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Polarization or “Squeezed Middle” in the Great Recession? : A Comparative European Analysis of the Distribution of Economic Stress

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Abstract: This paper analyses variation in the impact of the Great Recession on economic stress across income classes for a range of advanced European countries. Our analysis shows Iceland, Ireland and Greece to be quite distinctive in terms of increases in their multidimensional income, material deprivation and economic stress profiles. Between 2008 and 2012 these countries moved from being predictably located within anticipated welfare regimes to becoming clear outliers. For this set of countries, each of which was exposed to different but severe forms of economic shock, trends in income class polarisation versus middle class squeeze were variable. Each exhibited substantial increases in levels of economic stress. However, changes in the pattern of income class differentiation were somewhat different. In Iceland a form of middle class squeeze was observed. For income class polarization did not exclude middle class squeeze. Greece came closest to fitting the polarization profile. Changes in the distribution of household equivalent income had no effect on stress levels once the impact of material deprivation was taken into account. Changes in levels of material deprivation played a significant role in accounting for changing stress levels but only for the three lowest income classes. These findings bring out the extent to which the impact of the Great Recession on the distribution of economic stress across classes varied even among the hardest-hit countries. They also serve to highlight the advantages of a multidimensional approach that goes beyond reliance on income in seeking to understand the impact of such shocks.

Key words: ‘middle class squeeze’, polarization, income class, Great Recession, economic stress, material deprivation.

Introduction

In this paper we seek to bridge the gap between recent analyses relating to the distributional consequences of the Great Recession and those focusing more specifically on notions of “middle class squeeze” (Jenkins *et al* 2013, Kus, 2013, 2015). Our focus is on the more developed economies of the European Union and we will develop the argument that in understanding the distributional impact of the economic crisis in such countries it is necessary to go beyond income and develop a multidimensional approach that encompasses material deprivation and economic stress. Such an approach we will argue is necessary not just because the association between current disposable income and the latter dimensions tends to be considerably weaker than is frequently assumed but also because income tends to be a particularly poor measure of command over resources and economic circumstances in periods of economic upheaval. In addition a multidimensional approach enhances our ability to take into account the distinctive role that debt has played in shaping the circumstances of households during the recent economic crisis (Nolan and Whelan, 2011, Russell *et al* 2013).¹ In developing such an approach we make some important departures from the manner in which material deprivation measures have been employed at the European level, as in the construction of the European Poverty Target (European Commission, 2011 and Guio, 2009).²

Our analysis strategy proceeds broadly as follows. Drawing on the 2008 and 2012 waves of the European Union Survey of Income and Living Conditions (EU-SILC) we proceed to develop distinct measures of equivalent household income, material deprivation and economic stress together with a classification of income classes. Our initial analysis takes a descriptive form and focuses on establishing which countries experienced distinctive patterns of change in relation to their multidimensional profile of income, material deprivation and economic stress. In order to provide a benchmark for such change we locate individual countries within the welfare regimes to which they are conventionally allocated (Esping-Andersen and Myles, 2009), to provide a context in which to identify those with distinctive patterns of impact in terms of our outcome

¹ Our analysis thus extends on a comparative European basis Whelan *et al*s (2015) treatment of the Irish case.

² For a detailed critique of the European Poverty target see Whelan *et al* 2014).

measures.³ Our approach at this point follows Goldthorpe (2007: 207-209) in using large scale data sets, in phrase taken from Merton (1987), “to establish the phenomenon”. We would argue that the debate on the distributional consequences of the Great Recession provides a striking illustration of the need noted by Goldthorpe for social scientists to, in Lieberman’ (1987) words, to show “what is happening” before they attempt to explain “why it is happening”. In this context we do not seek to provide an overarching explanation of changing patterns of income, material deprivation and economic stress in economically advanced European countries. We first establish the extent of such changes and identify the subset of countries that experienced distinctive changes in their profiles and in particular those who experienced sharp increases in their stress levels, an outcome which we agree is of particular interest given the nature of the recent economic crisis. We then proceed to explore the distribution of such change across economic classes and the extent to which such changes provide support for claims relating to income class polarization versus ‘middle class squeeze’. We then extend our analysis in order to consider the extent to which such change is a consequence of the changing distribution of economic classes and the changing consequence of membership of such classes, before going on to explore the role of changing levels of income and material deprivation in accounting for such change.

Theoretical Context

The Great Recession has accentuated pre-existing concerns relating to income inequality (Piketty, 2014) and the negative impact of such inequality (Wilkinson and Pickett, 2009).⁴ However, it is far from clear that the literature relating to long-term trends in inequality is sufficient to enable us to understand the impact of the recent economic crisis and the manner in which it has varied across countries. Thus Eichengreen (2015:470) notes, “Piketty dismisses the crisis as a blip”. Similarly, it would seem unwise to assume that the subjective impact of the economic crisis can be understood as involving the impact of increasing income inequality on social psychological mechanism relating to factors such as status attainment and social capital.

³ The welfare regime classification is employed solely to facilitate communication of our results relating to national outcomes rather than being used for explanatory purposes.

⁴ See also Salverda *et al* (2014)

Atkinson and Morelli (2011: 49) in a comprehensive analysis of the relationship between economic crisis and income inequality conclude that there is no hard and fast pattern and that crises differ greatly from each other in their causes and outcomes and that as far as inequality is concerned “this time may be different”. Focusing specifically on the impact of the Great Recession Jenkins *et als* (2013) comparative analysis of the impact of the Great Recession showed that the initial distributional effects varied widely across countries, reflecting not only differences in the nature of the macroeconomic downturn but also in the manner in which cash transfers and direct taxes cushioned household net incomes from the full consequences of reductions in market incomes.

In countries most severely affected by the Great Recession considerable debate has emerged as to where the heaviest burden has fallen. In Ireland, for example, despite modest changes in conventional measures of income inequality and poverty and evidence of substantial buffering of the effects of the economic crisis by the welfare system, claims relating to increased class polarization have been made by a variety of social critics who have argued that “austerity” policies have involved the imposition of additional sacrifices on the most vulnerable (Callan et al 2014). However, at the same time increasing debt levels, negative equity, public sector redundancies and pay cuts and difficulties experienced by the self-employed have resulted in notions of ‘middle class squeeze’, coming to have considerable resonance in popular and political debate (Whelan and Maître, 2014, Whelan et al, 2015). The term originates in the US where it predates the recent economic crisis and refers to the relative decline in earnings for middling groups and the reliance on credit to maintain established living standards (Pew 2012, Kus, 2013). The European context is different in crucial respects. Debt levels are higher in the US and there is also considerable variation across EU countries. However, as Kus (2015: 212) observes, in the context of increased consumer demand and aggressive and less regulated credit markets, household debt levels have increased substantially in advanced European countries over the past two decades and notes that in 2010 the respective average levels of credit in the US and the EU were 126 and 99 per cent of income.⁵

⁵ The corresponding figures for consumer credit were 24% and 13% and for housing loans 98% and 17%. Figures for the EU exclude Croatia (source European Credit Research Institute).

In that context, the impact of the economic crisis, particularly on households made vulnerable by increased debt levels and affected by declining asset values (notably property) that accompanied it, is not likely to be fully captured by focusing purely on how incomes were affected and indeed on material deprivation *per se*. In this paper we adopt a multidimensional perspective that encompasses household income, material deprivation and economic stress. We understand material deprivation to be influenced not only by current income but also by wider command over resources and economic stress to be additionally influenced by financial obligations, coping capacities and reference groups. The distinction we seek to make is not between objective and subjective aspects of deprivation as such. Rather our measure of material deprivation seeks to capture enforced deprivation arising from lack of resources rather than different tastes. In addition, our indicator of economic stress allows a role for objective factors relating to debt burdens and financial obligation while also permitting a role for subjective elements in relation to variable ability to cope with such demands and obligations and differential reference points against which financial pressures are evaluated. This is in line with findings in the literature on the measurement of debt showing that neither purely subjective or objective approaches prove to be adequate (Ferreira, 2000, Finlay, 2006 and Betti et al 2007). As we will set out in more detail subsequently, the deprivation items we employ are more likely to capture longer term economic circumstances while the economic stress items focus on recent experiences. In addition, earlier comparative analysis has shown that the impact of material deprivation on economic stress varies significantly across countries with identical levels of household material deprivation, having a larger effect on economic stress in more affluent countries; this indicates that the impact is mediated by subjective processes that are contextually specific and influence the economic stress response (Whelan and Maître, 2013). Taken together these considerations suggest that the predominant direction of influence is from material deprivation to economic stress.

The focus of our analysis is on individual countries and changes in their situations as captured by the 2008 and 2012 waves of EU-SILC in terms of levels of income, material deprivation and economic stress. Having documented changes in each of these outcomes across a range of advanced European countries we focus on the distinctive features of the impact of the Crisis in three of the hardest-hit countries Iceland, Ireland

and Greece, which are characterised by distinctive changes in their multidimensional profiles. In order to provide a context for these findings we locate countries within welfare regimes. In 2008 systematic variation across welfare regimes was observed for each of the outcomes of interest and countries fitted predictably in such regimes. By 2012 substantial variation across welfare regimes persisted, however, at this point Iceland, Ireland and Greece showed striking deviations from the remaining members of the welfare regime. Clearly such changes associated with economic crisis cannot be accounted for by general characteristics of welfare regimes.

Data and Measures

Our analysis is based on data from the 2008 and 2012 waves of the EU-SILC.⁶ We have included sixteen economically advanced European countries, where we consider issues of income class polarization versus middle class squeeze to be of most relevance, comprising the original EU-15 (excluding Luxembourg) together with Iceland and Norway. For the purposes of our current analyses we focus on individuals residing in households where the Household Reference Person (HRP) is aged 65 or below.⁷ The number of countries included in our analysis falls below the minimum number of 25 proposed by Bryan & Jenkins (2015:17) for even relatively basic multilevel model specifications and no such analysis is reported in what follows. In any event, as will become clear, there is no evidence that variation across countries in changes in stress levels is structured in a fashion that could plausibly be interpreted as arising from corresponding changes in macro characteristics across the range of countries included in our analysis.

⁶ The choice of years may affect conclusions. For example both Ireland and Iceland experienced boom periods before the recession and an earlier reference period would show less dramatic changes. However, given our interest in the impact of the Great Recession and the fact that income refers for most of the countries to that in the previous year of the survey we concluded that the most appropriate comparison was between the 2008 and 2012. In no case was a decline in incomes observed before 2007. For those countries experiencing the sharpest falls these were observed between 2007 and 2012 although the specifics varies across countries. It should be kept in mind that the pattern of class effects observed relating to the impact of the economic crisis may be rather different from those that may be found to characterise economic recovery.

⁷ Given issues of reliability in relation to such incomes, we also excluded individuals in households where disposable household income is reported to be zero or negative. The total number of cases excluded was 0.5%

Incomes and “Income Classes”

We employ the conventional measure of household disposable income adjusted for household size, employing the “OECD-modified equivalence scale” which gives a value of 1 for the first adult, 0.5 for each additional adult and 0.3 for each child. We also adjust for inflation over the period: for most countries the income measure in EU-SILC refers to the previous calendar year, so the increase in consumer prices from 2007 to 2011 was taken. (For the UK the income information refers to the current year so the increase in prices from 2008 to 2012 was used).⁸

As Gornick and Jäntti observe (2013: 9), what economists refer to as the “middle class” might be more accurately described as those that fall in the “middle” of the income distribution. Within this income-based framework ‘class classifications’ have been developed in two ways. The first involves aggregating income bands into deciles or quintiles, in which case the size of classes remain constant over time. An alternative approach establishes class groups involving intervals defined by percentages of median household income (Atkinson and Brandolini 2013: 82), which is the approach we adopt here. The number of categories identified and the labels attached to them is to some extent arbitrary. We first distinguish households with incomes below 60% of median equivalized income—the most widely-used relative poverty threshold in an EU context – as “the income poor”. As Atkinson and Brandolini (2013) note, one may either accept “the premise that middle class living standards begin when poverty ends”, or instead take a more conservative approach and fix a level so as “to ensure that the lower endpoint of the middle class represents an income significantly above the poverty level,” as suggested by Horrigan and Haugen (1988: 5). Favouring the latter, we take those between 60% and 75% of the median to be “precarious” or on the “margins” of poverty (consistent with the finding from the analysis of income dynamics over time (e.g. Jenkins, 2011) that there is considerable movement between this category and the income poor from year to year). The middle class can then be said to be those not in or on the margins of poverty, between 75% and 166% of the median; within this we

⁸ In the case of Iceland we have not adjusted for inflation because given the scale of devaluation of the national currency relative to the Euro this would, in effect, involve double counting.

distinguish a “lower middle class” between 75–125% of the median and an “upper middle class” between 125% and 166% of the median. Those whose incomes are at least 167% of the median will be taken as the affluent class.⁹

Material Deprivation

The measure of material deprivation we use is constructed from the responses to questions about absence of the following items due to lack of resources:

- one week’s annual holiday away from home;
- a meal with meat, chicken, fish or vegetarian equivalent every second day;
- keeping the home adequately warm;
- a personal computer; and
- a personal car.

The material deprivation items take the classic Mack & Lansley (1985) form. So they relate to the enforced absence of items. So the wordings include reference to “ability to pay”, “capacity to afford”, “cannot afford”. The aim is to capture, as far as possible, objective deprivation rather than differences in taste. Such deprivation will be affected not only by current income but by wider command over resources.

Reflecting the limitations of the material deprivation items in EU-SILC relating to the more advanced European countries, the average level of reliability in both 2008 and 2012 is somewhat lower than for the economic stress at 0.55. While the reliability of the deprivation measure is lower than we would ideally like, variation across time and country was modest.

The approach we have adopted to the measurement of these outcomes differs in important respects from that adopted in constructing the official EU measure of material deprivation. In particular, we have sought to distinguish between measures of material deprivation tapping objective deprivation and items capturing economic stress which we expect to be influenced not only by objective circumstances but by subjective adaptation to such circumstances. These items have tended to be combined in EU

⁹ For further discussion of classification issues see Bigot et al (2012)

measures of material deprivation such as that incorporated in the EU 2020 Poverty Target.

Also, since our focus is on comparatively advanced European countries we have excluded items such as a colour TV and a washing machine, included in the EU indicator, but where deprivation levels are extremely low for most of the countries we are analysing.¹⁰ While in principle such items would seem to be potentially important elements of a European deprivation index, the levels of enforced absence are so low in developed economies that as a consequence such items are very weakly correlated with the items we have retained and indeed with each other thus fail to contribute to enhancing the reliability of the measure of deprivation.

Economic Stress

Our key dependent variable is a measure of economic stress. It is based on a set of items that are intended to capture objective debt problems but also subjective responses to such pressures. Overall we understand the outcome to reflect debt problems directly associated with objective financial circumstances but also with the capacity to adjust to such circumstances but also variability in the reference point from which such pressures are evaluated. A review of the literature on debt measurement makes clear that an exclusive focus on either objective or subjective aspects proves to be unsatisfactory. In developing a measure that incorporates both aspects we have made a conscious decision that in an era where household debt is of increasing significance, understanding the distributional impact of economic crisis and its potential implications requires that we go beyond, not just current income, but also objective deprivation, notwithstanding the fact that both may play a crucial role in accounting for economic stress. It is for that reason that we have focused on economic stress as our key dependent variable.

While there is an agreement that debt levels have substantially increased, there has been less consensus on how over-indebtedness and its consequences should be defined

¹⁰ For a detailed discussion of the limitations of the EU material deprivation measure see Maître et al (2014).

and measured. Furthermore, it is widely recognized that the concept of over-indebtedness is multidimensional and therefore no single indicator can encapsulate it. The models employed for measuring consumer over-indebtedness include objective and subjective versions (Ferreira, 2000; Finlay, 2006; Betti et al., 2007). The former is based on the notion of unsustainable spending behaviour (consumption/income ratio) or unsustainable level of debt (debt/asset ratio) or inability to service debt (debt payment/income ratio). However, there is no established methodology for determining the critical level of these ratios. Furthermore, Betti et al. (2007) argue that even if a critical level of indebtedness can be established, it is likely to fluctuate widely through the life course of an individual. The subjective approach classifies as over-indebted all those who judge themselves to be unable to repay their debts without reducing their other expenditure below their normal minimal levels. The implication is that the debt has become unsustainable. One difficulty with this measure is that tolerance for debt may vary across countries, time socio-economic groups and individuals and therefore may be an unstable indicator if used in isolation.

As Russell *et al* (2013: 695-697) note, a consortium of researchers appointed by the European Commission to develop a common operational definition of over-indebtedness proposed a mix of objective and subjective model indicators (Davydoff et al. 2008: pp. 55-56). They included payment commitments that push the household below the poverty threshold, structural arrears on at least one financial commitment, a burden of monthly commitment payments considered to be heavy for the household, limited payment capacity, and illiquidity.

Drawing on the items available in EU-SILC our proposed indicator of economic stress includes items relating to structural arrears, burden of housing costs, illiquidity in terms of inability to meet with unexpected expenses and adds items relating to debt experiences in the past 12 months and experiencing difficulty in making ends meet.

The full set of items is as follows:

1. Households were defined as having a structural problem with arrears where they were unable to avoid arrears relating to mortgage or rent, or utility bills or hire

purchase instalments (in the past 12 months). Those households experiencing such problems were given values of 1 while the remainder were scored as 0.

2. Focusing on illiquidity, individuals in households indicating that they were unable to cope with unexpected expenses were scored 1 while all others were scored 0.

3. Respondents indicating that housing costs were a “heavy burden” or “somewhat of a burden” were scored as 1 while the remaining category was assigned a value of 0.

4. A further indicator of debt was captured by the question “Has the household had to go into debt within the last 12 months to meet ordinary living expenses such as mortgage repayments, rent, food and Christmas or back-to-school expenses?” A positive answer was scored as 1 while a negative one was assigned a value of 0.

5. Respondents indicating that the household had “great difficulty” or “difficulty” in making ends meet have been given a value of 1 while the remaining categories have been scored as zero.¹¹

The average reliability of this measure across all sixteen countries employing Cronbach’s alpha was 0.69 on 2008 and 0.71 in 2012. It displays both satisfactory levels of reliability and extremely modest variation across countries.

In creating the economic stress and material deprivation indices, following Desai and Shah (1988), each item is weighted by its prevalence weight in the population. Less frequently experienced stresses (or deprivation) are allocated a proportionately greater weight. These weights are allowed to vary across time in order to best capture the latent stress variable and material deprivation variable. The weighted items are then added and this produces a continuous variable which has then been ‘normalized’ to produce scores ranging from 0 to 1. A score of zero means that the individual is not stressed (or deprived) on any of the items while a score of 1 means that the individual is stressed (or deprived) on all items while intermediate scores reflect the pattern of stress (or deprivation) responses and the prevalence weights at each point in time.

¹¹ Missing values levels are negligible for both the deprivation and economic stress items, ranging from 0,1 to 0.4 %

Welfare Regimes

The focus of our analysis is on individual country stress levels. However, to bring out the nature of key changes over time we locate these results in the context of welfare regime outcomes. Our initial analysis provides a detailed account of cross-national differences in economic stress in both 2008 and 2012 and identifies a subset of countries experiencing distinctive increases in stress levels. Rather than using welfare regimes as an explanatory variable, we are seeking to establish the extent to which countries experiencing particularly severe increases in level of stress also displayed changes in the pattern of income class effects that distinguish them from the remaining countries in their respective welfare regimes.¹² This requires analysis of both specific countries and the remaining members of their welfare regimes treated as aggregates. Countries have been allocated to welfare regimes as follows,

- The *social democratic regime* comprising Sweden, Denmark, Iceland, Finland, Norway and The Netherlands
- The *corporatist regime* comprising Germany, Austria, Belgium and France.
- The *liberal regime* comprising Ireland and the UK
- The *southern European regime* comprising Greece, Italy, Portugal and Spain.¹³

Income, Material Deprivation and Stress Levels by Country and Welfare Regime in 2008 and 2012

We commence our analysis by focusing in Table 1 on changing levels of household income, material deprivation and economic stress by countries clustered within welfare regimes. In Figure 1 we set out the percentage change for each dimension by country. We see that in 2008 the variation in mean equivalised disposable income across countries and welfare regimes was very much in line with expectations, The range across countries is from €39,000 for Norway down to under €12,000 in Portugal, while

¹² For a detailed discussion of different use of the welfare regime approach see van Kersbergen and Vis (2015).

¹³ For a detailed discussion of the basis for distinguishing these regimes see Whelan and Maître (2010).

across regimes it goes from €28,500 for the social democratic regime down to €17,000 for the southern European one, with the liberal and conservative regimes in between.¹⁴ Focusing on change between 2008 and 2012, by far the largest reduction in income was observed for Iceland where equivalised household income fell by over 40%.¹⁵ The next largest proportionate fall in income was for Greece with a 30% reduction, followed by Ireland where the decline was 20%. Six other countries experienced some income reductions, the largest ranging from 13% to 10% were observed in the UK, Spain and Portugal. In 2008 Iceland, Ireland and Greece fitted predictably into their respective welfare regimes, but by 2012 Iceland had clearly become a deviant case while Greece showed the largest decline in the southern European regime and the income positions of Ireland and the UK had been reversed although the gap was modest.

Turning to the comparable breakdown for material deprivation, in 2008 we found that the lowest level of material deprivation of 0.017 was observed in Iceland and the highest of 0.219 in Portugal. In regime terms the social democratic regime had the lowest mean level, followed by the corporatist and liberal regimes with the southern European regime having the highest levels. Nine countries experienced increases in material deprivation between 2008 and 2012, including Iceland, Ireland and Greece. Within the southern European regime Italy had experienced much lower income reductions than Greece but its absolute increases in material deprivation was nearly as great and was proportionately greater. Spain had a more modest increase and Portugal represents something of an outlier in that while its income level fell so too did its scale of deprivation. Within the social democratic regime, apart from Iceland where the initially low level almost doubled, the largest increases were observed for the Netherlands and Denmark. The UK displayed a sharper increase in deprivation that the reduction in its income level might have suggested with a level of increase comparable to that in Ireland. For the remaining countries observed increases were of a modest

¹⁴ Our focus here is on absolute changes in incomes. Figures relating to relative income poverty tend to exhibit an entirely different pattern because they do not capture such absolute changes are significantly influenced by the manner in which income from welfare benefits fare relative to market incomes. In Ireland the economic crisis had very little effect on relative income poverty rates.

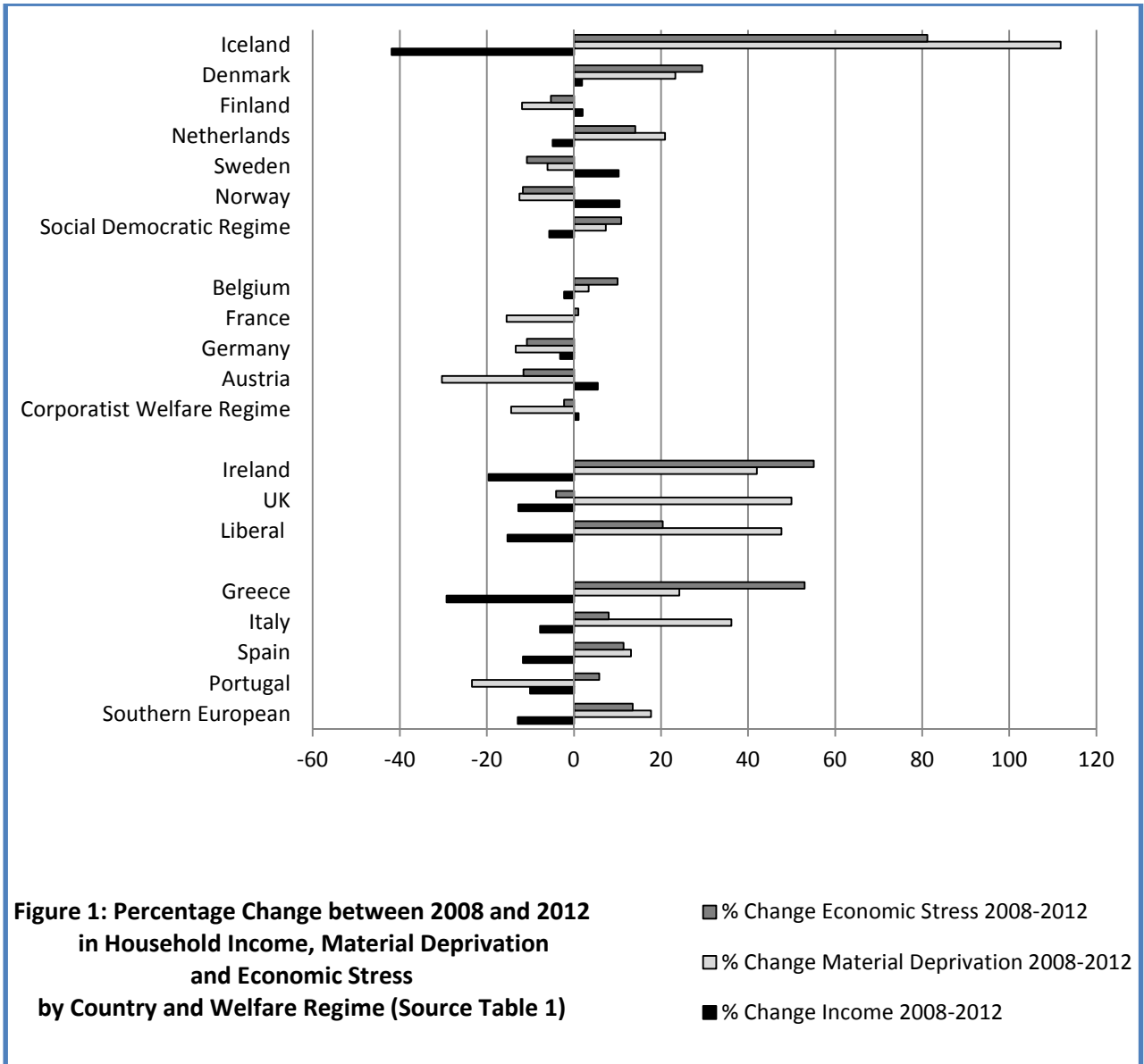
¹⁵ The figure for the Icelandic krona actually increases slightly over this period but this does not take into account an inflation level of 38%. In purchasing power parity terms there was a decline of just less than 50%. Our subsequent analysis involving income class and income is not affected by the choice of indicator.

scale. The main impact of change in regime terms was to widen the gap between the southern European regime and all others.

Table 1: Mean Household Equivalent Income (€) Adjusted for Inflation , Material Deprivation and Economic Stress by Country, Welfare Regime and Year of Survey

	<i>Equivalent Income</i>		<i>Material Deprivation</i>		<i>Economic Stress</i>	
	2008	2012	2008	2012	2008	2012
	Norway	38,903	42,983	0.032	0.028	0.077
Sweden	24,504	27,029	0.033	0.031	0.102	0.091
Netherlands	24,479	23,270	0.043	0.052	0.092	0.105
Finland	25,374	25,910	0.059	0.052	0.152	0.144
Denmark	29,881	30,455	0.043	0.053	0.095	0.123
Iceland	38,130	21,720	0.017	0.036	0.138	0.250
<i>Social Democratic Regime</i>	28,471	28,242	0.041	0.044	0.110	0.122
Austria	23,375	24,651	0.109	0.076	0.146	0.129
Germany	23,143	22,392	0.097	0.085	0.157	0.140
France	24,098	24,108	0.097	0.082	0.201	0.203
Belgium	23,374	22,836	0.087	0.090	0.180	0.198
<i>Corporatist Welfare Regime</i>	23,493	23,752	0.097	0.083	0.174	0.170
UK	27,009	23,564	0.084	0.126	0.194	0.186
Ireland	27,685	22,282	0.095	0.135	0.225	0.349
<i>Liberal</i>	27,274	23,112	0.088	0.130	0.206	0.248
Portugal	11,336	10,187	0.219	0.170	0.242	0.256
Spain	16,256	14,350	0.107	0.121	0.272	0.303
Italy	19,856	18,309	0.116	0.158	0.299	0.323
Greece	15,211	10,754	0.161	0.200	0.281	0.430
<i>Southern European Regime</i>	17,166	14,955	0.130	0.153	0.282	0.320
Country Eta²	0.146	0.180	0.066	0.082	0.076	0.082
N	272,357	260,023	272,357	260,023	269,376	257,669

Source: EU SILC 2008 and 2012 waves



Shifting our focus to economic stress, we observe that on 2008 the pattern of cross-national variation across countries in 2008, at the beginning of the crisis, was generally in line with what one would expect on the basis of the mean income and deprivation patterns at that time. The lowest average level of stress of 0.110 was in the social democratic countries; there was considerable variability within this cluster but all countries in this regime, other than Finland, had lower scores than the other countries in our analysis. The next lowest mean stress level was for the corporatist cluster, with an average of 0.174 and only modest variation across its members, followed by the liberal regime with an average value was 0.206. The highest stress level of 0.282 was observed in the southern European regime, with Italy and Greece at the upper end but within cluster variance being extremely modest. Overall, stress levels for the corporatist

regime were almost sixty per cent higher than for the social democratic cluster, for the liberal they were twice as high, and for the southern European group almost three times as high.

By 2012, the average stress level for the social democratic regime had increased marginally due to increases in Denmark, the Netherlands and most particularly Iceland, where the mean value increased by over 80 per cent over this short period so it becomes a clear outlier. For the corporatist regime the mean stress score declined marginally. For the liberal regime the average value increased by 0.042 which was entirely due to an increase of 55 per cent in Ireland, since the UK registered a marginal decrease despite the reduction in its income level and increases in its deprivation level. As a consequence by 2012 the mean Irish stress level was almost twice that for the UK. All of the southern European countries experienced increases in stress levels. For countries other than Greece these increases ranged from a perhaps surprising low of 5.8% for Portugal to 11.4% for Spain. For Greece in contrast the increase was over 50%. This produced a stress level of 0.430 higher than in any of the remaining countries. Average welfare regime scores remain in line with expectations. Iceland, Ireland and Greece, each of which experienced different forms of extreme crisis, exhibited distinctive increases in stress levels with the consequence that Ireland and Greece became the countries with the two highest stress levels while the level for Iceland rose to equal that of Portugal

From Figure 1 it is clear that Iceland experienced a distinctive deterioration in its situation with regard to household income, material deprivation and economic stress not only in relation to the other countries in its welfare regime but all of the remaining countries in our analysis. The same was true for Ireland and Greece in relation to income and stress. However, while substantial increases in levels of material deprivation were observed for both countries they were less sharply distinguished in this respect and unlike the case for the former did not experience the sharpest increases in this respect. This brings out the value of distinguishing between the three dimensions in our analysis. However, it remains true that Iceland, Ireland and Greece are distinctive in being characterised by a multidimensional profile of change which involves a substantial deterioration in relation to all three dimensions.

Changes in the Size of Income Classes

In line with our earlier argument that in era of increasing debt levels understanding the distributive impact of economic crisis and its implication requires that we go beyond a focus on income and deprivation. Our explanatory focus in the remainder of this paper will be on changing levels of economic stress. Having established the extent of such changes, given our focus on the redistributive consequences of the economic crisis, we will consider first the extent to which increased stress levels could be accounted for by changes in the distribution of income classes involving a shift in the distribution towards classes characterized by higher levels of stress.

In Tables 2 and 3 we set out the distributions of income class for 2008 and 2012 for Iceland, Ireland and Greece and for the social democratic, liberal and southern European welfare regimes excluding these countries. From Table 2 we observe that in 2008 systematic variation was observed in the distribution of individuals across categories of the income class typology by welfare regime, but very little variation between our three key countries and the remainder of the countries in their welfare regimes. The percentage income poor ranged from 9% in Iceland to 15% in Ireland and 19% in Greece. Very little variation was observed for the precarious and upper middle classes. However, the lower middle class contained half the sample in Iceland compared to about one-third in Ireland and Greece, balanced by the affluent class containing about 13% in Iceland compared to 17% in Ireland and 20% in Greece. The major contrast was between the social democratic countries and all others at both ends of the income class distribution.

The key question for our present purposes is the extent to which changes over time in the income class distribution can account for corresponding changes in stress levels. By 2012 the percentage poor had increased from 19% to 23% in Greece, but only modestly in Ireland and had declined slightly in Iceland. The rather minimal extent of the change is captured in the final row of Table 3 where we report the index of dissimilarity, capturing the percentage of cases that would be required to shift income classes in order to produce identical distributions in both years. The highest figure of 5% relates

to Greece. For Iceland it is 4% while for the remaining units it is below 3%. Similar results were observed for the remaining countries in each of the welfare regimes, This shows clearly that changes in the distribution of income classes between 2008 and 2012 were extremely modest and can consequently play little role in explaining temporal variations in stress levels.¹⁶

Changes in the Distribution of Income and Material Deprivation across Income Classes

Changes in stress levels could be mediated by changes in the impact of income class membership rather than in the size of such classes. One route through which such change could operate would involve corresponding changes in the distribution of average levels of household income and material deprivation across income classes, as opposed to changes in the distribution of individuals across these classes.

Table 2: Income Class Distributions for Within Welfare Regime Contrasts 2008

	Iceland	Other Social Democratic	Ireland	UK	Greece	Other Southern European
	%	%	%	%	%	%
Income Class						
Poor	9.2	10.9	14.7	16.7	19.1	18.1
Precarious class	10.6	10.4	13.0	10.8	10.0	10.5
Lower middle	49.6	48.1	37.4	34.9	33.5	35.2
Upper middle	18.0	19.5	18.0	17.8	17.4	18.0
Affluent	12.6	11.1	16.8	19.8	20.1	18.2
Total	100.0	100.0	100.0	100	100	100
N	7,554	83,363	11,034	17,157	12,649	72,316

Source: EU-SILC 2008 wave

¹⁶ Regression analysis allowing the impact of income class dummies to vary across time, available from the authors, confirms this conclusion. Using a slightly different classification and Luxembourg Income Study data Bigot et al (2012) find considerable variability across the countries included in our analysis regarding stability in the size of the middle classes.

	Iceland	Other Social Democratic	Ireland	UK	Greece	Other Southern European
	%	%	%	%	%	%
Income Class						
Poor	7.7	11.5	16.1	15.4	23.4	20.5
Precarious class	11.1	10.9	11.6	12.4	11.0	10.3
Lower middle	50.1	46.8	37.8	36.1	31.9	33.8
Upper middle	20.8	19.9	17.9	16.9	16.8	17.2
Affluent	10.2	10.9	16.6	19.1	17.0	18.3
Total	100.0	100.0	100	100	100	100
N	7,601	78,587	10,260	18,830	10,042	71,626
Dissimilarity Index 2008-2012	4.1	1.5	1.7	2.9	5.3	2.4

Source: EU-SILC 2012 wave

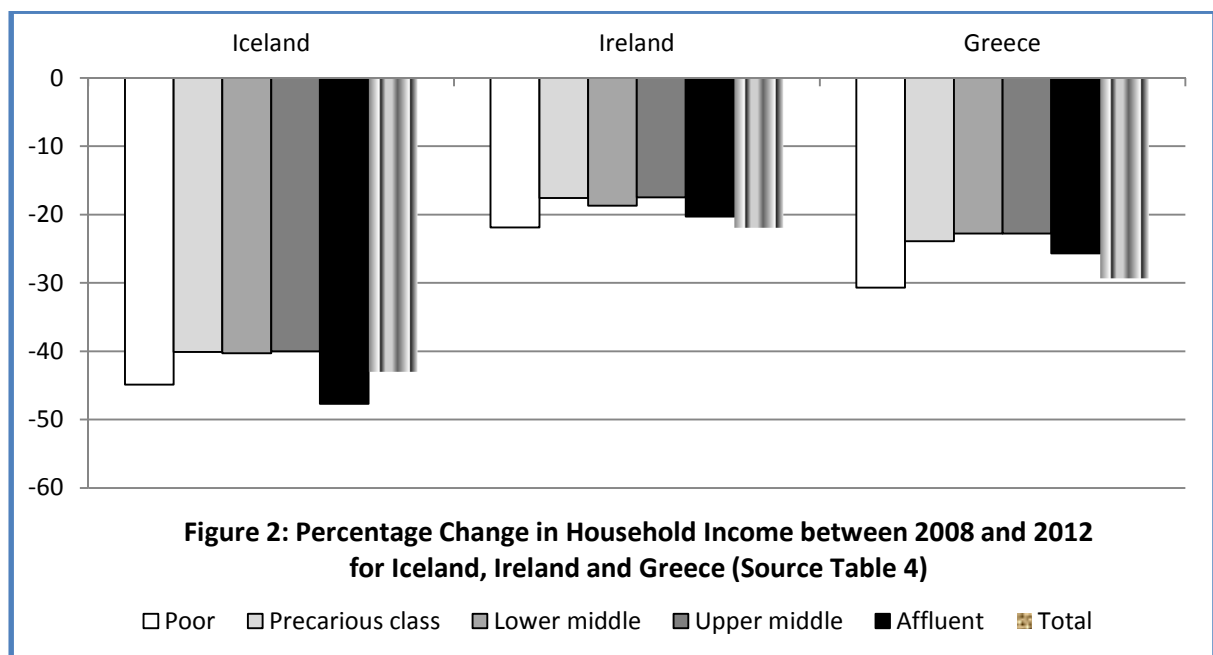
In Table 4 we provide details of changes in household income class between 2008 and 2012 for Iceland, Ireland and Greece and in Figure 2 we set out the percentage changes across income class and country. In Iceland the reductions in income across classes were proportionately very similar ranging from 40 per cent for the three intermediate classes to 45 per cent for the income poor and 48% for the affluent class such that mean income relativities remained relatively stable, with the differential between the affluent class and the poor class decreasing modestly from 5.6 to 1 to 5.3 to 1. Reduction in income levels were substantially lower in Ireland but were also proportionately similar across income classes ranging between 18% and 21%. In Greece a somewhat different situation prevailed with the largest proportionate reductions of 30% being observed for the poor and affluent classes with compared with an average of 24% for the remaining classes.

Table 4: Household Equivalent Income by Income Class in 2008 and 2012

	Iceland		Ireland		Greece	
	2008	2012	2008	2012	2008	2012
Income Class						
Poor	14,876	8,199	10,923	8,536	5,287	3,664
Precarious class	21,907	13,131	15,639	12,891	8,376	6,371
Lower middle	31,762	18,965	23,035	18,724	12,314	9,512
Upper middle	45,648	27,384	33,372	27,537	17,612	13,589
Affluent	82,911	43,358	55,983	44,620	30,794	22,866
Total	38,130	21,720	28,537	22,283	15,211	10,754
Eta²	0.502	0.734	0.529	0.638	0.560	0.628
N	7,553	7,601	11,021	10,261	12,648	10,042

Source: EU-SILC 2008 and 2012 waves

From Table 5 we can see that deprivation levels rose significantly in Iceland for the three lowest income classes and rather modestly for the two upper classes. In the Irish case we observe an increase in material deprivation for all classes but it takes a curvilinear rather than a hierarchical form. Material deprivation increases for Greece were concentrated in the bottom two income class categories while for the remaining southern European countries, increases in deprivation were more modest but again concentrated in the lower income classes.¹⁷



¹⁷ Further details are available from the authors.

We will return to the issue of the extent to which changes over time in the distribution of income and material deprivation across income classes can help to account for the changing relationship of income class to economic stress in the three countries most severely affected by the economic crisis.

Table 5: Material Deprivation by Income Class in 2008 and 2012

	Iceland		Ireland		Greece	
	<i>2008</i>	<i>2012</i>	<i>2008</i>	<i>2012</i>	<i>2008</i>	<i>2012</i>
Income Class						
Poor	0.060	0.095	0.204	0.236	0.304	0.411
Precarious class	0.035	0.077	0.200	0.243	0.268	0.311
Lower middle	0.014	0.036	0.089	0.145	0.166	0.162
Upper middle	0.002	0.009	0.030	0.058	0.085	0.080
Affluent	0.000	0.005	0.004	0.024	0.031	0.028
Total	0.017	0.036	0.095	0.135	0.161	0.200
Eta²	0.059	0.070	0.191	0.207	0.224	0.361
N	7,553	7,495	11,033	10,204	12,648	10,042

Source: EU-SILC 2008 and 2012 waves

Economic Stress Contrasts by Income Class and Year for Iceland, Ireland and Greece

We now shift our attention to the differential impact of income class on economic stress over time. In Tables 6 we set out the results of OLS regressions for stress by income class by year for Iceland, Ireland and Greece.¹⁸ For Iceland in 2008 there was a clear hierarchical pattern of income class effects with the stress level for the poorest income class being 0.218 higher than for the most affluent income class. At that point in time a relatively similar pattern was observed for the remaining social democratic countries with the gap between the affluent and income poor classes being 0.230 and a similar pattern of differentiation to that observed for Iceland being found for the remaining classes. In 2012 stress levels increased for all classes in Iceland, however, changes over

¹⁸ Full details of the corresponding results relating to the remaining countries in the social democratic, liberal and southern European welfare regimes are available from the authors.

time in the magnitude of class effects did not display a hierarchical pattern. The largest increase of 0.143 was for the lower middle class category while the next highest increments of approximately 0.100 are in the adjacent categories producing a clear curvilinear pattern with the coefficient for the income poor category increasing by 0.088.¹⁹

In 2008 Ireland exhibited a hierarchical pattern of income class effects stronger than in the social democratic countries with differences of 0.309 and 0.329 respectively between the income poor and precarious classes and the most affluent group with a gradual decline for the remaining categories. Over time in Ireland stress levels increased for all income class categories. For the income poor group the increase was 0.150 which was higher than for the precarious class where the increases was 0.097 and slightly lower than for the lower middle class category where an increase of 0.157 was observed. For the remaining two higher income classes there was an average additional increase of 0.080. Thus the Irish pattern of change was rather different to that relating to Iceland. There was an across the board increase in stress levels but one that was accompanied by a form of income class differentiation that contrasts the income poor and lower middle class with the upper middle and affluent classes with respective average increases in stress levels of 0.154 and 0.084. The precarious class constitutes something of an exception with an observed increase of 0.097 higher than for the two upper classes but a good deal less than for the lower middle class. Thus in the Irish case we observe both polarization in relation to the income poor and lower middle class squeeze.

In 2008 stress levels in Greece were somewhat higher than in Ireland and broadly comparable to those in other southern European countries. The stress score for the lowest income group was 0.426 which was 0.331 higher than for the most affluent group with the effect displaying a gradual decline across income categories such that the gap between the two upper middle and affluent classes being 0.102. Over time in Greece stress levels increased for all classes with a pattern of class differentiation closer to the Irish case than the Icelandic one but with a clearer hierarchical element across

¹⁹ These calculations include the difference of 0.027 in the constants as do subsequent calculations relating to Tables 6.

the three lowest income categories. For the two highest income classes the average increase was approximately 0.100 before then increasing steadily to an average of 0.156 for the three lowest classes with the highest value of 0.185 being observed for the income poor class.

Table 6: OLS Regressions for Economic Stress by Income Class and Time for Iceland, Ireland and Greece

	Iceland		Ireland		Greece	
	2012	2008	2012	2008	2012	2012
Income Class						
Poor	0.279 ***	0.218 ***	0.385 ***	0.309 ***	0.414 ***	0.331 ****
Precarious class	0.274 ***	0.208 ***	0.352***	0.329 ***	0.348 ***	0.295 ***
Lower middle	0.214***	0.098 ***	0.262 ***	0.179 ***	0.255 ***	0.227 ***
Upper middle	0.099 ***	0.025 ***	0.087 ***	0.068 ***	0.098 ***	0.102 ***
Affluent (Constant)	0.070	0.043	0.132	0.058	0.197	0.095
R²	0.077	0.094	0.172	0.159	0.231	0.182
N	10,218	10,923	10,218	10,923	10,041	12,648
P * < .1. ** P < .01 *** P < .001						
Source: EU-SILC 2006 and 2012 waves						

In Figure 3 we summarize the changing pattern of income class effects across all three countries. In each case the absolute level of stress increased for the affluent class with the level of change from 0.027 for Iceland to 0.074 for Ireland and 0.102 for Greece. However, with the exception of the upper middle class in Greece, in relation to all the remaining classes the relative position of the affluent class improved. Similarly, in all three countries the advantage enjoyed by the upper middle class over the lower middle class increases over time. These effects contribute to a significant degree of class polarization. However, the overall picture is complicated by other effects.

Greece provides a clear picture of income class polarization with a significant contrast between the bottom three and top two classes and a clear pattern of hierarchical

differentiation within the former. Iceland provides a striking contrast with clear evidence of lower middle class squeeze relative to all other classes and a fairly uniform deterioration in their position relative to the affluent class being observed for the remaining classes. The Irish case provides a mixed picture. As in Iceland we find evidence of lower middle class squeeze but also as in Greece an increasing disparity between the income poor and all classes other than the lower middle class. However, while changing circumstances and policy responses exacerbated the position of the income poor, the additional stresses experienced by the precarious class were no greater than for the upper middle class.



Multivariate Analysis of Changing Effects of Income Class over Time for Iceland, Ireland and Greece

In Table 7 we set out the results from a set of nested OLS models for Iceland, Ireland and Greece. Equations (i) include a set of dummies comprising a set of two way interactions to allow the impact of income class to vary across time within each country. It thus reproduces the results set out in tables 6A, B and C and provides significance tests for change over time. However, our major focus at this point is on equations (ii) which introduce a control for material deprivation and equations (iii) which add household equivalent income. The key issue we address is the extent to which changes

in the mean levels of deprivation and income associated with income classes help to account for the changing impact of income class on economic stress between 2008 and 2012.

Focusing on Iceland first, we can see that in 2008 controlling for material deprivation reduces the impact of income class for the income poor category with the coefficient declining from 0.218 to 0.156 and for the precarious category with the respective figures being 0.208 and 0.174. However, it has little effect for the higher income classes. More importantly, from the point of view of our current analysis, this pattern is repeated in relation to changes over time with the coefficients for the interaction between the time of survey and the three lowest income categories declining respectively from 0.061 to 0.032, 0.067 to 0.026 and 0.117 to 0.096 while the reduction for the upper middle class is minimal. Thus in Iceland material deprivation plays a major role in explaining the relationship between income class and stress and the manner in which it changes over time predominantly for the lower income classes. Introducing the log of household equivalent income produces further significant reductions in the impact of income class in 2008. The combined impact of material deprivation and income leads the upper middle class coefficient to become insignificant while the coefficients for the remaining classes are halved or more. However, crucially, income has no net influence on the changing impact of income class over time.

Focusing on Ireland, we find that controlling for material deprivation substantially reduces the income class effects in 2008 for all income categories. For the two lowest income categories it produces a reduction from 0.309 to 0.128 and 0.329 to 0.149 respectively while for the two highest income categories the respective changes are from 0.178 to 0.101 and from 0.068 to 0.044. In addition, as was the case for Iceland controlling for material deprivation also reduces the coefficients for changing impact over time for the three lower classes, where such effects had been significant, with the respective coefficients for 2008 and 2012 being 0.076, 0.022, 0.085 and 0.062, 0.001 and 0.051. So in the Irish case, as in Iceland, the changing distribution of material deprivation plays a role in accounting for the changing relationship between income class and economic stress primarily for the lower income classes. As in the Icelandic case, adding household income in equation (iii) reduces the income class effects in

2008, although the reductions are more modest than in the former case. However, it plays no role in explaining the manner in which income class effects change over time.

In the Greek case we once again find that material deprivation substantially reduces the 2008 income class coefficients; almost halving those for the two lowest income classes and reducing those for the third and fourth highest income groups respectively by approximately 50% and 25%. In addition, in line with the Icelandic and Irish cases, it results in significant reductions in the interactions effects capturing change over time for the two lowest income categories with the coefficients for 2008 and 2012 being respectively 0.083 and 0.053 and 0.020 and 0.033. However, it has no effect for the higher income categories. As in the Irish case, adding equivalent income in equation (iii) produces further modest reductions in the income class coefficients for 2008 but plays no further part in accounting for the changing impact of class between 2008 and 2012.

Overall, then, material deprivation plays an important role in accounting for income class effects in 2008 and for changing effects for the three lowest income classes in Iceland and Ireland and the two lowest income classes in Greece. In all three countries, adding income to the analysis provides further explanatory power in relation to the magnitude of income class effects but adds nothing to our ability to account for change in class effects between 2008 and 2012. Clearly factors other than deprivation, such as the scale and type of financial commitments, play an important role in explaining changing stress levels for the upper middle and affluent classes. This finding is in line with rather different pattern of changing income class effects that we have observed for the respective outcomes. Thus despite significant absolute increases in economic stress for the upper middle and affluent classes, with a few exceptions, not only did their relative position improve relative to the remaining classes but unlike the latter their deteriorating position was not a consequence of increased levels of material deprivation. In contrast the relative position of the lower middle class deteriorated relative to the upper middle and affluent classes in all three countries and was in significant part accounted for by corresponding increases in material deprivation. Increased stress levels for the precarious and upper middle classes were similar in Iceland and Ireland but with income changes playing a significantly more important role in relation to the former in both countries. For the income poor the decline in their

relative position occurred only in relation to the affluent class. In Ireland it was observed in relation to the precarious, upper middle and affluent classes and finally in Greece in relation to all the remaining classes.

	Iceland			Ireland			Greece		
	(i)	(ii)	(iii)	(i)	(ii)	(iii)	(i)	(ii)	(iii)
2012	0.028 ***	0.024 ***	-0.024 *	0.073 ***	0.055 ***	0.049 ***	0.102 ***	0.104 ***	0.090 ***
Poor	0.218 ***	0.156 ***	0.074 ***	0.309 ***	0.128 ***	0.089 ***	0.331 ***	0.174 ***	0.092 ***
Precarious	0.208 ***	0.174 ***	0.114 ***	0.329 ***	0.149 ***	0.100 ***	0.295 ***	0.159 ***	0.103 ***
Lower middle	0.096 ***	0.083 ***	0.040 ***	0.178 ***	0.101 ***	0.079 ***	0.227***	0.149 ***	0.110 ***
Upper middle	0.025 ***	0.023 ***	-0.001 ns	0.068 ***	0.044 ***	0.033 ***	0.102 ***	0.071 ***	0.049 ***
Poor*2012	0.061 ***	0.032 ***	0.029 ***	0.076 ***	0.062 ***	0.064 ***	0.083 ***	0.020 *	0.015 ***
Precarious* 2012	0.067* **	0.026 ***	0.030 ***	0.022 ***	0.001 ***	0.027 ***	0.053 ***	0.033 ***	0.027 ***
Lower middle*2012	0.117 ***	0.096 ***	0.100 ***	0.085 **	0.051 ***	0.053 ***	0.028 ***	0.029 ***	0.030 ***
Upper middle*2012	0.074 ***	0.071 ***	0.075 ***	0.020 ns	0.013 ns	0.009 ns	-0.004 ns	-0.003 ns	-0.002 ns
Material Deprivation		1.027 ***	1.019 ***		0.920 ***	0.952 ***		0.576 ***	0.568 ***
Log of equivalent income			-0.049 ***			-0.025 ***			-0.048 ***
Constant	0.043	0.042	0.608	0.058	0.054	0.192	0.095	0.077	0.565
R²	0.122	0.221	0.223	0.199	0.400	0.400	0.255	0.380	0.382
N	14,263	14,263	14,263	21,101	21,101	21,101	22,690	22,690	22,690
P < .1. ** P, < 01 *** P < .001									
Source: EU-SILC 2006 and 2012 waves									

Conclusions

In this paper we set out to analyse the impact of the Great Recession on changing economic stress levels across a range of advanced European countries. Our initial descriptive analysis identified Iceland, Ireland and Greece as exhibiting distinctive patterns of change with regard to their multidimensional profiles relating to household, income, material deprivation, and economic stress. By 2012 Iceland, Ireland and Greece, which previously fitted predictably into their respective welfare regimes, had become clear outliers in relation to economic stress as a consequence of substantial increases in levels of economic stress associated. However, in each case the changes in the pattern of income class differentiation were somewhat different. In the case of Iceland while all classes experienced significant increases in stress levels, a form of middle class squeeze was observed, with the most substantial increase being observed for the lower middle class, followed by the upper middle class. For Ireland the pattern of change over time involved a clear contrast between the income poor and the lower middle classes and the upper middle class and affluent classes. Thus a restricted form of class polarization coexists with the fact that exposure to significantly higher relative risk of economic stress extended into the lower middle class. In this case income class polarization although of a restricted rather than generalized form does not exclude lower middle class squeeze and is consistent with the pattern of change relating to deprivation. The situation of the precarious class which saw its relative position deteriorate significantly less than was the case for the income poor and the lower middle is a distinctive feature of the Irish pattern and requires further exploration. Finally, in the case of Greece we observe the sole unambiguous case of income class polarization involving a contrast between the three lowest and the two highest income classes.

In order to enhance our understanding of these changes we focused on corresponding changes in income class distributions and changes in levels of household income and material deprivation across income class categories. The former turned out to be extremely modest and can have played little role in explaining the pattern of change over time. Changing levels of material deprivation did play an important role in accounting for increased stress levels. However, this was the case only in relation to the bottom three classes with other factors clearly playing a more important role at the

upper end of the income hierarchy. Thus alongside significant examples of lower middle class squeeze we observe clear examples of the ability of the upper middle class and affluent classes ability to preserve and indeed enhance their relative advantage. In addition, the absolute increases in relative stress experienced by the latter appear to be of a qualitatively different character in that unlike the situation for the three lower classes they cannot be accounted for by change in levels of material deprivation. However, it does not necessarily follow that the consequences in terms of social cohesion are less and this is an issue which requires significant additional exploration.

These findings bring out the extent to which the impact of the Great Recession varied even among the hardest-hit countries, and even more so between them and the countries where it represented a less dramatic, though still very substantial, macroeconomic shock. They also serve to highlight the advantages of going beyond reliance on income – in aggregate and at the micro household level – in monitoring and seeking to understand the impact of such a shock. Incorporating both direct measures of deprivation and subjective assessments of degree of economic stress clearly add substantially to our ability to capture these effects more comprehensively. While this is now more widely recognised in terms of aggregate indicators – for example in the European Union context – such an approach is also required at the micro level to capture more fully how different groups and households are faring.

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