crisis. Despite the fiscal

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[53] In fact, the contrary happened: responding to the pleas of car dealers who saw their sales shrinking because of recession, the Government decided in early 2009 to reduce surcharges on imported luxury vehicles, hence increasing conspicuous consumption in the middle of the crisis.

[54] Even huge external disparities in the euro area went unnoticed from a policy point of view; for example Blanchard and Giavazzi (2002) were suggesting a benign neglect towards the excessive deficits. For a discussion of the problem see Christodoulakis (2009).

[55] See for example European Commission Report, (2009). For a discussion on the external imbalances in the Eurozone countries and how they reflect structural shifts between traded and non-traded sectors see Christodoulakis and Sarantidis (2011).

strain at home and the alarming signals that international recession was approaching, the Government appeared - even in mid-2008 - fully complacent with the situation, claiming that the Greek economy is sufficiently "fortressed" and will remain immune from the reverberations of international shocks.

When the global crisis erupted in September 2008, the Government remained for a long time ambivalent as to whether to implement a harsh program to stem fiscal deterioration or expand public spending to fight off the prospect of recession. A final compromise included a demand-push stimulus package at the end of the year, combined with a bank rescue plan of €5bn and a pledge to raise extra revenues if necessary. Unsurprisingly, the first two were quickly implemented, while the latter was forgotten soon afterwards. The public was quick to realize that no serious action is considered and its confidence to the Government eroded sharply. The ruling party suffered a major defeat in the elections for the European Parliament in June 2009 and shortly afterwards called for an emergency general election in October 2009.

3.1 The paradox of emergency

The official justification of calling an early election in less than two years from the previous one was that the country needed a tougher economic policy to combat the crisis. But, in contrast to the single excuse, the public experienced a double paradox: the first occurred with the incumbent party that was seeking re-election to apply fiscal consolidation but, in the meanwhile, was engaged in a spending spree of gigantic proportions in order to please its constituencies and stave off the prospect of defeat.[56] Predictably, primary expenditure at the end of 2009 neared €62bn, twice the size of 2003, while revenues dropped in a single year by €2.3bn or 1% of GDP.[57] Embarking on a similar paradoxical line, the main opposition party was on one hand promising to rescue the economy from imminent bankruptcy while it was at the same time declaring that "money exist" ("*lefta yparhoun*") and are sufficient to finance an

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[56] The damaging effects of the incumbent's complacency around elections are analysed in Skouras and Christodoulakis (2011) with a case study on Greece.
[57] Details on how spending was ballooned in 2009 are given in Christodoulakis (2010).

expansion of social programs and re-nationalise key public companies that were previously privatised.

As a result of the multiple ambiguities, the new incumbent emerged from the elections far from being convinced - let alone prepared - to follow a program of drastic fiscal consolidation, despite achieving a landslide victory and causing a harmful split in the opposition party. Trapped in its own *clichés* of pre-electoral rhetoric, the new Government was slow to grasp the criticality of the situation and act swiftly. Even when the budget deficit was reported to the European authorities to frog leap at 12.4% of GDP, the Government was publicly vowing to honor pre-election promises and continued to vehemently exclude privatizations from its policy options.[58]

Two months after the elections, the Government was still ambivalent until a chain of events was put in motion in December 2009 after a rating agency downgraded the Greek economy: the ECB promptly warned that the collateral status of Greek sovereign bonds may end shortly, this sparked a massive wave of credit default swaps on Greek debt, borrowing costs started going further up for both short and long term maturities, and Greece was put on the merciless spotlight of worldwide attention. International markets already worrying about the escalation of fiscal deficits, now turned suspicious about the Government's willingness to deal with the situation and declined to increase lending to Greece. As shown in Fig. 6, the yield curve was, month after month, moving upwards and becoming less steep, thus diminishing the prospects of cheap short term borrowing as well. By April 2009 the curve was completely flat with all maturities at such a prohibitively high yield that Greece had to turn to the bail-out.

3.2 A simple framework of indecision

In order to analyze how fiscal indecision that prevailed after the October 2009 elections led to the gradual exclusion of Greece from the bond markets, a simple

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[58] The Budget Plan submitted in autumn 2009 for fiscal year 2010 included new transfers to low-income households and an expansion of public expenditure. No revenues from privatizations were envisaged and, as a matter of fact, no privatization took place whatsoever until the time of writing this paper.

model of issuing one and two-period bonds is adopted. Suppose that there is a situation where revenues (L) net of primary spending are not sufficient to meet the amount of interest payments (D) due in period j. A fiscal gap (ϕ) is defined as the proportion of uncovered obligations in each period, i.e.

$$\phi_j = \frac{D_j - L_j}{D_j} = 1 - \frac{L_j}{D_j} \tag{2}$$

The market believes with probability (p_j) that the government will undertake additional fiscal action sufficient to cover all existing obligations or else will remain inactive with probability ($1 - p_j$). Fiscal resolve in the two periods may differ and probabilities are respectively parameterized as

$$p_1 = \theta + (1 - \theta) \cdot \lambda \quad \text{and} \quad p_2 = \lambda \tag{3}$$

where θ denotes the degree of commitment varying within [0,1] and $\lambda < 1$ since fiscal effort is likely to relax later, due to unforeseen difficulties or plain term-fatigue as next elections will be approaching. Expected net revenues are given by:

$$F_j = p_j D_j + (1 - p_j) L_j \tag{4}$$

The degree of expected haircut in each period is obviously:

$$h_j = \frac{D_j - F_j}{D_j} = (1 - p_j) \cdot \phi_j \tag{5}$$

The no-arbitrage equation for one-period bonds is given by the expression:

$$1 = (1 - h_1) \frac{1 + R_1}{1 + r} \tag{6}$$

where R_1 and r are the one-period and the benchmark yields respectively.

A haircut in period 2 may be imposed independently of whether or not another has been applied in the first period. Thus, the no-arbitrage condition for the 2-period bond is given by

$$1 = (1-h_1)\frac{R_2}{1+r} + (1-h_1)(1-h_2)\frac{1+R_2}{(1+r)^2}$$

(7)

where R_2 is the yield on the 2-period bond and h_2 the degree of expected haircut in the second period. Yields are then obtained as functions of expected haircuts as:

$$R_1 = \frac{1+r}{1-h_1} - 1$$

(8)

$$R_2 = \left[1 + \frac{1-h_2}{1+r}\right]^{-1} \left[\frac{1+r}{1-h_1} - \frac{1-h_2}{1+r}\right]$$

(9)

Recalling (5) it is easy to see how the yield differential is affected by the degree of fiscal resolve in the two periods, i.e.

$$\frac{\partial(R_2 - R_1)}{\partial p_1} > 0 \quad \text{and} \quad \frac{\partial(R_2 - R_1)}{\partial p_2} < 0$$

(10)

The above expressions imply that the yield curve becomes steeper (flatter) with an increasing (decreasing) fiscal resolve in the first period, represented by a rise (fall) in p_1. The reverse is the case with a change in the fiscal resolve in the second period, represented by p_2. The following cases are examined:

(i) <u>Front-loaded action</u> ($\theta=1$): In this case $p_1 = 1$ and the market expects that appropriate action to meet current obligations will be undertaken immediately. The implication is that $h_1 = 0$ and $h_2 > 0$ and this leads to an upward yield curve with $R_1' = r$ and

$$R_2' = \frac{r^2 + 2r + h_2}{2 + r - h_2} > r \qquad (11)$$

(ii) <u>Complacency</u> *(θ=0)*: In this case $p_1 = p_2 = \lambda < 1$, effort is below requirements in both periods and expected haircuts are now $h_1 = h_2 > 0$. Expressions (8) and (9) give:

$$R_1'' = R_2'' = \frac{r + h_1}{1 - h_1} > R_2' \qquad (12)$$

The yield curve moves upwards and becomes flat. Intermediate cases *0<θ<1* are similarly examined. Starting from a steep position when full-scale fiscal action is expected, the yield curve is becoming flatter as resolve is waning away. A graphical illustration of how the yield curve is upwards shifting with indecision is given in Fig. 7.

The simple model reflects with surprising accuracy the situation of diminishing resolve from the last quarter of 2009 through the first one in 2010. Following Roth *et al* (2011), an index of public trust measured by the Eurobarometer is used to reflect the prevailing sentiment on whether the Government is considered capable to tackle the problems of the economy.

As shown in Fig. 8, the index of trust rose sharply in the autumn 2009 when the Greek Government was angrily reporting that public deficit was found to be even higher than expected and vowed to take all necessary measures to tackle it. Though not spelt out yet, the public drew the conclusion that swift fiscal action is under way and this explains the relative calm of the markets before the upswing in December 2009. Using the theoretical framework, the high-resolve expectations are captured by letting *θ=1* and getting $p_1 = 1$ and a steep yield curve as shown in the bottom of Fig. 7.

In real-life Fig. 6 the yield curve was indeed steep and upward slopping right after the elections in October 2009 and short-term maturities were traded at yields substantially

lower than the ten-year maturities.[59] But as no serious action was undertaken in practice, the index of trust started falling again and in spring 2010 it was approaching the same level as when the crisis erupted in September 2008. The public was gradually adjusting its expectations downwards, thus driving the probability of resolve to the complacency level, $p_1 \to \lambda < 1$. The curve was becoming increasingly flatter and Greece was borrowing at an increasing cost in all maturities until it was finally driven out of the markets.

4. The IMF-EU Memorandum: From unwillingness to misfiring

Another factor that further aggravated the situation was the unwillingness and lack of contingency plans by the European authorities to react promptly[60] to the rapid isolation of Greece from international bond markets. A clear manifestation of misjudging the situation took place when the European Central Bank refused to grant collateral status[61] for all denominations of Greek sovereign bonds supplied by commercial banks in exchange of liquidity. As this came a few days after Greece was downgraded by the rating agencies in December 2009, it sparked new fears that a default was imminent. Though in March 2010 the ECB finally conceded that Greek sovereign bonds will enjoy full collateral treatment for another three years regardless of rating status, it was by then too late for the prevailing view of Greece being at the brink of insolvency to be reversed.

At the same time EU authorities were sternly refusing the option of letting the IMF to intervene in a Euro-area country and suggested that a new fiscal program launched in

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[59] It is still unexplained why the debt management strategy of the time neglected this window of opportunity and instead concentrated on borrowing long and expensive paper. In contrast, Ireland seized the opportunity to borrow short and cheap after the crisis in 2008 creating a credit shield against the risk of going to the markets in adverse conditions.

[60] This is in contrast with the readiness shown in the cases of Hungary, Latvia and Romania that were quickly assisted by IMF and European Union funds in 2008 and 2009.

[61] After the credit crunch in 2008, the ECB invited private banks of member states to obtain low-cost liquidity using sovereign bonds rated A+ or above as collateral securitization. De Grauwe (2010) commenting on the extension of bonds collateralisation argued that the decision of the ECB was "… a major contribution … to reducing the risk of spillovers to other markets".

January 2010 by the Greek Government would be sufficient to restore confidence. Their stance was dissipated only when it became clear that the difficulties in servicing the Greek debt might quickly propagate into the banking system of other European states and cause another painful recession in their economies just when they were about to exit the previous slump.

Early slowness was now replaced by hasty orders and conditions that Greece implements a Memorandum of ambitious revenue targets and structural changes, aiming to ensure fiscal credibility and restore competitiveness and growth. After sweeping negotiations, a joint loan of €110bn was finally agreed in May 2010 by the EU and the IMF to be granted to Greece to substitute for unreachable market borrowing. A brief assessment of the outcome after the first year of implementation is given below.

4.1 New taxes, but no new revenues

With a dithering record on tax collection, the Government rushed in March 2010 to raise more revenues by increasing[62] the VAT rate from 19% to 21%. Although experience from a similar decision to raise the VAT rate by 1% in 2005 suggested that the rise is more likely to be used as an excuse to increase prices rather than augment revenues, authorities were hoping that recession would this time compensate for the fear of inflation. To buttress against increased incentives for VAT appropriation by retailers, the Government launched a campaign of receipt-collection and announced further measures to beat tax evasion.

With no evidence of success in the first two months of implementation, the same measure was recommended by the Memorandum and in May 2010 the VAT rate was set further up to 23%. Once more, projections proved unrealistic and CPI inflation at the end of 2010 was rampaging at 4.5% substantially above the level in previous years.

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[62] In an interesting counterexample, the British Government responding to the post-crisis recession decided to reduce the VAT rate by two units in 2008, despite the looming deficits.

It is revealing to compare total revenue collection during the 12 months prior to and after the implementation of the Memorandum, as shown in Fig. 9. Although revenues were enhanced by a lucrative lump-sum tax in exchange of settling previous arrears (*'peraiosis'*), a heavy increase in fuel tax and a substantial rise in several consumption surcharges, net collection remained virtually the same as in the corresponding months before the tax storm. As nominal GDP remained stagnant between 2009 and 2010, the failure to raise revenues should be solely attributed to the continuing slackness in the collection mechanism and the increased incentives to evade it. Liquidity-starving retailers were quick to recognize in the VAT increase a new opportunity for cash, worth enough to ignore the cost of apprehension.

With growth plummeting, the economy ended up in a typical stagflation situation with fiscal revenues not improving and debt continuing to accumulate.[63]

4.2 New reforms, but no growth

The bailout Memorandum included the implementation of structural reforms that would reduce various scleroses in the economy, cut red-tape in entrepreneurship, shrink public ownership in utilities and improve competitiveness. Such reforms were seen as sufficient to bring about growth and achieve the fiscal deficit targets, without succumbing to any sort of Keynesian stimulus against the deepening recession.

In practice however, success has been limited and in any case far from generating growth. A major reform took place in the ailing social security system, raising age limits, extending backwards the salary base on which pensions are calculated and rationalizing the overly abused provisions for early retirements. However, even this successful reform did not have any immediate fiscal benefit as savings will mostly occur in the future. Ironically, as a result of the reform, several pension funds were further burdened by the rush of near-retirement employees in the public sector to take

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[63] Mabbet and Schelkle (2010) timely pointed out that "…forcing the besieged state to fiscal contraction makes it so much harder, if not impossible to get back on a sustainable path".

advantage of favorable transition clauses and exit service before the new regime is applied.

Ending barriers to entry in a number of activities and vocations was fiercely opposed by the insiders and the initial plans were seriously compromised. For example, an ambitious and protracted liberalization of lorry licensing was granted a postponement for two years, while the lifting of downward price controls in lawyers and dispensing chemists was abandoned one day before submitted for parliamentary approval. Not surprisingly, reforms were not translated into more growth and, without any other supply or demand-driven initiative in sight, the economy experienced an even deeper recession in 2010 falling by a further -4.50% of GDP.

4.3 Lower public spending, but no privatisations

The Memorandum was more successful in curtailing the explosive path of public consumption from €62bn in 2009 down to €55.6bn in 2010, through universal pension and salary cuts. That was the main reason for bringing the General Government deficit down from the ominous 15.4% of GDP in 2009 to around 10.40% of GDP in 2010.[64] But that was achieved at a heavy political cost: given the strong affiliation of public unions to the ruling party, the implementation of expenditure cuts caused an irrevocable alienation with the Government so that any further application of the same kind is unlikely. On the other hand, the more promising front of privatizations remained completely inactive, until decisions to speed them up were at last taken in mid-2011.

4.4 An alternative path for debt sustainability

The dynamics of the debt-to-GDP ratio are sensitive to the prospects of growth, and three alternative scenaria are presented to show this effect. First, a baseline Scenario (A) is obtained in which no explicit action is considered to prompt growth, as has been the case so far. According to the official predictions in MTFP recession will continue

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[64] The figure is not yet finalized by Eurostat.

through 2011 at a rate of -3.80% of real GDP with a dim growth of 0.60% appearing only in 2012, while inflation is projected at the particularly low level of 1.10%. In this benchmark scenario no privatization is assumed to take place, though deficit targets are kept as agreed in the Memorandum. Results are depicted in Table 2 and Fig.10. Ddebt is found to escalate near 160% of GDP in the next two years before declining slowly after 2014.

Frightened by such a bleak prospect, the Government succumbed to pressures from the IMF and the European Union and announced an ambitious program that includes extensive privatizations of public companies and a plan of real-estate development on public property.[65] The new Government program aims at collecting an amount of €50bn during the period 2011-2015, or roughly 4% of GDP per annum. Proceeds of the program will be earmarked for buying back debt.

Despite the strong rhetoric, the above target should be viewed with caution for two reasons. First because, as history suggests, privatizations were seldom popular in Greece and it was only in the run-up to EMU that the Government decided to invite private investors to participate in the ownership of public companies. The second reason is that privatizations were virtually abandoned during the last two years and for the program to be put in motion again a careful planning will be required. It is thus questionable if in the present circumstances of recession, widespread industrial action and adverse market conditions the target of raising 4% of GDP per annum is realistic, unless a major – though yet unlikely - political mobilization takes place to ensure intra and inter-party consensus and trade-union cooperation.

To inquire the effect of growth and privatizations on debt accumulation a less ambitious privatization target is considered. An alternative Scenario B assumes that proceeds will be at 2% of GDP per annum until 2015 and some growth will be generated. This moderate privatization program seems more comparable with historical experience than the more aggressive plan as shown in Fig.4. Even at the

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[65] The same plan was announced by IMF-EU-ECB representatives in February 2011, but it was fiercely rejected by the Government. Later, the Government adopted a more flexible line before finally accepting the initial plan.

moderate level privatizations are likely to accelerate restructuring in public enterprises and invigorate investment activity both at a company and sector level thus leading to some growth.

Other growth-assisting policies may include direct investment grants financed by EU funds and front-loaded EU financing of regional infrastructure as being recently proposed by EU authorities. Thus, an amount of €15bn could become immediately available for the period until 2013 to fight recession and unemployment. Moreover, in order to avoid the concomitant rise in public deficits as required by the national co-financing clause, the European Commission will consider minimizing or even waiving this obligation for an unspecified number of years.[66]

Assuming that all the above policies are simultaneously and quickly implemented, a more optimistic growth profile is set for Scenario B. In this exercise, growth resumes at 0.60% in the current year rather than next[67] and then continues as described in the baseline Scenario A but one year in advance. For 2014-2015 a growth rate of 3% is assumed instead of the baseline 2.3%. Inflation is set equal to the more realistic level of 2%, closer to what actually prevailed in the previous years. Deficit targets remain intact as in the baseline scenario. As shown in Table 2 and Fig.10 the effect of higher nominal growth and privatizations is quite powerful and dynamics of debt change considerably.

In this 'some-growth-some-privatization' Scenario, the ratio of debt to GDP is immediately stabilized and starts falling from next year, approaching 128% by year 2015.

Finally a more optimistic Scenario C is considered by assuming full-fledged privatizations as announced by the Government. To make comparisons simple, growth

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[66] According to Bloomberg Businessweek (June 23, 2011), European Commission President Jose Manuel Barroso will urge leaders to help Greece access billions of Euros in EU development funds to create jobs and make its businesses more competitive. If only this had come earlier!

[67] Suppose, for example, that one third of the 3-year EU funds of Euro 15 bn become quickly operational so that an additional amount of Euro 5 bn or 2.20% of GDP is allocated to Greece this year. Assuming a public investment multiplier around 2, back-of the envelope-calculations suggest a growth increase of 4.40% that would more than compensate for the current -3.80% slump and give a net rate of growth of 0.60% as considered in Scenario B.

rates, inflation rates and deficit targets are kept the same as in Scenario B without taking into account any additional positive externalities from privatizations. In this '*some-growth-full-privatizations*' Scenario, a serious decumulation of public debt takes place and its ratio to output approaches 118% of GDP in 2015, substantially lower than the level it had in 2009.

One should bear in mind, of course, that such scenaria as above are nothing more than mechanical simulations and far from constituting a firm path of events. Especially for Scenaria B and C policies should be carefully planned and applied to ensure that macroeconomic assumptions on growth and privatizations materialize. Moreover, all three scenaria implicitly assume that financing needs are smoothly covered either by an extension of the bailout loan as it is currently debated or by a gradual return to normal market conditions after 2012.

5. Instead of conclusions: Beware the ESM even gifts bearing

The paper described some aspects of the debt accumulation in Greece and showed that apart from fiscal deterioration, lack of growth and the long delays in deciding the appropriate action resulted in exacerbating the initial problem. It is, therefore, important for restoring sustainability to ensure that policies capable of assisting growth are preferred over those that solely aim to achieve unrealistically high primary surpluses by raising taxes and further contracting the economy. Under a combination of fast-track privatisations and a modest return to growth, the debt to output ratio can be stabilized immediately and decline substantially in the next few years.

The remaining problem is that such an outcome presupposes that a smooth financing of borrowing needs is secured. This, however, cannot as yet be taken for granted before the decisions by EU on another €100bn of loans are finalized. Moreover, the new loan should be contracted at the previous terms and conditions of the bail-out agreement without being subjected to the still provisional form of the European Stability Mechanism (ESM). Otherwise the markets, in anticipation of the more

complicated criteria on which a continuation of assistance will be considered by ESM, might retain their doubts on the applicability and adequacy of the new loan. The reason is that ESM introduces seniority status for repaying the loans granted by European states.

As it stands, ESM will be enacted in June 2013 and will have two new responsibilities over the currently operational mechanism of European Financial Stability Facility (EFSF). First it will undertake a systematic assessment of fiscal sustainability in each particular country and, in case of need, it will provide liquidity funds at a preferred creditor status.[68] Second, if servicing the debt is found to be beyond the country's capacity, there will be an appropriate "haircut" on private sector holdings under a new framework of Collective Action Clauses (CACs).

Although the mechanism was conceived to calm uncertainty in the bond markets, especially with regards to the indebted periphery, the new provisions of seniority generated a fresh tide of worries. Sovereign spreads rather than being reduced were driven further up and analysts explained this counter-intuitive response by pointing to the perplexities involved in applying CACs in a two-tier debt.[69]

With regards to Greece, two questions on the applicability of ESM are critical:
(i) Will ESM underwrite the current bailout loan of €110bn on the same conditions envisaged in the Memorandum or is it going to revise the terms and, if so, in which direction? This question would not matter, had Greece secured its return to markets in 2011 as initially envisaged in the Memorandum. In that case, the bailout loan would simply demand regular service costs, no matter if it is guarded by ESM or any other institution. However, latest developments suggest that Greece is not expected to tap markets before 2012 and the current loan should both increase and extended to facilitate regular debt financing for as long as needed.

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[68] In the European Council, 16-17 Dec 2010, the following decision was made: *«In all cases, in order to protect taxpayers' money, and to send a clear message to private creditors that their claims are subordinated to those of the official sector, an ESM loan will enjoy preferred creditor status, junior only to IMF loan"* (my emphasis); European Council (2010), COEUR21.

[69] See, among others, Zsolt, Pisani-Ferry and Sapir (2011), and Vehrkamp (2011),

(ii) Will ESM treat any new bailout loan agreed before 2013 as having the seniority status or this will apply only to new loans issued after June 2013? Eventually, the former may lead to a vicious circle as more senior debt pushes market rates upwards and results to seeking more (and from then on senior) assistance from ESM. Market rates will then rise even further and growth will suffer from lack of credit. Such difficulties could utterly jeopardize any chance of Greece returning to normal market conditions for a long period ahead.

Against such a turn of events three provisions must be considered:

(a) Seniority status does not apply for the loans agreed upon before 2013 or, in any case, prior to ESM becoming operational.

(b) An extension of maturities from 5 to 10 years should be announced and applied on the IMF-EU loan facility before 2013, in order to alleviate excessive pressure on repayment requirements in the transition period until growth resumes and the debt to GDP ratio is stabilized.

(c) Supplementarily, a voluntary extension of maturities on private bold holders[70] could also be examined in a way that it does not constitute a 'credit event'.

If such cost-mitigating measures are decided, the optimistic scenaria of higher growth and privatizations can become realistic alternatives to the gloomy predictions of failure, default and collapse that currently are in a growing use to describe present day Greece.

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[70] The literature on "*if, whether, when and how*" the Greek debt will be restructured is accumulating by the day. One of the most authoritative analyses on the legal aspects of restructuring is written by Gulati and Buchheit (2010). In a sequel paper (2011) the same authors describe how a voluntary extension of maturities held by the private sector can take place.

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Appendix A: Determinants of spreads in the Euro area

The euro area sovereign spreads are regressed against fiscal balances, public debt and Current Account deficits. The sample spans the period 1998:Q1 to 2009:Q4 so as to include the effects of global crisis but stopping short of the implementation of the bail-out agreement for Greece. Observations are taken for 11 Euro area countries, namely those that joined EMU in the first phase plus Greece but minus Luxemburg to avoid small-size effects. All variables are expressed as relative to their counterparts of Germany. Results are based on Pool Mean Group estimation (see Pesaran, Shin and Smith, 1999) as shown below.

	(1)	(2)
Long run coefficients		
Current Account deficit	**2.160*** (3.328)	**1.720** (2.888)
Public Debt	**1.345*** (3.749)	**1.216*** (3.734)
Fiscal deficit	-	**1.571** (2.821)
Short run coefficients		
Speed of adjustment	-0.198*** (-10.354)	-0.223*** (-8.029)
Intercept	3.906* (1.832)	5.567** (2.406)
Change in Public Debt	1.510** (2.731)	1.459** (2.693)
Change in Fiscal deficit	-	-0.256* (-1.933)
Change in Current Account deficit	0.136 (1.056)	-0.308 (-0.693)
No. of obs.	378	378
Log likelihood	-1314.557	-1289.381

Notes: t-statistics are presented in brackets. Three asterisks (***) denote significance at 1% level, ** denote significance at 5% level and * denotes significance at 10% level. Automatic selection of lags is based on Akaike's information criterion with a maximum of 2 lags.
Source: Current Account data from IFS. Public debt and deficits from Eurostat, spreads of 10-year bonds from OECD. Details are available by the author.

All three factors are found to be statistically significant and with the correct sign in the long run relationship. In the short-run only public debt exerts a strong effect in raising the spread, while fiscal deficit is weak relative to the long run coefficient and with the wrong sign. Current Account deficit has no significant effect in the short-run.

Appendix B: Tables

TABLE 1 - Comparison of key economic variables in Greece

Period averages (avg)	Post EMU 2000-2003	Post Olympics 2004-2008	Post crisis 2009-2010
Avg Net Revenues %GDP	26.36	22.66	21.42
Avg Public Consumption %GDP	20.13	20.60	25.25
Avg Primary Surplus %GDP	**2.54**	**- 0.79**	**- 6.65**
excl.public investment	*6.23*	*1.67*	*- 3.84*
Investment surplus	*-3.69*	*-2.47*	*-2.81*
Avg Gen. Government deficit %GDP	4.51	5.20	12.13
Avg Debt rise in Euro bn, pa	9.00	18.68	31.90
Avg GDP rise in Euro bn, pa	12.05	13.34	-0.41
Period average Debt as %GDP	101.57	103.96	130.96
Period total change in Debt %GDP	***- 4.63 ***	**10.71**	**27.14**
Avg Current Account as %GDP	**-5.55**	**-11.90**	**-10.48**
Avg Current Account in Euro bn	-8.44	-26.37	-24.93
Avg Growth rate %	**4.51**	**3.42**	**-3.29**
Avg Inflation rate %	3.47	3.41	3.03

Note: All figures denote annual average over the corresponding period, unless stated otherwise. Total changes for debt to GDP ratio are differences from end to the beginning of each period. Figures for 2010 are estimates as published in spring 2011.

(*) A widely publicized currency swap took place between the Hellenic Republic and Goldman Sachs in mid-2001 in order to convert debt liabilities from the rising Yen to Euro. The swap was based in historic exchange rates and resulted in a decline of the debt to GDP ratio by about 1.40% in 2001, in exchange for a rise in deficits by 0.15% of GDP in subsequent years, so that the overall fiscal position in present value terms remained unchanged. The change in debt between 2000-2003 is reported here net of the above swap. Without this adjustment, the change in debt-to-GDP ratio would appear larger at -6.03 percentage units, based on the currently available AMECO dataset.

In any case, the swap effect disappeared a few years later due to the rapid depreciation of the Yen against the Euro after 2002. Besides, the aforementioned swap was irrelevant for the eligibility of Greece entering the Eurozone in June 2000 as entry assessment was based exclusively on the performance of the economy up to 1999.

Sources: 1. Debt of General Government: ESA95 definition, Ameco Eurostat 2011, online.
2. GDP at market prices, GDP growth rate and inflation rate: IMF WEO Database 2010.
3. Fiscal figures: Annual Budget Reports, (various editions).
4. Current Account: Bank of Greece, Statistical Bulletins (various editions).

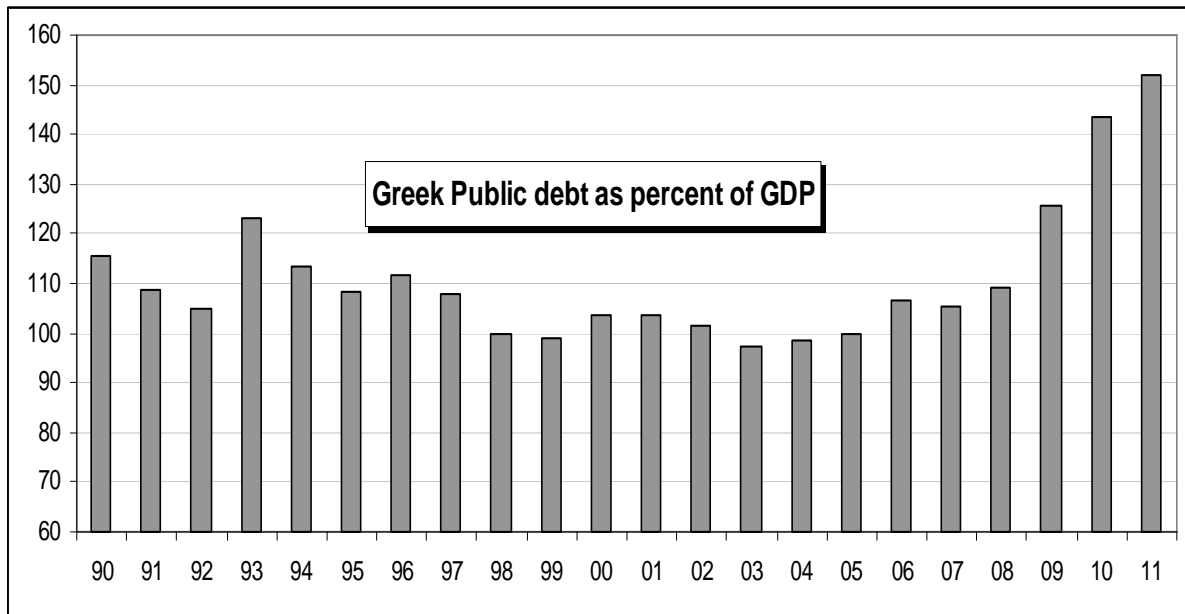**TABLE 2 - Alternative scenaria for the debt-to-GDP ratio**

	2010	2011	2012	2013	2014	2015
Deficit %GDP	**-10.40**	**-7.60**	**-6.50**	**-4.90**	**-2.60**	**-2.60**
A. Inflation rate	1.4	1.3	0.9	1.1	1.1	1.1
B. Inflation rate	1.4	2	2	2	2	2
A. Growth rate	-4.5	-3.8	0.6	2.1	2.3	2.3
B. Early growth	-4.5	0.6	2.1	2.3	3	3
Public debt %GDP						
A. Low growth and no privatizations	142.70	153.96	158.18	158.08	156.27	154.44
B. Early growth and moderate privatizations	142.70	144.68	143.49	140.37	134.96	128.72
C. Early growth and extensive privatizations	142.70	144.57	141.31	137.55	128.48	118.92

Notes: Scenario A: recession continues and no privatization takes place. Scenario B: with early growth and moderate privatizations 2% of GDP per annum; Scenario C: with early growth and privatizations up to 4% of GDP per annum.

Source: MTFP, 2011, and own calculations.

Appendix C: Graphs

FIGURE 1 - Greek public Debt as %GDP for the period 1990-2011

FIGURE 2 - Main debt-affecting factors as %GDP, 2000-2011
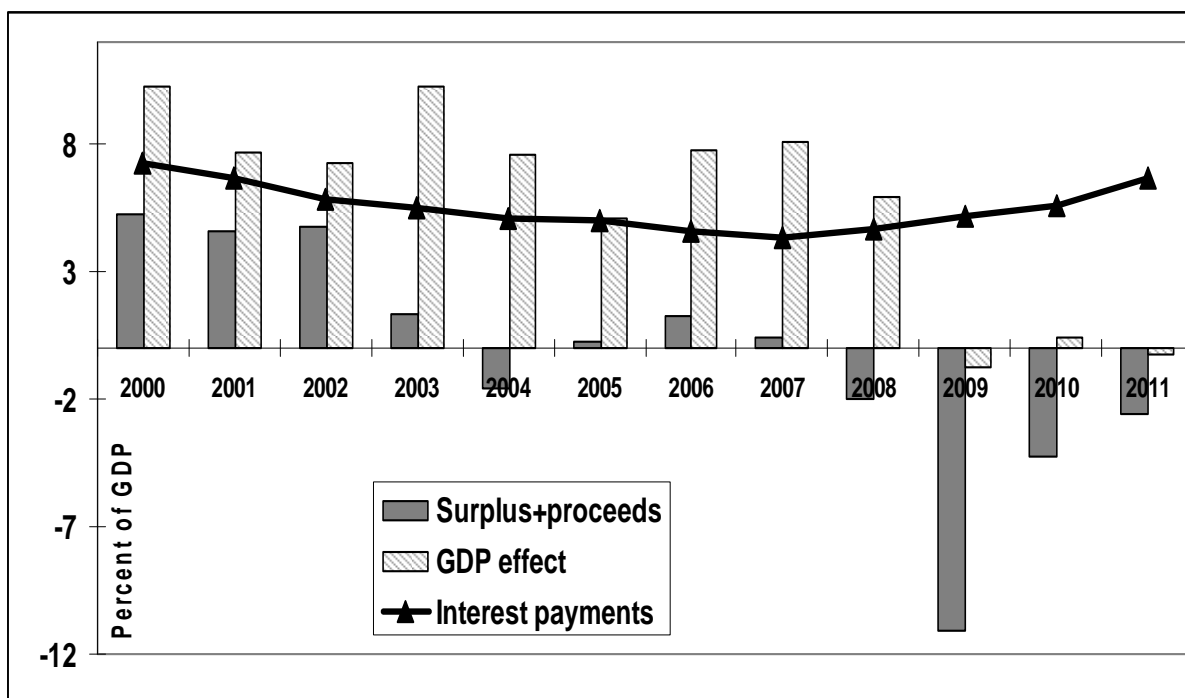
FIGURE 3 - Public consumption and revenues as %GDP in Greece, 2000-2011

Public consumption and revenues as % GDP
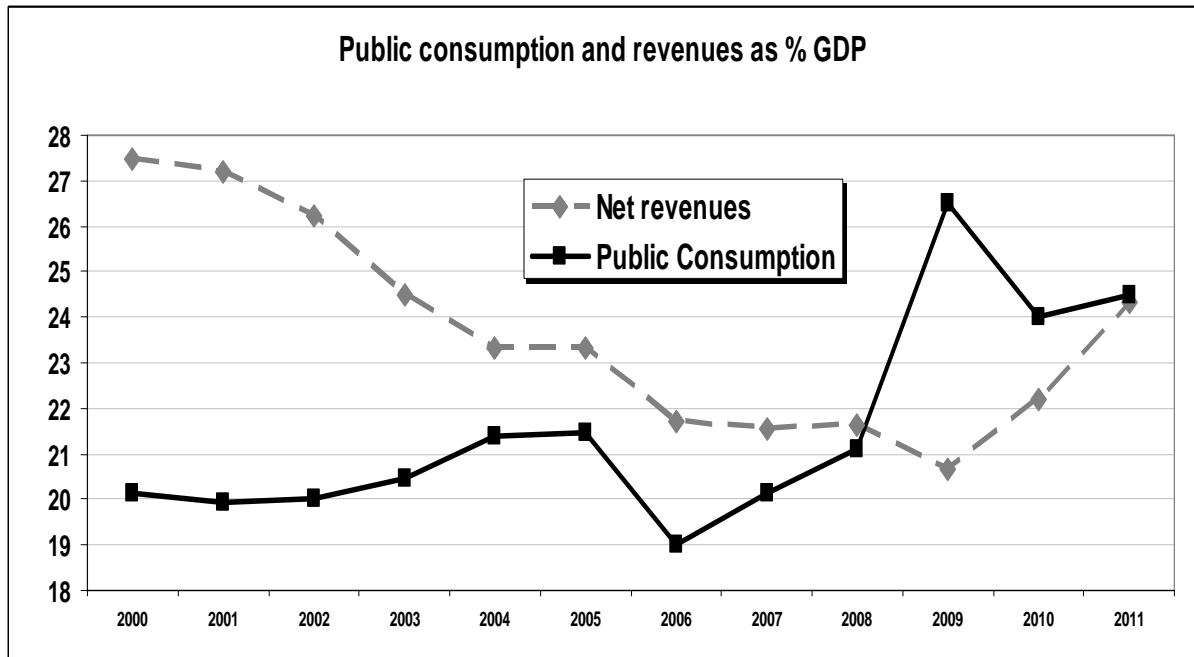
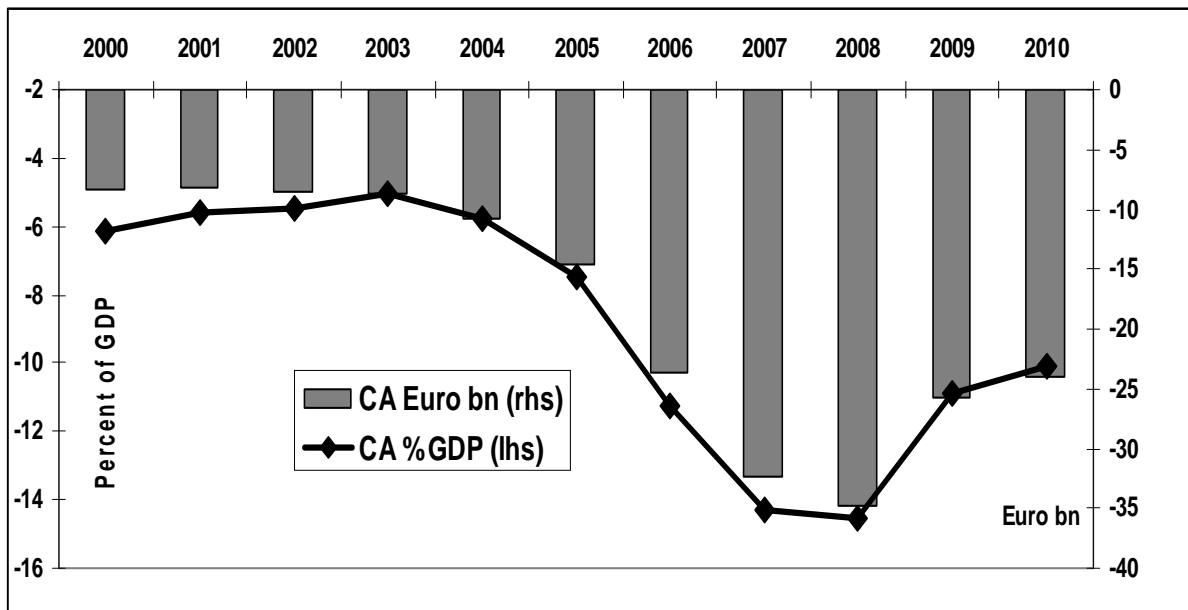Source: Budget Reports, various editions. GDP at market prices, IMF WEO Database 2010.

FIGURE 4 - Proceeds from privatization, past and future

PRIVATISATIONS, past and future
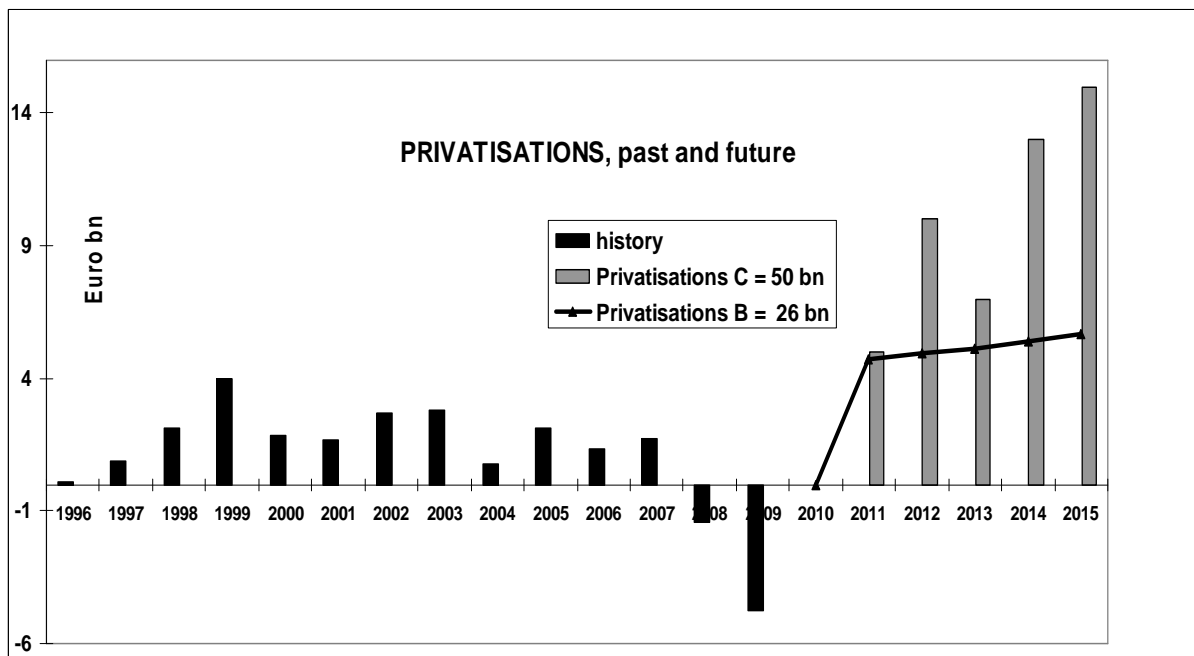
Note: For 2008 and 2009 proceeds are net of bank shares purchases, thus the negative sign.
Source: Annual proceeds as reported by the Privatization Report, Ministry of Finance, 2008. Proceeds are net of capitalizations in state-owned enterprises. Data for 1996 and 1997 are taken from Budget Reports. Figures for Scenario C are taken from MTFP. For Scenario B own calculations.

FIGURE 5 - Current Account in Greece, 2000-2010

Source: Current Account in Euro billion, Bank of Greece, Statistical Bulletin (various editions). GDP at market prices, IMF WEO Database 2010.

FIGURE 6 - Greek Bond yield curves for the period October 2009-May 2010
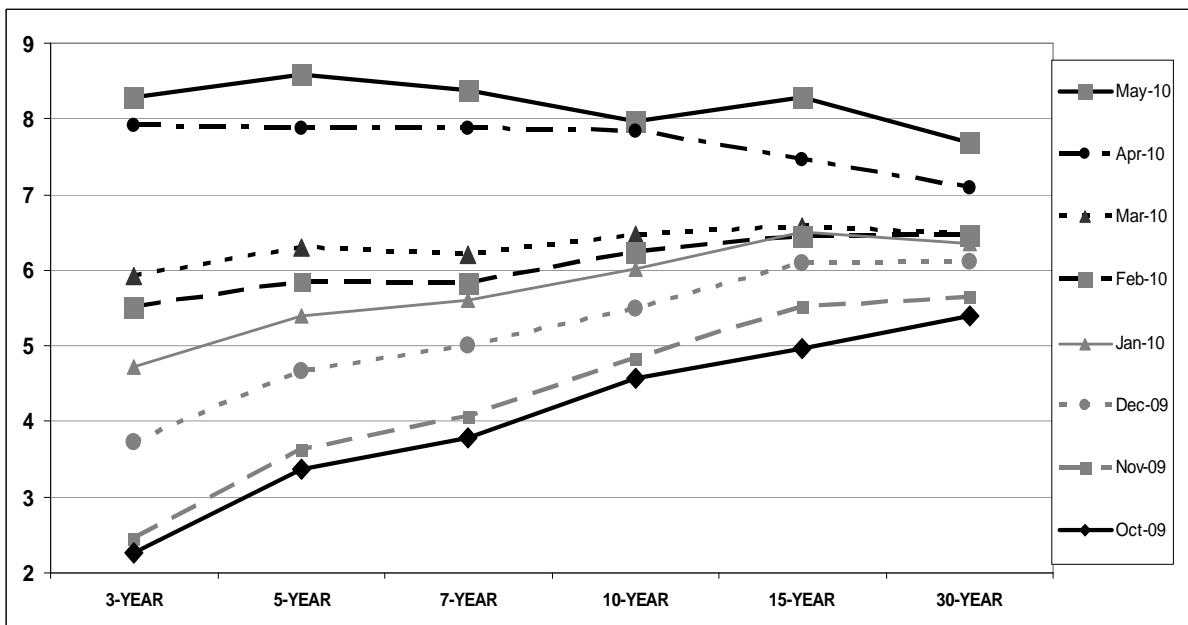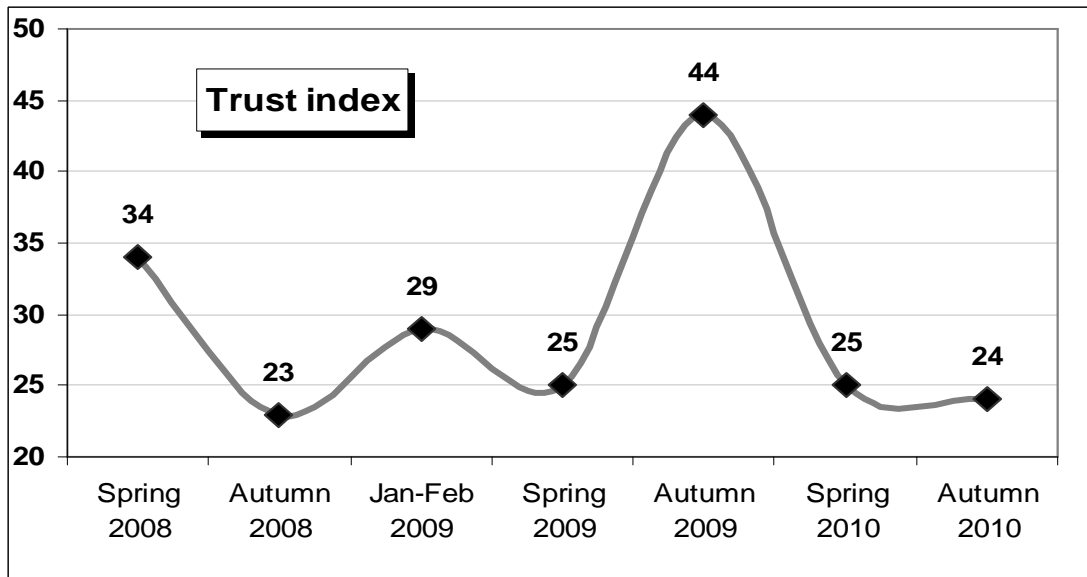

Source: Bank of Greece, Bulletin of Conjectural Indicators, Table IV.23, page 116, March 2011.

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FIGURE 7 - Two-period yield curves with varying degrees of fiscal commitment
**($\theta=1$: high resolve, $\theta=0$: complacency)**
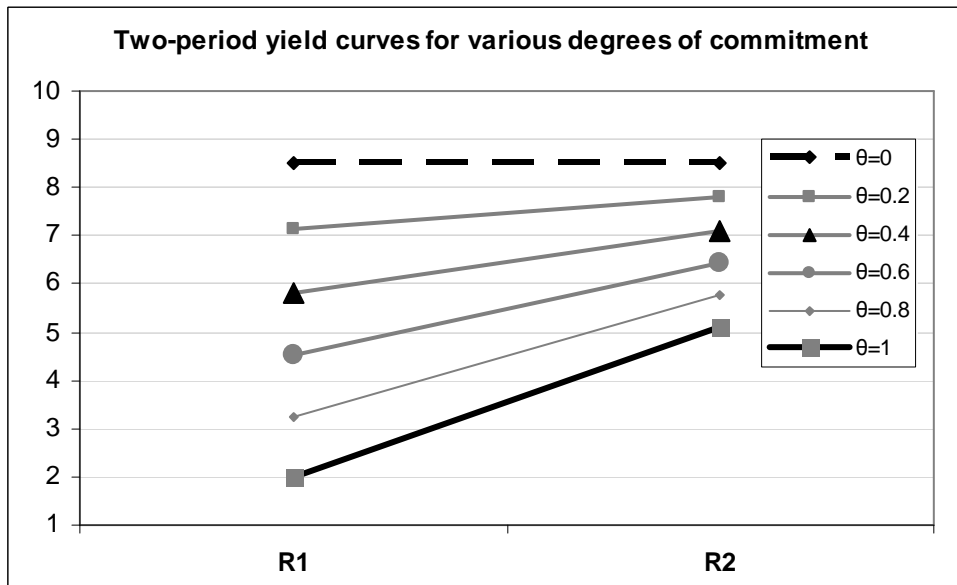
Note: Parameter values were set as $\varphi=0.30$, $\lambda=0.80$, r=4%.

FIGURE 8 - The rise and fall in the index of public trust to Government regarding the economic situation

Source: Eurobarometer No. 69 (Table QA12), 70 (QA12), 71 (QA9.3), 72 (QA10), 73 (QA14) and 74 (Greece, Slide 5).

FIGURE 9 - Monthly total revenues before and after the implementation of the bailout Memorandum (in Euro million)

Monthly total revenues, Euro mn

- ◆ Before bail-out: Apr2009-Mar 2010
- ● After bail-out: Apr2010 - Mar2011
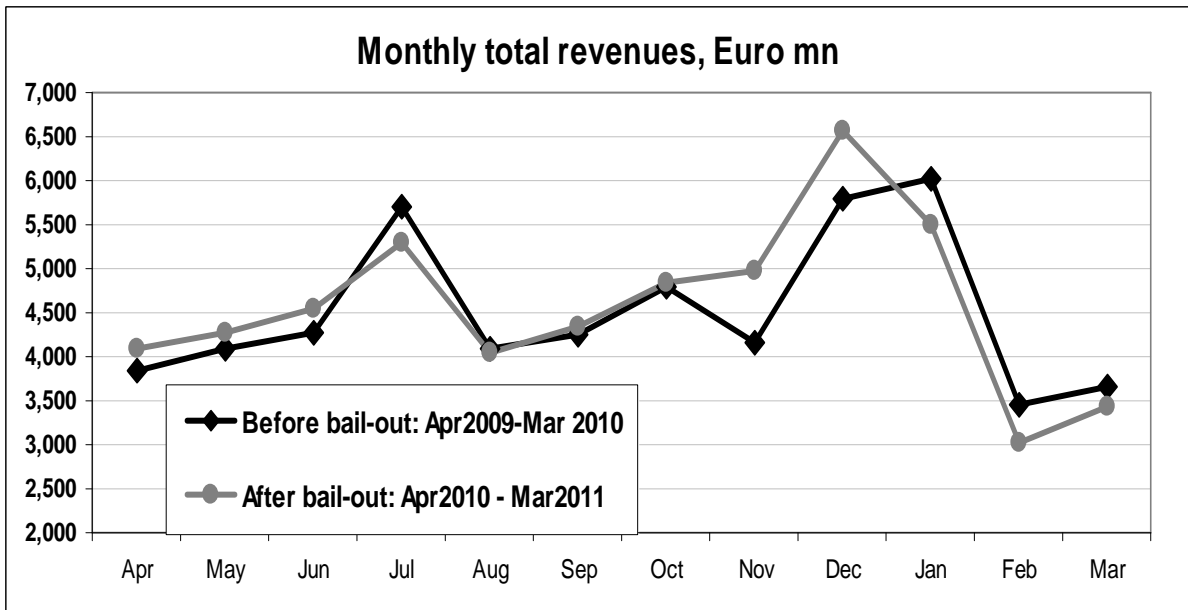
Notes: Higher VAT rates were introduced in April 2010. The dim line spans the period April 2009-March 2010, while the dark one the same period one year later.
Source: Bank of Greece, Bulletin of Conjectural Indicators, various editions.

FIGURE 10 - Alternative paths for public debt as % of GDP

DEBT AS %GDP

- ◆ SCENARIO A
- ■ SCENARIO B
- ● SCENARIO C
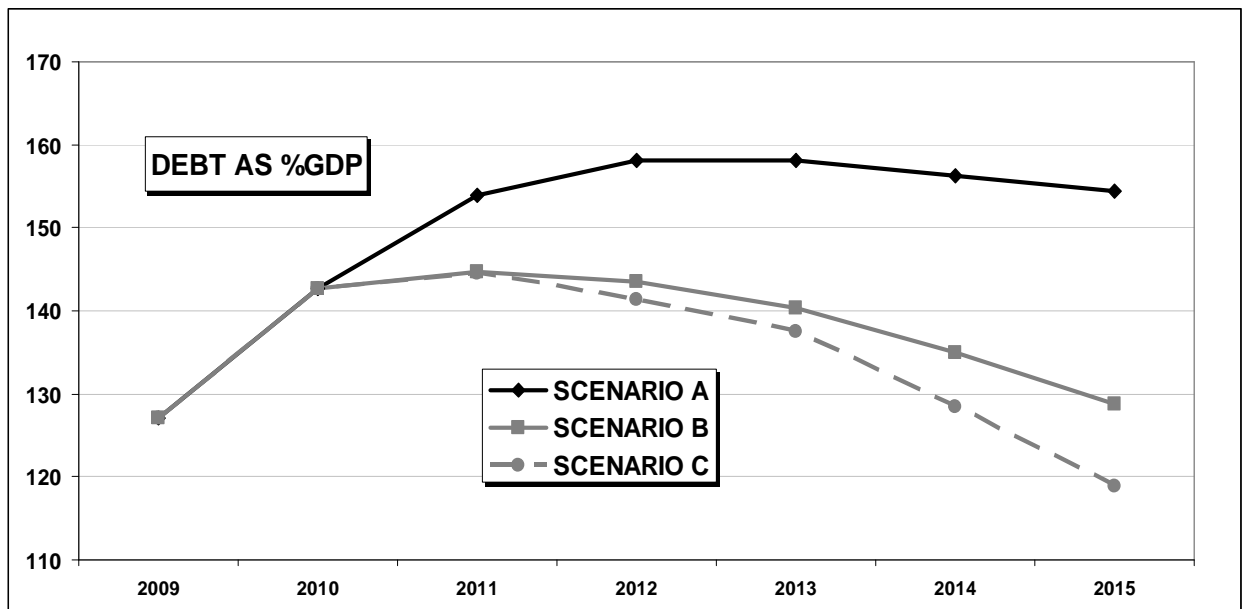
Notes: (a) Official, as reported in Budget Report 2011. No extra action is considered. (b) Early growth starting at 2011 by 0.60% and moderate privatizations generating proceeds up to 2% of GDP per annum. (c) With growth as in (b) and extensive privatizations up to 4% of GDP per annum.
Source: Budget Report 2011 and MTFP (2011).