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The Great Recession and the Changing Distribution of Economic Vulnerability by Social Class: The Irish Case

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Abstract

Ireland provides an interesting case study of the distributional consequences of the Great Recession. To explore such effects we develop a measure of economic vulnerability based on a multidimensional risk profile for income poverty, material deprivation and economic stress. In the context of conflicting expectations of trends in social class differentials, we provide a comparison of pre and post-recession periods. Our analysis reveals a doubling of levels of economic vulnerability and a significant change in multidimensional profiles. Income poverty became less closely associated with material deprivation and economic stress and the degree of polarization between vulnerable and non-vulnerable classes was significantly reduced. Economic vulnerability is highly stratified by social class for both pre and post-recession periods. Focusing on absolute change, the main contrast is between the salariat and the non-agricultural self-employed and the remaining classes; providing some support for notions of polarization. In terms of relative change the higher salariat, the non-agricultural self-employed, the semi-unskilled manual and those who never worked gained relative to the remaining classes. This provides support the notion of 'middle class squeeze'. The changing relationship between social class and household work intensity reflected a similar pattern. The impact of the latter on economic vulnerability declined sharply, while it came to play an increasing role in mediating the impact of membership of the non-agricultural middle classes. Responding to the political pressures likely to be associated with 'middle class squeeze' while sustaining the social welfare arrangements that have traditionally protected the economically vulnerable presents formidable challenges in terms of maintaining social cohesion and political legitimacy.

Key words Great recession, economic vulnerability, social class, middle class squeeze, household work intensity.

Ireland's Macroeconomic Roller Coaster

Ireland represents a particularly interesting case study of the distributional impact of pronounced macroeconomic fluctuations and the consequences for levels and distribution of poverty and social exclusion. Evaluating the consequences of the Great Recession in Ireland is significantly influenced by the outcome indicator on which one focuses.[i] In this paper we explore the extent to which going beyond manifest indicators to develop a multidimensional understanding of latent economic vulnerability, provides further insight into the manner in which its consequences are distributed across social classes and mediated by household work intensity.

Ireland has seen quite remarkable macroeconomic fluctuations over the past two decades, with the fastest economic growth rates in the OECD during the so-called 'Celtic Tiger' boom being followed by a recession which had a more negative impact on national output in Ireland than in any other OECD country. The decade of exceptionally rapid growth from the mid-1990s saw the numbers employed expand dramatically and unemployment reduced to 4%, but included an unsustainable credit-fuelled expansion in the construction sector and unbridled property price boom. Recession from 2008 onwards went together with a bursting of the property bubble and related tax revenues, a collapse in asset values, a banking crisis of unprecedented proportions and a ballooning fiscal deficit. This toxic combination meant that by late 2010, despite substantial increases in taxation and expenditure cuts, the Irish government had to avail of a 'bail-out' from the Trokia (Whelan, 2010).

The high water mark of Ireland's economic boom was in 2007, with the global financial crisis and the bursting of the domestic property bubble leading to an unprecedented contraction in GDP in 2008-2009. The economy then 'flatlined' in 2010 and 2011. The impact of the recession was to raise unemployment to 14% by 2011, despite substantial net emigration. The

number of individuals in households characterised by very low work intensity, employing the measure incorporated in the EU poverty and social exclusion target, rose from 16% in 2008 to 34% in 2011.

The Distributional Consequences of the Great Recession in Ireland

A frequent refrain during recent debates on welfare cuts and tax increases has related to the need to "protect the vulnerable". However, it is far from clear that a consensus exists on who is to be included under this heading. Our main focus will be on the distribution of economic vulnerability by social class, employing a version of the European Socio-economic Classification (ESeC). This schema is based on Goldthorpe's (2006) theoretical conception of social class, focusing on differentiation in employment status and regulation of employment as viable responses to issues of monitoring and asset specificity (Rose and Harrison, 2006). Use of this schema allows us to take into account not only the hierarchical aspect of class but also the impact of different forms of employment.[ii]

One of the primary objectives of schemas such as ESeC is to bring out the constraints and opportunities typical of different class positions. Use of the schema facilitates evaluation of competing claims relating to trends in the strength of class relationships. In the Irish case the polarisation claim is implicit in the arguments of a variety of social critics and the trade union movement that the response of the state to the economic crisis has been deeply flawed, involving not only a failure to protect the vulnerable but the imposition of major sacrifices on those on low and middle incomes (Social Justice Ireland, 2013, TASC, 2012). In contrast, the argument for the diminishing importance of class relationships emerges from the proponents of the 'individualization' thesis who emphasise the impact of globalization, the erosion of traditional career patterns and the undermining of the buffering capacity of the welfare state (Beck, 2007). From this perspective, the context provided by the crisis in an economy as open as Ireland faced by demands for extreme fiscal austerity could provide a particularly

favourable environment for the emergence of such tendencies. An alternative perspective argues not for the 'death of social class' but for important changes in the traditional distribution of life chances across such classes. The term 'middle class squeeze' originates from the US discussion. [iii] There it refers to the relative decline in earnings of middling groups and to the depletion of their wealth as a result of 'overspending' in order to maintain established standards of living (PRC, 2012). Such overspending is seen to be closely associated with easier access to credit. It is indeed the case that a distinctive feature of the recession in Ireland has been the scale of debt problems (Russell et al 2012). Increasing debt levels, public sector pay cuts and pension levies, increasing progressivity in taxation and the difficulties being experienced by the self-employed have resulted in the notion of 'middle class squeeze' coming to have considerable resonance in popular debate in Ireland. This was reflected in the devotion of a special series in the influential Irish Times to the topic.[iv]

In a context where demands to "protect the vulnerable" increasingly co-existed with claims of "can't pay won't pay", the government sought to reconcile the imperatives of reducing the fiscal deficit and dealing with a legacy of sovereign bank debt while retaining political legitimacy in relation to the distribution of the burden of adjustment. Tripartite social partnership agreements were regularly negotiated in Ireland between 1987 and 2009 in the context of a catch all party political system with weak ideological divisions. These relationships did not survive the introduction of a wide range of austerity measures. However, the government still sought to bring the public sector unions on board. In mid-2010 these unions accepted a deal that offered assurances that there would be no further pay cuts or compulsory redundancies in return for the active implementation of public sector reform – the "Croke Park Agreement" (Dellepiane & Hardiman, 2012 a & b).

Nolan et al (2013) concluded that while Ireland was one of the counties most affected by the downturn in relation to household income, in relative terms the principal part of the burden in

relation to net income was borne by higher income groups. However, considerable disagreement continues to exist regarding the degree to which government policies have succeeded in distributing the burden in an equitable manner. In what follows we seek to develop an appropriate multidimensional indicator that goes beyond income in order to document the consequences of the Great Recession for the distribution of economic vulnerability across social classes.

We also seek to seek to establish the extent to which changing class patterns are mediated by household work intensity. The EU measure was developed in the context of an increasing European emphasis on work as a route out of poverty and vulnerability and an emphasis on the social investment approach to making efficient use of social capital and facilitating access to the labour market (Morel, Palier and Palme, 2012). However, the extent to which this approach does reduce poverty and social exclusion remains a matter of debate (Cantilllon, 2011).

Data and Measures

Data

Our analysis focuses on the period 2004-2011 for which comparable data are available from the Irish component of the European Survey of Income and Living Conditions (EU-SILC). This information is obtained via a dedicated household survey, conducted by the Central Statistics Office. This has been carried out annually since 2003 with a total completed sample size of the order of 5,000 to 6,000 households and 13,000-14,000 adult individuals in each year (except for the first year when the sample was about half this large).

The analysis reported here is focused at the individual level. Where household or household reference person (HRP) characteristics are involved these have been allocated to each individual.

Income Poverty

Income poverty is defined in terms of median disposable income adjusted for household size employing the Irish national equivalence scale. Our analysis of trends in income poverty focuses on those below 60% of median income. In our subsequent analysis of economic vulnerability we employ a 4-category income variable that distinguishes those below 50%, between 50-60%, between 60-70% and above 70%.

Material Deprivation

The limitations of income in capturing inability to participate due to inadequate resources and the value of incorporating measures of material deprivation have been increasingly recognised and the values (Nolan and Whelan, 2011). The measure we employ is labelled "basic deprivation". It comprises household and HRP items, as set below, relating to enforced absence of life-style items.

- Two pairs of strong shoes
- A warm waterproof overcoat
- Buy new rather than second hand clothes
- Eat meals with meat, chicken or fish (or vegetarian equivalent) every second day
- Have a roast joint (or its equivalent) one a week.
- Go without heating during the past twelve months
- Keeping the home adequately warm
- Replace any worn out furniture
- Buy presents for family or friends once a year
- Have family or friends for a drink or meal once a month
- Have a morning, afternoon or evening out in the past fortnight for entertainment

Across the Irish SILC 2004-2011 waves it has a Cronbach alpha reliability of 0.821. In the analysis that follows we distinguish between those experiencing enforced deprivation on two or more items and all others.

Economic Stress

This indicator is constructed from a set of items relating to difficulty in making ends meet, inability to cope with unanticipated expenses, structural arrears and housing costs being a

burden. Since the items had variable numbers of categories which have dichotomized the categories before aggregating them.

The first item relating to ability to make ends meet is based on the following question. "A household may have different sources of income and more than one household member may contribute to it. Thinking of your household's total income, is your household able to make ends meet, namely, to pay for its usual necessary expenses?" Reponses indicating "great difficulty" or "difficulty" have been given a value of 1 while the remaining categories have been scored as zero.

Household were define as having a problem with arrears (in the past 12 months) where they were unable to avoid arrears relating to mortgage or rent, utility bills or hire purchase instalments. Those households experiencing such problems were given values of 1 while the remainder were scored as 0.

Those households reporting that they were unable to cope with unexpected expenses were allocated scores of 1 while the remainder were allocated values of 0.

The indicator relating to the financial burden of total housing cost was based on the question set out below.

Think of your total housing costs including mortgage repayment or rent, insurance and service charges. To what extent are these costs a financial burden to you? Responses indicating a "heavy" or "slight" burden were scored as 1 while the remaining category was assigned a value of 0.

We have defined those experiencing difficulties in relation to 3+ of the four items as experiencing economic stress. The measure has an alpha of 0.738

Between 2004 and 2011 16 % of individuals fell below the 60% income line, 15 % were above the deprivation threshold and 17 % above the stress threshold. The choice of thresholds ensures that comparison across variables are largely unaffected by differences in marginal distributions.

Work Intensity

Work intensity is measured at the household level and shows the proportion of possible working time in the previous year that the working-age household members spent at work. It can range from 0 (no working-age adult at work) to 100 per cent (all working-age adults worked full-time, full-year). Working-age, for this purpose, is defined as being between the ages of 18 and 59, excluding students under age 25. Adults age 60 and over are excluded from consideration entirely. Children are assigned a work intensity score based on the working-age adults in the household.

Economic Vulnerability

Analysis of trends for 2004-2011 reveals that while there was no clear trend in income poverty a steady increase was observed in levels of basic deprivation and economic stress (Nolan et al forthcoming). In this paper we go beyond these individual indicators to develop a multidimensional indicator of economic vulnerability relating to individuals characterised by a distinctive risk profile in terms of income poverty, material deprivation and economicstress In the academic and policy literature, concern with vulnerability has been linked to a shift of focus from current deprivation to insecurity and exposure to risk and shock. The IMF (2003), the UN (2003) and the World Bank (2000) have developed a range of approaches to measuring vulnerability at the macro level..

We make use of latent class analysis which hypothesizes underling processes that result in distinct clusters of individuals. Within these groups outcomes are independent of each other because the factors that lead to individuals being located there are those that accounted for

the original correlations. The question is then whether such simplifying assumptions allow us to identify clusters of individuals with distinct multidimensional profiles, while at the same time producing an allocation of individuals to the cells of the relevant multidimensional table that comes sufficiently close to the observed patterns (McCutheon and Mills, 1998). Our focus in on the 4*2*2 table formed by the cross-classification of the 4-category income poverty variable with the basic deprivation and economic stress dichotomies.

Comparing Pre and Post Recession Levels and Patterns of Economic Vulnerability

Our focus is on the contrast between 2004-2008 and 2009-2011. Economic circumstances had begun to deteriorate significantly in 2008. However, income figures from EU-SILC refer to the previous twelve months and there is likely to have been a lag in the effect of changing economic conditions .Consequently, we have allocated 2008 to the earlier period.

In Table 1 we show model fit statistics for four latent class models. The benchmark model is the conditional independence model. This allows for variation in the three indicators across time but for no association between the indicators. This model misclassifies 19.0% of cases.

A model that assumes homogeneity of cluster sizes reduces the conditional independence G^2 likelihood ratio figure by 92.3% but still misclassifies 5.4% of cases. Allowing the size of the vulnerable class to vary over time reduces the deviance by 96% and misclassifies 3.5% of cases. Finally, allowing cluster size and the profile of conditional probabilities to vary reduces the benchmark deviance by 99.9% and misclassifies only 0.1% of cases. A satisfactory fit requires that we allow for heterogeneity in relation to both size and profile. The fully heterogeneous model identifies 15.8% of the population as economically vulnerable for the period 2004-2008. The figure then rises to 26% for the period 2008-2011.

Table 1: Latent Class Model for Trends in Economic Vulnerability over Time (2004-2008 v 2009-2011)				
	G^2	Degrees of Freedom	Dissimilarity Index	% Reduction on Conditional Independence Model
Conditional independence Model	36,439.1	20	0.190	
LCA Homogeneous over time	2,811.8	19	0.054	92.3
LCA Heterogeneous Class Size	1,439.5	18	0.035	96.0
LCA Heterogeneous Class Size & Profiles	40.3	8	0.003	99.9

In Table 2 we set out the probabilities conditional on class membership for the fully heterogeneous model. For the period 2004-2008 the conditional probability of being above the basic deprivation threshold rises from 0.0210 for the non-vulnerable to 0.755 for the vulnerable. For 2009-2011 little change is observed with the respective figures being 0.028 and 0.738. For the earlier period the contrast relating to economic stress is slightly less sharp with respective probabilities of 0.028 and 0.071. However, in this case the contrast for the later period is somewhat different with economic stress levels increasing for both clusters with the respective probabilities being 0.055 and 0.749. The absolute change is greater for the vulnerable group involving an increase of 0.048 compared to 0.029 for the non-vulnerable. However, the proportionate increase is greater for the latter with the level doubling compared to a six per cent increase for the latter. Finally, when we focus on income poverty, we find that 0.481 of individuals in the vulnerable cluster were below 60% of median income compared to 0.115 of the non-vulnerable. Once again we observe a rather different pattern for 2009-2011 but on this occasion poverty rates decline for both groups with the corresponding rates being 0.093 and 0.310

In this case both absolute and relative changes are greater for the vulnerable group.

Table 2: Conditional Probabilities for Latent Class Model with Heterogeneous Class Size & Profiles		
	2004-2008	2009-2011
	Conditional Probabilities	Conditional Probabilities

	Economically Vulnerable		Economically Vulnerable	
	No	Yes	No	Yes
Income Poverty				
70% +	0.806	0.311	0.849	0.491
60-70%	0.080	0.209	0.059	0.200
50-60%	0.055	0.198	0.042	0.161
50+	0.060	0.283	0.051	0.149
Basic Deprivation 2+	0.021	0.755	0.028	0.738
Economic Stress 3+	0.028	0.701	0.055	0.749
Class Size	15,8%	84.2%	74.0%	26.0%

While a focus on absolute differences provides a mixed picture, we observe a consistent narrowing of relativities for all three dimensions. For income poverty the odds ratio declines from 7.1 to 4.4. For economic stress the respective figures are 81.3 and 51.2 and for basic deprivation 143.8 and 96.6.. As economic vulnerability has become more pervasive the degree of polarization has diminished.

Trend in the Impact of Household Work Intensity and Social Class on Economic Vulnerability

While our analysis takes place at the level of individuals, outcomes relating to income poverty, material deprivation and economic stress have all been allocated to individuals on the basis of their membership of households. Consequently, in our subsequent analysis we focus on the impact of socio-economic attributes of the HRP. In estimating statistical significance we make appropriate adjustment for clustering of individuals within households. Individuals are allocated to the modal class associated with their response pattern.[v] Because of our interest in the mediating role of household work intensity, the analysis that follows is restricted to those individuals for whom such a measure is available.

In Table 3 employing an 8 category version of the EseC class schema, we show the breakdown of vulnerability by class and time period. In the pre-recession period a clear pattern of class differentiation is observed. For both salariat classes the rate is 3%. It increases to 6% and 8% respectively for the self-employed in agriculture and the petit bourgeoisie and the higher grade white & blue collar classes. It then climbs sharply for the lower social classes. For the lower white collar & skilled manual it rises to 14% before increasing to 21% for the semi-unskilled manual and finally to 45% for those who had never worked.

The risk of vulnerability increases over time for all eight classes. Modest increases in risk levels are observed for the higher and lower salariat with respective figures of 1.9% and 4.9%. The increase for farmers of 6.4% is only marginal higher than for the latter which is consistent with recent trends in relation to farm household income. [vi] However, for the remaining categories the level of increase shows no clear pattern of hierarchical differentiation. In fact, the most modest increase of 10% is observed for those who had never worked. The increase for the higher grade white & blue collar is marginally higher and for thee semi-unskilled manual it rises to 11%. Finally, the largest increases of 13% and 18% relate respectively to the petit bourgeoisie and the lower white collar & skilled manual.

Table 3: Economic Vulnerability by HRP Social Class and Time Period

	2004-2008	2009-2011	Difference
	% Vulnerable	% Vulnerable	%
ESeC Social Class			
Higher Salariat (ESeC Class 1)	2.9	4.8	1.9
Lower Salariat (ESeC Class 1	3.2	8.1	4.9
Self-employed Agriculture (ESeC Class 5)	5.6	12.0	6.4
Petit Bourgeoisie'(ESeC Class 4	8.4	21.1	12.7
Higher Grade White & Blue Collar (ESeC Classes 3 & 6)	8.1	18.8	10.7
Lower White Collar & Skilled Manual (ESeC Classes 7 &	14.4	32.0	17.6

8)			
Semi-Unskilled Manual (ESeC Class 9)	21.1	32.0	10.9
Never Worked	45.0	54.7	9.7
N	57,204	27,658	

Shifting our attention to class relativities, because our dependent variable is a dichotomy, particular statistical issues arise in relation to interpretation of change over time. As Breen et al (2011) emphasise, when we use non-linear probability models, such as the logit to make such comparisons, we cannot be sure that differences in coefficients represent real differences in effects across groups. The difficulties arise because the coefficients of such models are identified only up to scale: they depend not only on the effects of predictor variables but also on the conditional error variance of the underlying model. This means that when we compare the coefficient for a variable *x* in the same non-linear probability model fitted to two or more groups we cannot know whether differences in coefficients are caused by real differences in the effect of *x* or by differences in residual variation. To deal with this problem, Breen et al (2011) demonstrate that differences in logit coefficients across groups result from a combination of differences in correlations between the latent dependent y* and the independent variable x (the square root of the ratio of the explained to unexplained variance of *y**) and in the standard deviations of *x*. The correlation part is invariant to differences in the marginal distributions of *x* and *y** across groups, while the standard deviations of *x* reflect group differences in the marginal distribution of *x*. Focusing on the correlation is appropriate when we want to compare the variation in *y** the latent dependent variable between and within values of *x* the independent variable. This is particularly the case when *x* is categorical. In our analysis of trends over time the correlation captures the degree of variation between social class and work intensity categories relative to the variation within and allows us to test for the significance of changes in the degree of association over time. The correlations are estimated using a STATA programme nlcorr.

In Table 4 we show the correlations between economic vulnerability and social class for both time periods. The contrast in each case is with higher salariat. The highest level of correlation for the first time period of approximately 0.3 is observed for the semi-unskilled and never worked classes and no significant change is observed over time. For the self-employed in agriculture a modest but statistically significant increase is observed from 0.07 to 0.09. For the remaining classes the magnitude of the increase is considerably greater and lies between 0.06 and 0.07 and in each case is highly significant. There is clear evidence of a pattern of change in class effects reflecting a 'middle class squeeze'.

Table 4: Correlation of Economic Vulnerability with Social Class By Time Period

	2009-2011	2004-2008	Difference	Z
ESeC Social Class				
Higher Salariat (ESeC Class 1)	Reference	Reference		
Lower Salariat (ESeC Class 1	0.079	0.018	0.061	7.96
Self-employed Agriculture (ESeC Class 5)	0.090	0.071	0.019	2.48
Petit Bourgeoisie'(ESeC Class 4	0.216	0.150	0.063	8.89
Higher Grade White & Blue Collar (ESeC Classes 3 & 6)	0.219	0.154	0.065	8..82
Lower White Collar & Skilled Manual (ESeC Classes 7 & 8)	0.330	.0.260	0.070	10.03
Semi-Unskilled Manual (ESeC Class 9)	0.330	0.330	0.000	0.00
Never Worked	0.297	0.294	0.003	0.43

Trends in the Relationships between Household Work Intensity and Social Class and Economic Vulnerability

In Table 5 we set out the changing distribution of household work intensity. The percentage experiencing either VLWI or LWI increased from 22% to 34% while the figure for HI or VHI fell from 57% to 47%.

Table 5: Household Work Intensity by Time Period

	%	%
Work Intensity		
Very Low (0-0,2) (VLWI)	13.9	21.4
Low (0.2-0.45) (LWI)	8.4	12.6
Medium (0.45-).55) (MWI)	20.4	19.4
High (0.55-0.85) (HWI)	27.0	21.5
Very High (0.85-1) (VHWI)	30.4	25.0
N	59,175	29,518

Before seeking to establish the role which household work intensity plays in mediating the impact of social class, in Tables 6 and 7 we examine its relationships to social class and economic vulnerability.

In Table 6 we focus on the changing relationship between work intensity and social class. The relevant correlations were derived from an ordered logit analysis using the STATA lncorr programme. The ordering of the classes remains uniform over time. For the first period, with the higher salariat as the reference category, the difference between the correlations for the lower salariat and the never worked category is .275 while in the second period it is .267 However, it is clear that that, with the exception of the self-employed in agriculture and the never worked classes, the correlation of economic vulnerability with social class increases over time. The largest differences of respectively 0.070 and 0.045 and 0.040 are observed for the petit bourgeoise, the lower white collar & skilled manual class and the lower salariat. Smaller increases of 0.031 are observed for the higher grade white & blue collar and semi-unskilled manual classes. Thus a pattern of 'middle class squeeze' emerges that broadly corresponds to that observed for the relationship between social class and economic vulnerability.

Table 6: Correlation of Household Work Intensity with Social Class By Time Period

	2009-2011	2004-2008	Difference	Z
ESeC Social Class				
Higher Salariat (ESeC Class 1)	Reference	Reference		
Lower Salariat (ESeC Class 1	0.033	-0.006	0.039	5.07
Self-employed Agriculture (ESeC Class 5)	-0.009	0.005	-0.013	--1.74

Petit Bourgeoisie'(ESeC Class 4	0.109	0.039	0.070	9.21
Higher Grade White & Blue Collar (ESeC Classes 3 & 6)	0.084	0.053	0.031	4.00
Lower White Collar & Skilled Manual (ESeC Classes	0.198	0.153	0.045	6.04
Semi-Unskilled Manual (ESeC Class 9)	0.230	0.199	0.031	4.27
Never Worked	0.300	0.269	0.031	4.38

From Table 7 we can see that the degree of differentiation of economic vulnerability by categories of work intensity declines significantly. With VHWI as the benchmark the correlation for V declines from .580 to .518. For LWI the respective figures are .382 and .355. For MWI the corresponding correlations are .303 and .281. Finally for HWI we see a fall from .144 to .114. Thus, while the extent of low and very low work intensity increased substantially between the two time periods, consistent with the changing pattern of class correlations, work intensity became a much less powerful predictor of economic vulnerability.

Table 7: Correlation of Economic Vulnerability with Household Work Intensity By Time Period

	2009-2011	2004-2008	Difference	Z
Work Intensity				
Very Low (0-0,2) (VLWI)	0.519	0.580	-0.061	11.6
Low (0.2-0.45) (VLI)	0.355	0.382	-0.028	4.25
Medium (0.45-).55) (MWI)	0.281	0.303	-0.022	11.00
High (0.55-0.85) (HWI)	0.114	0.144	-0030	4.07
Very High (0.85-1) (VHWI)	Reference	Reference		

The Mediating Role of Household Work Intensity

Here we seek to explore that manner in which work intensity mediates the impact of social class and to distinguish between the direct and indirect effects. An analysis of such effects requires nested models in which the impact of an independent variable can be observed both before and after a hypothesised mediating variable has been entered. However, as Kohler et al (2011) observe, comparing the effects of nested models for nonlinear models is not straightforward. Kohler et al (2011: 421) note that in such models, direct and indirect effects

can differ not only because of the mediating role of an added variable but also because of a rescaling of the model that arises whenever the mediator variable has an independent effect on the dependent variable. Crucially, for the rescaling to occur, it is not necessary for the mediating variable to be correlated with the independent variable whose impact we wish to assess.

To address these issues Karlson et al (2012) have developed the KHB method which extends the decomposability properties of linear models to non-linear probability models. The fundamental idea underlying the method is to extract from the mediating variable the information that is not contained in the independent variable, the direct and indirect effects of which we seek to capture. [vii]

We estimate these effects using the STATA khb programme developed by Kohler et al (2011). In Table 8 we show the decomposition of the effect of social class on economic vulnerability. For the period 2004-2008 the additive logit coefficient capturing the total effect of social class on economic vulnerability ranges from 0.074 for the lower salariat to 3.739 for the never worked class. At that point the indirect effects for the lower salariat and self-employed agricultural class were not significant and that for the petit bourgeoise was modest. However, for the remaining classes the mediating role of work intensity was substantial with the indirect effect gradually rising from 0.226 for the higher grade white collar & blue collar classes to 2.107 for the never worked category. Thus the importance of work intensity as a mediating factor was largely concentrated at the lower end of the class structure. The size of the direct effect of social class independent of work intensity went from 0.076 for the lower salariat to 1.632 for the never worked class with the pattern of effects being very similar to that observed for the total effect.

For the period 2009-2011 the magnitude of the total class effect increased substantially for all classes other than the semi-unskilled class, where the increase was modest, and the never worked class where the effect fell from 3.739 to 3.476. The gap between the lower salariat and the never worked category fell from 3.665 to 2.97. Similar reductions were observed for the remaining classes. Comparable but slightly smaller effects are observed in relation to the semi-unskilled class. Unlike the previous time period, the only class for which the indirect effect was not significant was the self-employed in agriculture. For the remaining classes the size of this effect ranged from 0.162 for the lower salariat to 1.712 for then never worked group. The size of this effect increased over time for all classes other than the never worked class where it fell from 2.107 to 1.712, but only modestly so for the semi-unskilled manual. The outcome again involved a narrowing of differentials between the non-agricultural middle classes and the semi-unskilled manual and the never worked classes. The size of the direct effect also increased for all classes but the pattern of change over time involved modest variation across classes.

Table 8: Decomposition of Social Class Effect on Economic Vulnerability with Work Intensity as a Mediating Factor by Time Period

	2004-2008		2009-20111	
	Logit Coefficient	Z	Logit Coefficient	Z
HRP ESeC Social Class				
Lower Salariat (ESeC Class 1				
Total	0.074	0.58	0.501	3.88
Direct	0.076	0.60	0.339	2.62

Indirect	-0.002	-0.03	0.162	1.73
Self-employed Agriculture (ESeC Class 5)				
Total	0.830	4.87	1.032	4,61
Direct	0.838	4.92	1.024	4.60
Indirect	-0.008	-0.11	0.008	0.08
Petit Bourgeoisie'(ESeC Class 4				
Total	1.291	10.16	1.743	13.85
Direct	1.148	9.03	1.262	9.95
Indirect	0.143	1.84	0.481	5.06
Higher Grade White & Blue Collar (ESeC Classes 3 & 6)				
Total	1.114	9.07	1.578	13.48
Direct	0.888	7.15	1.237	10.59
Indirect	0.226	2.91	0.341	3.61
Lower White Collar & Skilled Manual (ESeC Classes				
Total	1.756	16.05	2.348	21.10
Direct	1.061	9.67	1.549	13.96
Indirect	0.696	8.68	0.799	8.32
Semi-Unskilled Manual (ESeC Class 9)				
Total	2.286	21.13	2.404	21.67
Direct	1.359	12.38	1.463	13.08
Indirect	0.927	11.47	0.942	9.70
Never Worked				
Total	3.739	31.01	3.476	24.92
Direct	1.632	13.22	1.764	12.62
Indirect	2.107	23.94	1.712	16.66
N	50,834		25,041	
R^2	0.32		0.24	

Karlson et al (2010) propose the confounding percentage, i.e. the percentage of the total effect accounted for by the mediating variable, as an aid to interpreting the output from the KHB method and in Table 9 we report this summary index for the findings set out in Table 8. In the pre-recession period the effect was negative for the lower salariat and the self-employed agricultural classes. For the petit bourgeoisie this rose to 11% and for the higher grade white & blue collar class to 20%. It then increased 40% for both the lower white collar & skilled manual and semi-skilled manual classes. It peaked at 56% for the never worked class. For the post-recession period a very different pattern was observed. For the lower salariat the figure rose to 32% and for the petit-bourgeoisie to 28%. Little change was observed for the higher grade white & blue collar class. For the remaining classes we observe

a reduction in the percentage of the total effect accounted for by the mediating role of work intensity. With the exception of the self-employed in agricultural, variation in the percentage of the total effect of social class accounted for by work intensity is a great deal more modest in the post-recession period.

Table 9 Confounding Percentages for the Mediating Role of Household Intensity for Social Effects on Economic Vulnerability by Time Period

	2004-2008	2009-2011
	Confounding %	Confounding %
ESeC Social Class		
Lower Salariat (ESeC Class 1	-3.47	32.3
Self-employed Agriculture (ESeC Class 5)	-1.01	0.75
Petit Bourgeoisie'(ESeC Class 4	11.07	27.6
Higher Grade White & Blue Collar (ESeC Classes 3 & 6)	20.31	21.62
Lower White Collar & Skilled Manual (ESeC Classes	39.61	34.03
Semi-Unskilled Manual (ESeC Class 9)	40.55	39.17
Never Worked	56.35	49.25

Finally in Table 10, employing the khb method, we look at total, direct and indirect average partial effects (APE)[viii] estimated across individuals by class for both time periods. In the first time period being in the never worked class rather than the higher salariat on average increased the probability of being vulnerable by 0.269. This total effect can be partitioned into an indirect effect of 0.152 mediated through work intensity and a direct effect of 0.117. In the second time period the corresponding figures were 0.444, 0.225 and 0.218. The reduced role of work intensity is reflected in the fact that for the later period direct and indirect effects are of almost equal magnitude.

For the semi-unskilled manual class and the lower and higher white collar and skilled manual classes we observe a doubling of effects across time with little change in the mediating role of work intensity. However, for the petit bourgeoisie and the lower salariat the mediating role of work intensity is extremely modest for the first period, with respective

direct effect of 0.083 and 0.005 and indirect effects of 0.010 and 0.000. For the second period, on the other hand, the respective direct effect figures are 0.161 and 0.043 and the indirect probabilities are 0.063 and 0.021 capturing both the rise in risk levels and a significant increase in the role of work intensity for both cases. For farmers on the other hand indirect effects through work intensity were effectively zero at both points in time while the direct more than doubled from 0.061 to 0.131.

Table 10: Decomposition of Social Class Effect on Economic Vulnerability with Work Intensity as a Mediating Factor8by Time Period

	2004-2008		2009-20111	
	Average Partial Effect	Z	Average Partial Effect	Z
HRP ESeC Social Class				
Lower Salariat (ESeC Class 1	0.005	0.58	0.064	3.88
Total	0.005	0.60	0.043	2.62
Direct	-0.000		0.021	

Indirect				
Self-employed Agriculture (ESeC Class 5)				
Total	0.050	4.85	0.132	4.58
Direct	0.060	4.90	0.131	4.56
Indirect	-0.000		0.001	
Petit Bourgeoisie'(ESeC Class 4				
Total	0.095	10.02	0.223	13.77
Direct	0.085	8.92	0.161	9.88
Indirect	0,010		0.062	
Higher Grade White & Blue Collar (ESeC Classes 3 & 6)				
Total	0.080	8.94	0.202	13.55
Direct	0.064	7.03	0.158	10.60
Indirect	0.016		0.044	
Lower White Collar & Skilled Manual (ESeC Classes				
Total	0.126	16.01	0.300	21.58
Direct	0.076	9.62	0.198	14.00
Indirect	0.050		0.102	
Semi-Unskilled Manual (ESeC Class 9)				
Total	0.164	20.95	0.307	22.14
Direct	0.098	12.23	0.187	13.09
Indirect	0.066		0.120	
Never Worked				
Total	0.269	31.93	0.444	26.45
Direct	0.117	13.19	0.225	12.73
Indirect	0.152		0.119	
N				
R^2				

Conclusions

The impact of the Great Recession in Ireland was reflected in a doubling of the rate of economic vulnerability. Not only has the level of economic vulnerability increased dramatically over time but the profile of vulnerability has changed. Deprivation and economic stress have become more loosely associated with income poverty and the degree of polarization in terms of the odds of being above the threshold on each of the three component indicators is significantly reduced over time. In turn, vulnerability became more widely distributed across the class spectrum.

At both points in time economic vulnerability is highly stratified by social class. There is no evidence that class differences in vulnerability have been substantially eroded by processes of

individualization of risk. Focusing on absolute increases in the probability of vulnerability over time provides some support for the notion of a restricted degree of polarization between the salariat and farmers on the one hand and the remaining classes. A focus on relativities provides a somewhat different picture. Over time the pattern of increase in the level of association between class position and economic vulnerability provided significant support for the notion of middle class squeeze. The higher salariat and the self-employed in agriculture have succeeded in maintaining their relative advantages over time. No change was observed in the situation of the semi-unskilled and never worked classes. All of the remaining classes experienced a significant deterioration in their position.

Those towards the bottom of the class distribution were already heavily reliant on social transfers in the pre-recession period. The increase in unemployment and corresponding decline in income from employment will thus have left many of them relatively unaffected. The evolution of income support rates for those relying on social protection is also important. Support rates provided were actually increased in 2009. These increases took place at a time when, most unusually, poverty thresholds framed in purely relative terms were going down since average/median incomes across all households were declining. So the relative position of those relying on social transfers improved considerably (Callan et al 2013).

For the middle classes the impact of additional and progressive taxes in combination with unemployment, wage cuts and the collapse in consumer demand can be seen to be reflected in their changing risk profile. In that sense there has been a ‘middle class squeeze’ in that classes that had previously been substantially insulated from exposure economic vulnerability experienced the sharpest increases in their odds of being vulnerable and came to constitute an increasing segment of the this group.

Focusing on the mediating role of household work intensity we found that its changing relationship to social class also reflected a 'middle class squeeze'. Consistent with this, a substantial weakening of the impact of work intensity on economic vulnerability was observed, although other factors also played a significant role. Over time the mediating role of work intensity changed significantly and in the post-recession period indirect class effects of this kind became highly significant for a range of middle classes. Cantillon (2011) notes social investment policies including increasing focus on work intensity can have somewhat different distributional consequences than anticipated where job growth benefits households where there is already someone at work. Here we see the reverse side of that picture. As levels of work intensity declined, the pattern of association with social class deviated from a straightforward hierarchical pattern and the impact of work intensity on economic vulnerability declined sharply.

The implications of these changing patterns of relative risk will depend on the manner in which they are experienced. It seems plausible that the experience of vulnerability is likely to be more traumatic for groups for whom it is something of a novelty. The political implications of the redistribution of relative risk may differ from those associated with previous pattern of vulnerability in the boom period. If Ireland has not shown a whole-hearted commitment to a highly egalitarian society, social partnership and a catch-all party political system have maintained a welfare floor through protection of core welfare provision (Nolan et al forthcoming). During the boom the trade union movement found it easier to engage with government on deals supporting welfare expansion accompanied by tax cuts and disposable income than to address distributional issues (Dellepiane and Hardiman, 2012 a & b). However, recent efforts by the government to revise the Croke Park Agreement relating to public sector accommodate a further set of public sector pay cuts and reforms, involving

substantial protection for the low paid, but with significant cuts in allowances for front line workers were initially resoundingly rejected by the unions.

Although subsequently a significant number of unions changed their votes and accepted the revised Haddington Road agreement the underlying tensions within the trade union movement remained evident.+ Among the most vocal critics of the proposed revisions to the agreement were middle range civil servants, such as teachers and nurses, whose ballots produced huge majorities in favour of rejection. These constitute precisely the kind of groups, who, as a consequence of substantial real cuts in salaries, the imposition of pension levies, and in many cases a significant burden in relation to negative equity and substantial mortgages undertaken during the boom, are likely to have been drawn into the economic vulnerability net in a manner that they unlikely to have anticipated.

Ireland has been quite distinctive in that an unprecedented economic contraction and austerity has provoked little in the way of social disruption or conflict. There is still some way to travel on the austerity path and a commitment to an export oriented growth model has led to the rejection of the options of tax increases or corporation taxes. In such circumstances, dealing with the pressures arising from a 'middle class squeeze' while sustaining the social welfare arrangements that have traditionally protected the economically vulnerable presents formidable challenges in terms of maintaining social cohesion and political legitimacy.

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[i] For a more extended treatment of poverty and deprivation indicators during boom and bust se Nolan et al (forthcoming).

[ii] Our analysis differs therefore from those were class is defined in terms of relative income position such as deciles (Dallinger, 2013).

[iii] For a detailed discussion of this notion particularly in relation to the US where it has been associated with the relative decline in earnings of middling groups and to the depletion of their wealth as a result of 'overspending' in order to maintain established standards of living se ? (2012) and Kuz (2012)

[iv] Irish Times February 2012

[v] Post-assignment he size of the vulnerable class is 11.2% in the earlier period and 20.4% in the later period.

[vi] Family farm income fell significantly in 2008 and 2009 but rose even more substantially in 2010 and 2011 (Hennessy et al 2011)

[vii] Where Z is the mediating variable and R =Z – (a =+ bX), R and Z differ only in the component in Z that is correlated with X. Consequently the full and model is nor more predictive than the reduced model aand the residuals have the same standard deviation.

[viii] The APE is a weighted average of the marginal effects over the sample. If the sample is drawn randomly from the population, the APE estimates the average marginal effect of *x* in the population (Karlson et al 2001)