Making geographical sense of the Greek austerity measures: compositional and equilibrium effects

Vassilis Monastiriotis

Abstract
This paper examines the geographical variation in the impact that the recent austerity measures in Greece will have on its regional economies. We examine two types of effects, those that are essentially compositional (i.e., affecting regions differently due to their differences in employment specialisations) and those that concern longer-run processes of cross-regional adjustment, that have to do with demand deficiencies and behavioural responses to risk. Our analysis suggests that the austerity measures have a potentially large and spatially uneven impact, which can enhance existing disparities in the country and compromise its future development prospects. Against initial expectations, it appears that almost all types of austerity measures (e.g., those raising revenues versus those cutting expenditures) have similar geographical effects, thus depriving the Greek government from the ability to select spatially-redistributive measures as part of a regionally-sensitive fiscal consolidation policy. By implication, such measures can only come from an external fiscal stimulus (regionally targeted public investment through EU funds, possibly supported by an EIB pre-financing scheme) but perhaps at the expense of the pace at which fiscal consolidation may be achieved.

Keywords: Austerity measures; Greece; Regional imbalances; Composition effects; Cumulative causation
JEL Codes: R11, R12, R38, O18

1. Introduction
The global financial crisis set tectonic waves first in the banking systems and then in the real sectors of the economies of most of the developed world. Although in the initial stages of the crisis Greece was not particularly affected – and, indeed, it was considered to be rather insulated from the crisis, due to its low openness and its membership to the Eurozone – by the end of 2009 Greece entered an unprecedented fiscal and sovereign debt crisis, which is still threatening the stability and EMU

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membership of the country. 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 thus lacking an explicit spatial dimension. Nevertheless, this does not mean that the austerity measures are spatially neutral. Quite to the contrary, due to the uneven distribution of specialisations, incomes, and economic capacities and opportunities, geographically horizontal measures can have significant spatial effects, affecting different regions disproportionately. This composition issue is of course not unique to Greece. For example, Rowthorn (2010) has recently argued that the public-sector employment 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 (and thus of demand generation). Inversely, deficit reduction measures that focus on the revenue side (tax rises) will hurt disproportionately the higher-income regions of the south.

This issue of composition is particularly important in the case of Greece, due to the country’s acute and multi-faceted inequalities and weak cross-regional equilibration mechanisms (Petrakos and Saratsis, 2000; Monastiriotis, 2009). In Greece, more than in the UK, 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, 2011). 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.
Besides this issue of composition, the austerity measures—and the economic crisis to which they come as a response, but which they also intensify—can have a more structural impact on the distribution of economic activity and the performance of the Greek regions. This is because the negative demand shock induced by the recession and the austerity measures may push the less well-off regions in a vicious circle of weakening demand, declining investment and rising unemployment. In the absence of counter-veiling policy measures, and with profit and employment opportunities declining everywhere in the country and income risk rising, adjustment mechanisms may push towards further concentration of economic activity in the more urban and more developed areas, which exhibit a larger demand base (larger markets), greater technology and agglomeration advantages and, incidentally, a stronger concentration of political and financial capital and wealth.

The remainder of this paper is structured as follows. Section 2 examines briefly how the economic crisis affected Greece and its regions 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 impact of the 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 a very low exposure to international trade (with exports representing a mere 8% of national GDP), a rather vibrant banking system with significant investment diversification and a 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.

The situation changed dramatically after October 2009, when a new government in Greece announced that the budget deficit was significantly higher than that previously reported: from 3.7% of GDP reported in the 2009 convergence programme to 5.4% reported by the outgoing government on 2 October 2009, to 12.7% reported by the new government in December 2009 and to 15.5% as officially agreed by Eurostat in November 2010. Clear evidence of mis-reporting and data manipulation led to an unprecedented credibility crisis, pushing the spreads for Greek government bonds to unattainable levels (over 1,000 basis points in March 2010), and consequently destabilising the Greek economy, as economic confidence collapsed and fears of a deep recession materialised – further pushing up the government debt and the budget deficit. The situation got out of control by the spring of 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 and literally on the 11\textsuperscript{th} hour\textsuperscript{1}, an emergency rescue package in the form of an €110bn loan to the Greek government (paid in four instalments over a two-year period). The rescue package entailed a set of provisions for the 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 did not subside until very recently, when first the IMF and then the EU signalled that they would consider extending the loan facility to an horizon of up to 10 years.

\textsuperscript{1} 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.
Even at this level of calamity, however, economic performance in Greece has not been too dreadful. The rate of recession peaked at -4% in 2010 and while unemployment rose to a historical high (from a 17-year low of 7.2% in the second quarter of 2008 to 12.3% in the third quarter of 2010), it remained quite close to the Eurozone average (10.1% in autumn 2010) and significantly lower than in other heavily affected countries such as Spain (20.7%), Ireland (14.1%), or even Lithuania (18.4) and Latvia (19.4%). In fact, as Figure 1 shows, developments in Greece have not been too dissimilar to those found in the British economy, which was hit by the crisis much more severely in the first instance and which possesses, it is believed, a more flexible labour market and an infinitely more independent monetary policy that allowed the country to engage in an unprecedented programme of quantitative easing (including printing money) and led to a very sizeable currency depreciation (by over 20% since 2007). Of course, regional evolutions have not been uniform. Unemployment grew faster (by over 40%) in Crete, the Rest of Attica region and the South Aegean. The regions of Thessaly, the Ionian and Eastern Macedonia and Thrace (henceforth, EMT), as well as the two main metropolitan regions of Athens and Thessaloniki, also saw increases of over 30%. In contrast, unemployment increased much slower in the westerns and northern periphery, while it actually declined marginally in the North Aegean region. As a result, spatial disparities in unemployment declined substantially, with the coefficient of variation dropping by
over 40%. Nevertheless, Western Macedonia remained the region with the highest unemployment rate in the country (Figure 2).

**Figure 2. Unemployment rates relative to the national, by quarter and region**

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 by creating savings to the value of 7.4% of GDP in 2010 and a further 6.3% of GDP in 2011. 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 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 include a 7% reduction in the budget of the public investment programme, various cuts in social transfers and benefits, perhaps to the value of 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 (a similar measure is implemented for pensions, where the 13th and 14th salaries are
replaced by two flat payments of €400); a variable reduction in benefits in the so-called ‘narrow public sector’ (mainly, civil servants), ranging from 8% for civil servants earning less than €14,000 pa to 13% for those earning 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); 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 (which is estimated at 10% of total household incomes nationally). In the next section we examine the variable impact that these measures will have on the regional economies of Greece.

3. The spatial effects of austerity – compositional effects

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 direct and indirect taxation (including measures aiming at tackling tax evasion), changes in public sector employment and pay, and changes in public expenditures (income transfers and public investment).

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. Moreover, as the EU/IMF/ECB ‘troika’ pressures Greece to accelerate its public investment programme in order to make use of funds available through the EU, public investment is shifted towards ‘soft’ interventions (e.g., on entrepreneurship than on infrastructure) and/or becomes more concentrated. As is shown in the top panel of Table 1, both of these developments will tend to benefit the larger and more central regions as well as those in the south, whose economies have historically relied less on public investment and especially ones in infrastructure. The worst affected region appears to be by far
that of Western Macedonia (which may lose up to 0.5% of its GDP in foregone public investment), followed by the other regions forming the northern and north-western periphery of the country. Given that public investment in Greece tends to stimulate than crowd-out private investment, it appears that the cuts in the public investment programme will are likely to reinforce the core-periphery pattern of inequality in the country. The effects of the prospective cut in benefits and other income transfers to households seem also to effect more strongly regions in the northern and north-western periphery, although in this case heavily affected are also the regions of Crete, Peloponnese, Thessaly and Western Greece. Attica/Athens and the South Aegean remain however the two least affected regions. Again, the effect will be a disproportionate decline in incomes in the periphery (reaching as much as 5% of disposable incomes in the most heavily affected EMT).

Table 1. Selected components of income by region

<table>
<thead>
<tr>
<th>Region</th>
<th>Public inv.</th>
<th>Total</th>
<th>Public inv. infrastructure</th>
<th>Income transfers</th>
<th>All public sector</th>
<th>Public sector temps</th>
<th>Central govt</th>
<th>Central govt high-wages</th>
<th>Public body</th>
<th>Local govt</th>
<th>Public utilities</th>
<th>State enterprise</th>
<th>Pensions</th>
<th>Low-income</th>
</tr>
</thead>
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<tr>
<td>EMT</td>
<td>2.5% 0.7%</td>
<td>11.6%</td>
<td>15.1% 0.7%</td>
<td>9.1% 1.3%</td>
<td>2.8% 2.2%</td>
<td>0.3% 0.8%</td>
<td>20.2%</td>
<td>10.7%</td>
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<tr>
<td>CM</td>
<td>1.8% 0.2%</td>
<td>6.0%</td>
<td>16.3% 1.1%</td>
<td>9.6% 1.2%</td>
<td>2.6% 2.5%</td>
<td>1.1% 0.6%</td>
<td>22.7%</td>
<td>7.4%</td>
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<tr>
<td>WM</td>
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<td>6.0%</td>
<td>28.4% 2.7%</td>
<td>11.9% 1.9%</td>
<td>3.6% 3.0%</td>
<td>9.2% 0.7%</td>
<td>20.3%</td>
<td>11.4%</td>
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<tr>
<td>IP</td>
<td>3.3% 0.7%</td>
<td>6.7%</td>
<td>23.8% 1.6%</td>
<td>14.2% 2.2%</td>
<td>5.2% 2.1%</td>
<td>1.0% 1.2%</td>
<td>29.7%</td>
<td>13.3%</td>
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<td>TH</td>
<td>1.9% 0.2%</td>
<td>6.7%</td>
<td>19.5% 1.2%</td>
<td>10.9% 1.1%</td>
<td>5.2% 2.0%</td>
<td>0.9% 0.5%</td>
<td>22.1%</td>
<td>9.9%</td>
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<tr>
<td>II</td>
<td>2.7% 0.3%</td>
<td>5.7%</td>
<td>16.9% 1.0%</td>
<td>7.4% 0.3%</td>
<td>4.5% 3.4%</td>
<td>0.8% 0.8%</td>
<td>27.0%</td>
<td>7.7%</td>
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<tr>
<td>WG</td>
<td>2.2% 0.7%</td>
<td>6.6%</td>
<td>16.9% 0.9%</td>
<td>10.1% 1.9%</td>
<td>3.2% 1.8%</td>
<td>0.8% 1.0%</td>
<td>27.1%</td>
<td>12.7%</td>
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<td>CG</td>
<td>2.3% 1.4%</td>
<td>4.9%</td>
<td>17.6% 1.1%</td>
<td>8.4% 1.1%</td>
<td>3.5% 2.2%</td>
<td>1.7% 1.7%</td>
<td>22.4%</td>
<td>8.3%</td>
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<td>AT</td>
<td>1.1% 0.2%</td>
<td>2.2%</td>
<td>18.8% 1.0%</td>
<td>8.5% 1.3%</td>
<td>2.9% 3.5%</td>
<td>1.6% 2.1%</td>
<td>20.5%</td>
<td>2.6%</td>
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<tr>
<td>PN</td>
<td>1.9% 0.7%</td>
<td>6.6%</td>
<td>16.0% 0.8%</td>
<td>8.4% 1.3%</td>
<td>2.9% 1.7%</td>
<td>1.9% 1.1%</td>
<td>24.4%</td>
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<tr>
<td>NA</td>
<td>2.8% 0.4%</td>
<td>5.2%</td>
<td>22.8% 1.5%</td>
<td>15.2% 2.4%</td>
<td>2.4% 1.4%</td>
<td>2.1% 1.4%</td>
<td>27.1%</td>
<td>9.8%</td>
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<tr>
<td>SA</td>
<td>2.1% 0.5%</td>
<td>4.2%</td>
<td>16.3% 1.4%</td>
<td>6.3% 0.0%</td>
<td>5.2% 3.0%</td>
<td>0.8% 1.0%</td>
<td>18.6%</td>
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<tr>
<td>CR</td>
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<td>7.3%</td>
<td>12.8% 1.0%</td>
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<td>2.8% 1.6%</td>
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<td>21.9%</td>
<td>6.4%</td>
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<tr>
<td>ATH</td>
<td>1.1% 0.2%</td>
<td>2.2%</td>
<td>18.8% 0.7%</td>
<td>9.5% 1.8%</td>
<td>4.5% 1.4%</td>
<td>1.7% 1.7%</td>
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<tr>
<td>SKG</td>
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<td>16.3% 0.6%</td>
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<td>4.0% 1.3%</td>
<td>0.7% 1.1%</td>
<td>22.7%</td>
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Source: Quarterly Labour Force Survey and Household Budget Survey (ELSTAT), author’s calculations; Public investment data from Monastiriotis and Psycharis (2011).

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. As is shown in Table 1, the public sector accounts for
close to 20% of total disposable household incomes in the country, while another 20% is accounted for by pensions. A prospective 10% cut in public sector pay and a smaller but similar cut in pensions amounts to up to an income reduction of 4% nationally. Regional variations in this effect are also important and perhaps larger than in the case of public investment. Assuming similar cuts in all regions, the pay cuts in the public sector can reduce average regional incomes by as little as 1.3% in Crete to as much as 2.8% in Western Macedonia. The rest of the heavily affected regions are again in the norther and north-western periphery, namely the regions of Ipeiros and the North Aegean. The share of public sector temps and employees in public utilities, where most of the public sector downsizing is expected to take place, are also highest in these regions, as is the incidence of high-income earners amongst the public sector employees, the category that experiences the sharpest decline in disposable income. Although the group of least affected regions includes this time regions located also outside the centre and the south, such as EMT (and, importantly, Athens appears to be more strongly affected than some intermediate cases in the periphery), in general the pattern of northwest-southeast dichotomy observed earlier remains: the public sector cuts will hurt disproportionately the regions of Western Macedonia, Ipeiros and the North Aegean and it will affect by less some southern areas such as Crete, Peloponnese and the South Aegean. The same regions, this time including also the Ionian islands and Western Greece are set to lose the most from the pension cuts, with the southern and central areas being again the least affected.

Not surprisingly, the same regions are also the most likely to suffer from the revenue measures being introduced and especially those on indirect taxation (consumption levies and VAT). This is because the incidence of low incomes, for which indirect taxation constitutes a larger part of disposable income, is also higher in these regions (see last column of Table 1). Using estimates in the income effect of the tax rises by decile of the distribution of household incomes (derived from Matsaganis and Leventi, 2010) and data on the distribution of household incomes by region (from the Household Budget Survey), we can estimate that the overall effect will be in the area of 3.8% of disposable incomes, ranging from a low 3.59% in Attica/Athens to above 4% in Ipeiros, North Aegean, Western Macedonia, EMT, Western Greece and Peloponnese. With the addition of the latter two, these are again the regions most heavily affected by the other measures included in the austerity programme. In
contrast the effect is again smallest in the central (Athens and Thessaloniki) and southern regions (Crete and South Aegean). In contrast to the effects of indirect taxation, a progressive income tax could in fact 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 (2010) find 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 regions of Attica (including Athens), Central Greece, South Aegean and Crete (and less so in Central Macedonia and EMT), the effect of the new income tax is also spatially regressive.

4. The spatial effects of austerity – longer-run implications
Besides their compositional effects, the austerity measures may also produce important equilibrium changes in economic activity across the Greek regions that are due to the relative economic position of each region, rather due to its specialisations per se. There are four relevant dimensions here: (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.

Our starting premise is that the austerity measures, as they come to add to an existing recession, not only constitute a negative demand shock but also create conditions of deficient demand – to which the Greek economy cannot respond not because it lacks flexibility (see the evidence around Figure 1) but because it is resource/budget constrained. The impact of this resource-constraint is not distributed evenly in space. Rather, for the most heavily-affected regions the austerity measures may create a vicious circle of relative underperformance which may then be difficult to break when absolute performance recovers. We can think of the following mechanism. First, rising unemployment and lower incomes weaken the consumption base of these 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 wage 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 regions that the combination of recession and austerity pushes below a critical threshold of productive capacity and internal demand – and as long as the state of the national economy does not allow for an external stimulus to the ailing regional economies.

Rational economic behaviour under heightened risk may come to add to this circular effect. Increased income risk, caused by the austerity measures, increases financial prudence (see Kimball, 1990; Eechhoudt and Schlesinger, 1994) thus leading to a disproportionate decline in risk-taking in the economy. In turn, this may lead to a redirection of private investments to more affluent areas, even if risks are not distributed evenly across space. Indeed, Broll et al (2010) have recently shown that with rising income risk financial prudence increases, leading to greater concentration of private capital investment (agglomeration) even with elastic risk aversion – which would tend to disperse investment across space as a strategy for risk diversification.

For Greece this suggests that, as the austerity measures intensify the crisis-induced economic contraction and uncertainty, ‘prudent’ businesses will cut down on their risky investments, especially 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. Thus, peripheral areas, such as those in the less developed northern and north-western parts of the country, will become more risky places even if the first-order impact of the recession on them is not particularly heightened. In contrast, investment will tend to concentrate in the main metropolitan areas and especially in the Capital, where large segments of the population, as well as of political power, reside.

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 (even with higher unemployment, a higher density of jobs would tend to create lower unemployment durations thus increasing the probability of
finding a job for any given level of unemployment – an externality attributed to labour-pooling). 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 faster in peripheral areas. As a result, economic activity will become increasingly concentrated in better-off areas, areas with specialisations in internationally competitive sectors (such as tourism in the case of the southern Aegean islands) and areas of higher agglomeration (such as 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 of economic activity in these regions below a critical threshold of demand (Angeriz et al, 2008) or of density (Ciccone and Hall, 1996) will lead to an increasingly slower rate of productivity growth vis-a-vis the regions that benefit from increasing concentration of economic activity. Relative reductions in the scale of economic activity in these regions 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

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2 This could be especially forceful for recent university graduates, for which unemployment rates are very high and suitable employment opportunities outside the main urban areas are rather scant.

3 This is consistent with the Harris-Todaro model of urban migration and thus can operate even if one assumes that the labour markets in the peripheral and less dynamic areas of Greece clear. The effect is even stronger if the peripheral regions are seen as sources of unemployment than of market clearing.
negative effects of the national austerity measures. This is especially so as the main effect (and purpose) of these is to create a sizeable internal devaluation, which is hoped to improve the price-competitiveness of Greek products. In the context of the Greek economy, this adds another reason to believe that the impact of the austerity measures will have a cumulative causation effect of the type discussed above. The economies of the South Aegean and of Crete (and perhaps a few others, such as Chalkidiki in Central Macedonia, parts of the Peloponnese, and the Ionian islands), i.e., those least affected by the composition effect, have an important specialisation in tourism and thus a real devaluation can act as an indirect stimulus to their economies. In contrast, regions in the northern and western peripheries have a very low export base and specialisations in largely uncompetitive products. For them, the devaluation will be felt more as an increase in import prices than as an increase in exports – thus further strengthening the circular mechanism discussed above. In any case, the real beneficiary of the internal devaluation will be Athens and its broader functional region, as it is not only an important tourist destination but also host to the vast majority of large, dynamic export-oriented and foreign-owned companies in the country. Its degree of industrial diversity, accessibility and concentration of political capital and wealth also suggests that this region, above all others, possesses the highest degree of economic resilience. Most other regions –and, it would appear, particularly those in the northern and north-western periphery– do not possess the same degree of economic resilience and, by implication, the ability to overcome the austerity shock from within.

5. Conclusions
The chronic misreporting of, and lack of prudence in, public finances in Greece has led, with the global financial crisis, to an unprecedented fiscal crisis in the country. 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, the spatial implications of the combined effect 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, especially Western Macedonia, Ipeiros and the North Aegean are out to lose the most. For them, the public sector cuts can cause a reduction in employment and in regional incomes by as much as 3% – while the impact of rises in indirect taxation may be even larger. These regions are also expected to suffer more by the reduction in public expenditure, which can wipe out another half a percentage point of regional GDP. The second group comprises of the other peripheral and less developed regions of the country, especially Peloponnese and to a lesser extent the Ionian islands, Thessaly and parts of Central Greece and Central Macedonia. For them, public sector cuts will represent a negative shock closer to 1% of regional GDP, while the impact of the rise in indirect taxation will be similar to the first group. Finally, the more central and high-income regions of Attica and the south Aegean, as well as parts of Central Macedonia and Central Greece (mainly Thessaloniki, Voioita and Evoia) will experience a net gain from the changes in income taxation and will suffer less, by less than 1% of regional GDP, from the reductions in public sector pay and employment and in public expenditure – while the impact of the rise in indirect taxation will also be smaller in relative terms. 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.

Crucially, it moreover appears that the effects of different types of measures have a rather similar geography. Two implications emanate from this. First, the government does not seem to have a spatial trade-off available between, say, revenue-enhancing and expenditure-reducing measures, as has been argued for other economies (Rowthorn, 2010). Such a trade-off could of course be created, were the government to implement a more progressive, also geographically, income tax system. Nevertheless, taxing high and very high incomes in Greece (i.e., those above the 7th decile) has historically proven to be politically difficult and thus seems unlikely also today. Perhaps more importantly, raising income tax rates for those income groups (which include the full population of the tax-evading incomes of farmers and own-account professionals) will most certainly increase tax evasion and non-compliance thus working against the only spatially redistributive –and socially fair– measure
taken within the austerity programme. Second, by implication, the different measures of the austerity programme appear to impact cumulatively, all weakening demand and employment most in the same group of regions. As discussed in section 4, this can push certain regions below a capacity threshold that can trigger a cumulative causation effect of relative underperformance, if not absolute decline, which may be particularly hard to address especially under the current circumstances.

The size of such an effect, of course, and the extent to which it materialises, depends crucially on the implicit assumption made above that the austerity measures, combined as they are with the already strong impact of the recession, will not only lead to a temporary decline in demand (which may or may not be regionally differentiated) but will also change the behaviour of risk-averse economic agents, thus transforming the temporary demand shock into a permanent cumulative causation mechanism. Although we have no way of testing for the validity of this assumption at this stage, we note that, if anything, it does not appear to be particularly implausible.

There is an important policy message coming out from this, admittedly pessimistic, prediction. The austerity measures have clear spatial implications. Under specific assumptions/conditions, these can be so severe as to affect cross-regional equilibria and, by implication, the country’s ability to achieve balanced and sustainable growth in the future. Although devising regionally-sensitive austerity policies may not seem as an option in the current climate, at least for Greece, implementing an austerity package in the knowledge (of the possibility) that it may compromise future growth in a cumulative fashion should also not be seen as an option. Given the inability of the Greek government to mobilise resources from abroad and the recessionary impacts of mobilising resources internally, the only plausible option appears to be an externally-induced fiscal stimulus that will moreover obtain a clear spatial designation so as to achieve not only national, but also harmonious, growth. Such a mechanism in fact exists, in the form of loans provided by the European Investment Bank to ‘pre-finance’ the designated national contribution (co-financing) to funds absorbed under the EU Cohesion Policy. Greece has already received a €2bn loan under this scheme.

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4 As mentioned previously, market 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.
The depth of the recession, the pervasiveness of the austerity measures and the negative growth spirals that these may generate, as discussed above, call for much bolder actions on that policy front. At least until economic growth resumes in Greece, EU funding should be decoupled from national co-financing (most appropriately through the EIB ‘pre-financing’ loans, which maintain performance incentives while removing budgeting constraints) and productive public investments should be directed in areas where the austerity measures seem to generate the most pervasive effects. Without such a policy, or an alternative policy to the same effect, the country risks entering a process of cumulative regional divergence and peripheral decline that can only intensify existing regional asymmetries and compromise future national and regional growth.
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