

Technical Paper on

Trends in Economic Stress and the Great Recession in Ireland

An Analysis of the CSO Survey on Income and Living Conditions (SILC)

Bertrand Maître

Helen Russell

Christopher .T. Whelan



An Roinn Coimirce Sóisialaí

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Authors

Bertrand Maître

Bertrand Maître is a Senior Research Officer at the Economic and Social Research Institute (ESRI) and adjunct at Trinity College Dublin.

More information on the author is available online at:

http://esri.ie/staff/view_all_staff/view/index.xml?id=78

Helen Russell

Helen Russell is an Associate Research Professor at the Economic and Social Research Institute (ESRI) and adjunct professor at Trinity College Dublin.

More information on the author is available online at:

https://www.esri.ie/staff/view_all_staff/view/index.xml?id=115

Christopher T Whelan

Christopher T. Whelan is Professor of Sociology at the School of Sociology, Social Policy & Social Work in Queen's University Belfast. He is Professor Emeritus in the School of Sociology, UCD and a senior fellow at the Geary Institute. He was formerly a Research Professor at the Economic and Social Research Institute (ESRI).

More information on the author is available online at:

http://www.esri.ie/staff/research_affiliates/

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Abstract

Since 2008, Ireland has experienced the most severe economic and labour market crisis since the foundation of the State. These economic and labour market changes have had a stark impact on the standard of living across the Irish population. The rapid deterioration in the labour market, the rising level of household indebtedness and stringent austerity measures to plug the public finance deficit have had a widespread impact yet there is debate about where the heaviest burden has fallen and where the economic stress has been felt most. The paper analyses data from the Survey of Income and Living Conditions for the period 2004 to 2011. The aim of the paper is to develop and test a measure of economic stress, which will capture some of the aspects of the rapid change in economic fortunes on Irish households that are not picked up by income alone. This includes tapping into features of the recession such as debt problems, unsustainable housing costs, and other difficulties associated with managing on reduced household income in a period of uncertainty. In testing such a measure we examine trends over time from boom to bust in the Irish economy and consider how economic stress is distributed across different socio-economic groups. The paper explores the distribution and level of economic stress across income class groups, social classes and the life-course and tests the thesis of 'middle class squeeze'.

Key words: economic stress; Great Recession; Ireland; social class; CSO Survey of Income and Living Conditions (SILC)

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List of Acronyms

CSO	Central Statistics Office
CPI	Consumer Price Index
EU-SILC	European Union Statistics on Income and Living Conditions;
ESeC	European Socio-economic Classification
ESS	European Social Survey
EU	European Union
GDP	Gross Domestic Product
HRP	Household Reference Person
IMF	International Monetary Fund
OLS	Ordinary Least Squares (regression models)
PRSI	Pay-Related Social Insurance
SILC	Survey on Income and Living Conditions
USC	Universal Social Charge

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1. The Distributional Consequences of the Great Recession in Ireland

Since 2008, Ireland has experienced the most severe economic and labour market crisis since the foundation of the state. The combination of the global economic recession, the banking crisis and the bursting of a domestic property bubble led to an unprecedented contraction in national output and income and to a fiscal crisis, resulting in Ireland having to accept a 'bail out' from the European Union (EU) and the International Monetary Fund (IMF). This paper focuses on the period up to 2011 the latest year for which detailed income and economic stress measures are available in the Survey of Income and Living Conditions (SILC) research microdata.

From the onset of recession in 2008, Gross Domestic Product (GDP) declined rapidly.¹ The unemployment rate rose steeply from less than five per cent in 2007 to 14.6 per cent in 2011. Long-term unemployment also rose steadily, from less than two per cent to over eight per cent, in the same period. These economic and labour market changes have had a stark impact on the standard of living across the Irish population. Mean annual equivalised disposable income per individual fell by just under €2,000 from 2008 to 2011 (Callan et al., 2013a).² The rapid deterioration in the labour market, alongside stringent austerity measures to plug the public finance deficit, have had a widespread impact, yet there is debate about where the heaviest burden has fallen and where the economic stress has been felt the most.

Income generated from the labour market fell by an average of 11.5 per cent per household between 2004 and 2011 (Watson and Maître, 2013). The bulk of this drop was due to the loss of employment, but many of those who retained their jobs also saw a decline in earnings and in net income due to tax changes during the recession. Public sector earnings have fallen significantly due to the introduction of a pension levy in 2009 and a wage cut of between three and 15 per cent in 2010 (O'Connell, 2012).³ In the private sector, adjustments were mostly made through job cuts rather than wage reductions. Gross hourly earnings rose marginally between

1 Annual GDP growth rate fell from 5.4 per cent in 2007 to -5.5 per cent in 2009 before returning to 0.9 in 2012.

2 Mean annual equivalised income per individual fixed at 2004 prices fell from €20,962 in 2008 to €19,003 (Callan et al., 2013a Table 5). Income is measured over the preceding 12 month period.

3 Further public sector pay cuts were introduced post-2011 as part of the Haddington Road Agreement 2013.

2006 and 2009 and then remained static between 2009 and 2011 (Bergin et al., 2013; Walsh, 2012). Increasing rates of (largely involuntary) part-time work for men and women in both the public and private sector (Russell et al., forthcoming) will also have a depressing effect on weekly and annual labour market earnings.⁴ Tax changes such as the introduction of the Universal Social Charge (USC)⁵ and changes to Pay-Related Social Insurance (PRSI) have also reduced net earnings.

During the first phase of the recession, social welfare payments were protected. Budget 2009 increased income support rates for social welfare recipients. However, the budgets of 2010 and 2011 reduced the rates in most schemes for those of working age, although the payment in respect of child dependents was increased and the rates of payment for old age pensions have remained unchanged to date. Since 2009, the universal child benefit payment has been cut a number of times and the early childcare supplement, a cash grant of €1,000 payable for children under six years, was abolished in 2009. Payments to young unemployed people have been cut substantially.

Callan et al. (2013a) provide this summary of changes: 'over the full period 2008 to 2011 the major changes have involved losses for both bottom and top deciles, with gains in income shares focused on the rest of the upper half of the distribution' (p. 19). Austerity budgets since 2011 have made further changes to public sector pay, welfare and taxation. These are not captured in our analysis and could influence conclusions about economic stress relating to a later period as indeed they affect the cumulative impact of budgetary changes over the 2008 to 2014 period (Callan et al., 2013b).

Nolan et al. (2013) concluded that while Ireland was one of the countries most affected by the downturn, changes up to 2011 in relation to household income, taxation, welfare and public sector pay were generally progressive. However, the direct effect of the recession in terms of levels of employment and the distribution of

4 Bergin et al (2013) report that weekly earnings in the private sector fell by four per cent between 2008 and 2011, partly due to the decline in hours worked. The average number of hours worked per week declined by 1.4 hours.

5 The government introduced an income levy and a health levy, which were replaced by the Universal Social Charge (USC). The USC is currently payable on all income over €10,036, excluding social welfare payments.

forms of employment resulted in higher than average losses for the bottom decile. It is more difficult to estimate the distributional consequences of cuts in services, the property collapse and related exposure to debt.

Considerable disagreement continues regarding the degree to which government policies have managed to distribute the burden equitably (Social Justice Ireland, 2013a and 2013b; TASC, 2012). This is probably not unrelated to the fact that conventional measures of income poverty and inequality have a limited capacity to capture the impact of the recession. Income-based measures of poverty work best during a period of stability; however, the volatility of incomes in Ireland in the boom and subsequent bust has undermined their usefulness. The indicator of income poverty in Ireland did not capture the general fall in the standard of living caused by the recession because the poverty threshold itself fell from 2009 to 2011. Analysis of trends for 2004 to 2011 reveals that there was no clear trend in income poverty at 60 per cent of household equivalent disposable median income (see Watson and Maître, 2012; Watson et al., 2012; Nolan and Whelan, 2011). This is because the poverty threshold is a relative measure and is calculated as a proportion (60 per cent) of median income at any given time. When all incomes fall, the median income falls, causing the poverty threshold to fall too. This influences the proportion falling under the poverty threshold. Similar problems occurred during the boom when incomes were rising rapidly but the proportion below the income poverty line did not decrease because the poverty threshold also rose. In addition, no evidence can be found for an increase in inequality, with the average Gini coefficient actually declining from 0.318 for 2004–08 to 0.306 for 2009–11 (Nolan et al., 2014).

In this paper our aim is to develop and test a measure of economic stress, which will capture some aspects of the rapid change in the economic fortunes of Irish households that are not picked up by income alone. This includes tapping into features of the recession such as debt problems, unsustainable housing costs and other difficulties and stresses of managing on reduced household incomes in a period of uncertainty and austerity. In testing such a measure, we examine trends over time from boom to bust in the Irish economy (2004–11) and consider how economic stress is distributed across different socio-economic groups. Particular focus is placed on the level of economic stress across income class groups, social

classes and the life-course and how this has changed during the economic crisis. The aim is to complement rather than replace existing measures of poverty.

The paper is structured in the following way: in the next section we outline why a measure of economic stress may provide useful insights and presents arguments from the literature that suggest shifts in the distribution of economic risks across social classes and the life-course. In section 2 we describe the construction of the economic stress measure based on indicators collected in SILC. In section 3 we describe the level of economic stress by socio-economic characteristics. The results of statistical modelling of economic stress are presented in section 4, including the interaction of income class and life-course effects, which is explored through a series of age-specific models. In section 5 we outline our conclusions both on the nature and distribution of economic stress and on the usefulness of the measure.

1.1 Going beyond income measures: Analysing economic stress

One approach to addressing the shortcomings of income poverty as an indicator (outlined above) is to include deprivation indicators into the measure of poverty. This strategy was adopted in the Irish poverty monitoring procedures and in national anti-poverty policies. A sharp increase was observed in the basic deprivation indicator included in the national consistent poverty measure over this period. The proportion of the population experiencing basic deprivation increased from 11.8 per cent in 2007 to 24.5 per cent in 2011. This was associated with an increase in the level of consistent poverty from 5.1 per cent to 6.9 per cent (Nolan et al., 2013).

Whelan and Maître (forthcoming) provide an analysis of the impact of the Great Recession in Ireland on multi-dimensional risk profiles comprising income poverty, basic deprivation and economic stress. Here, our focus is on changes in levels and patterns of economic stress. One of the reasons we need to go beyond conventional measures of income poverty and inequality, in understanding how individuals and households have experienced the current recession, is that debt problems have played a more significant role than in previous recessions. During the boom period the level of personal indebtedness in Ireland increased dramatically. Credit card debt per capita rose from €102 in 1996 to €707 in 2008 and the number of credit card

issues increased rapidly (Russell et al., 2011, Table 4.1). The level of mortgage credit per capita increased over tenfold between 1995 to 2008 (ibid., Table 4.2). Moreover at the peak of the boom, the ratio of house prices to average earnings and loan to value ratios among first time buyers were exceptionally high, two indicators that suggest mortgage levels were unsustainable (Kelly, 2009). Since the onset of the economic crisis, mortgage arrears have grown steadily. Figures for Quarter 2 2013 show that 12.7 per cent of mortgage holders were in arrears for principle dwellings, as were a further 20.4 per cent of buy-to-let mortgages holders.⁶ While Ireland was not alone in the increase in personal debt levels during recent decades, the scale of debt problems experienced by Irish households is exceptional in European terms. In 2011, the rate of mortgage/rent arrears among Irish households was the highest in the European Union (EU), at 11.6 per cent compared to 4.1 per cent across the EU 28 and 4.5 per cent within the EU 15. Only Greece came close to the level of housing arrears observed in Ireland; for all other countries the rate was seven per cent or less. Combining information on arrears in utility bills, hire purchase repayments and mortgage/rent, just less than 20 per cent of Irish households were in arrears in at least one of these categories compared to an average of 11.7 per cent for the EU 28 and 9.6 per cent for the EU 15.

There appears to be a growing interest in alternative measures of financial well-being to provide additional insights into the effects of recession, illustrated by the League of Credit Unions' 'what's left' tracker survey. Evidence from the Central Statistics Office (CSO), from a special survey module called *Effect on Households of the Economic Downturn*, conducted in 2012, suggests that the financial impact of the recession was widespread. Four-fifths of Irish households had cut back on at least one area of spending as a result of the downturn (CSO, 2013). In addition, 43 per cent of households said that they were finding it difficult to keep up with their bills and debts, due mainly to higher than expected or additional costs (73 per cent) or loss of income (47 per cent). At the EU level, monthly consumer surveys provide timely information on the financial situation of households (European Commission, 2013). These surveys use a measure of 'financial distress' based on two items: having to draw on savings and running into debt to cover current expenditures. They

⁶ Sources: Residential Mortgage Arrears and Repossessions Statistics, Figures q2 2013, Central Bank of Ireland.

show a rise in financial distress across all income quartiles. Results for Ireland show a strong deterioration in the year 2012 but a significant improvement over the last quarter of that year (ibid., chart 29). These initiatives also fit into a broader policy agenda across Europe of ‘moving beyond GDP’ to find more meaningful measures of economic conditions and social progress, including both objective and subjective indicators (e.g. Stiglitz et al., 2009).⁷

In light of these developments, a focus on subjective economic stress is important because it complements the analysis of income poverty and basic deprivation. In this paper we seek to tap ‘economic stress’ by focusing on reports that address factors such as difficulty in making ends meet, arrears and the extent to which housing costs are a burden. Clearly, economic stress defined in this way is likely to relate to both low income and basic deprivation, but it can also be affected by any factor that contributes to insecurity and that relates to current or anticipated circumstances.⁸

In the Irish case the most suitable data for this analysis is the Survey on Income and Living Conditions (SILC) collected by the CSO, which is a large representative sample of Irish households. The SILC contains detailed information on household resources. It allows us to distinguish between low income, basic deprivation and subjective economic stress much more clearly than if we had used the comparative EU-SILC data set.⁹

Economic stress is also important because it has potential consequences for individual well-being and health. Research across Europe found that financial strain (difficulty making ends meet) is more strongly associated with well-being than income (Whelan and McGinnity, 2000). More recent results from the European Social Survey 2010 show that those finding it difficult to cope on their existing income had substantially lower levels of life satisfaction, even when a wide range of other relevant factors were taken into account, such as unemployment, physical

7 Similar initiatives include the EU 2030 well-being project and the Measuring National Well-being programme launched in the UK in 2010.

8 Whelan and Maître (forthcoming) provide an analysis of the impact of the Great Recession in Ireland on multi-dimensional risk profiles comprising income poverty, material deprivation and economic stress.

9 The SILC data are more representative and detailed than the ‘what’s left’ tracker survey, which is not based on a random sample of the population, contains fewer cases and does not collect the detailed information on each household member’s income from all sources that is used to derive income measures in SILC.

health, social support and household characteristics (Russell et al., 2013). Economic stress is also likely to be linked to poorer physical outcomes due to the well-established link between psychological stress and physical symptoms, such as disturbed sleep patterns, high blood pressure, heart problems and migraine (Chandola, 2010; Cohen et al., 2010; Aneshensel, 1992).

The negative effects of financial stress are not confined to the current well-being of adults in the household. The 'family stress model' posits that economic stress has a negative effect on parenting behaviour, which in turn is associated with poorer outcomes for children (Conger and Donnellan, 2007). There is also growing longitudinal evidence to support the hypothesis that the experience of economic stress can have a detrimental effect on child well-being and cognitive outcomes (Lee et al., 2011; see Cooper and Stewart, 2013, for a review).

Analysis of the consequences of economic stress requires longitudinal analysis. Nevertheless these studies alert us to the potential consequences of aspects of economic stress observed here.

1.2 New and old social risks and the distribution of economic stress

Changing, economic, demographic and political factors have provided challenges to the traditional welfare state during the Great Recession and have led to growing scepticism from some commentators with regard the salience of traditional stratification factors.

1.2.1 The role of traditional stratification factors

Two (partly competing) perspectives challenge traditional notions regarding social stratification and social risk. The individualisation thesis (Beck, 2007) argues that the declining influence of traditional social structures enables a 'risk society' to emerge, in which social risk is more evenly distributed among segments of the population. The life-course perspective (Vandecasteele, 2010) asserts that social risks are to be understood as phases in the person's life trajectory. This emphasis on the life-course connects with the notion of 'new' social risks arising from individualised life trajectories and lifestyles and the importance of agency in responding to life events,

with a resulting decrease in the importance of hierarchical stratification structures (Pintelon et al., 2013).

An alternative view argues not for the ‘death of social class’ but for important changes in the distribution of life chances across such classes. The term ‘middle class squeeze’ originated in discussion in the United States (US).¹⁰ 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., 2011). Increasing debt levels, public sector pay cuts and pension levies, increasing progressivity in taxation and the difficulties being experienced by the self-employed have all resulted in the notion of the ‘middle class squeeze’ coming to have considerable resonance in popular debate in Ireland.¹¹ This was reflected in the devotion of a special series to the topic in the Irish Times.¹²

Expectations based on claims of the demise or reshaping of traditional cleavages contrast sharply with claims, by a variety of social critics, that in Ireland not only have the most vulnerable members of society not been protected, but that major sacrifices have been imposed on more disadvantaged groups (Social Justice Ireland, 2013b; TASC, 2012).

1.2.2 The role of life-course factors in the Great Recession

A number of commentators have suggested that the effects of the Great Recession may vary by age. In an analysis of household consumption patterns, Gerlach-Kristen (2013) concluded that the main burden of the Irish crisis has been borne by younger households. The CSO survey on financial effects of the downturn also found that households headed by a person aged under 55 years were much more likely to have made cutbacks in spending in the previous 12 months than older households (CSO, 2013, Table 2). The public discourse on the ‘new poor’ or ‘squeezed middle’ has also

10 For a detailed discussion of this notion particularly in relation to the US, see Kus (2013).

11 For a comparative analysis of changes in the income share accruing to the ‘middle class’, defined primarily in terms of income band cut offs, see Atkinson and Brandolini (2013).

12 Irish Times, February 2012.

focused on the position of working families with children, who, it has been argued, have been hard hit by earning cuts, tax increases, property tax, reductions to child benefit and increases in the costs of accessing services, particularly services that are disproportionately consumed by middle class families such as private health insurance and third level education (Minihan, 2012; Muhlau, forthcoming).

An analysis of labour market outcomes during the recession (McGinnity et al., forthcoming) found that while all working age groups have been affected by the contraction of the labour market, those under 25 years are hardest hit. The impact on the relative situation of older workers aged 55–64 years is somewhat mixed: the degree of insulation from unemployment enjoyed by this group has been eroded since 2007, but their employment level was less severely hit than for those aged 35–44 years. The higher labour market vulnerability of young people during recession is not confined to Ireland and is linked to their position as inexperienced workers and labour market entrants (Plantenga et al., 2013). The association between age and economic stress may follow a similar pattern to that for labour market outcomes or may be affected by other life-course factors.

In what follows, in line with conventional poverty analysis, we conduct our analysis at the level of the individual. However, since the key outcomes on which we focus are measured at the household level, our analysis of socio-economic variation is based on the socio-economic attributes of the household reference person (HRP). Young people may be resident in parental households, which can offer additional financial support and fewer financial responsibilities (Watson et al., 2013). Moreover, age is related to other potential risk factors such as housing tenure: those under 25 years are unlikely to be mortgage holders and more likely to be in the private-rented sector, if they are a HRP primarily responsible for providing accommodation. Previous research has also shown that households with children face a higher risk of poverty (Watson, et al., 2012).

While a good deal of the literature on social risk focuses on the extent to which old social risks are being displaced by new social risks, a number of contributions focus on the manner in which such risks may combine. Whelan and Maître (2008) have shown, in relation to poverty, that social class and life-course factors can combine in

an interactive rather than additive manner. Similarly, Vandecasteele (2010) has shown that risky life events do not trigger identical poverty effects for different social classes.

In what follows we use the 2004 to 2011 waves of the SILC survey to explore the impact of traditional stratification factors, such as position in the income hierarchy and social class, on levels and patterns of economic stress. We also explore the role of life-course factors, as reflected in life cycle stage and number of children. We examine the manner in which such 'old' and 'new' social risk factors interact and how such processes may be reflected in the changing impact of factors such as social welfare dependence and housing tenure.

2. Data and Methodology

This technical paper analyses data from the Survey on Income and Living Conditions (SILC) for Ireland. The objective of the SILC survey is to collect information on the income and living conditions of households as well as a large range of socio-demographic information about the household members, ranging from personal characteristics to personal income, living conditions, labour market position, education and health status. The SILC survey is a voluntary survey of private households carried out by the CSO. The SILC survey was initiated in 2003, with interviews carried out only on a six-month period (from June to December 2003). The survey was subsequently carried out annually, with data collection taking place throughout the year. The number of households in the completed sample varied from 4,300 to 6,000 between 2004 and 2011.

Analysis in this technical paper is carried out at the individual level, using all the SILC waves from 2004 to 2011 for descriptive and modelling purposes. A two-stage sample design was employed, with eight population density stratum groups (based on the 2006 population census), with a random selection of sample and substitute households within blocks and the application of an appropriate calibration weight (CSO, 2012).

2.1 Measurement of economic stress

The SILC survey asks questions of the person responsible for the accommodation in relation to household topics as well as to all individuals aged 16 years and over for other individual items such as labour market situation, health and personal income. For the purpose of this analysis we have identified several questions at household and individual level that are clearly related to economic stress. When the questions have been answered by the person responsible for the accommodation we attributed these answers to all household members. For the individual questions we attributed the answers of the Household Reference Person (HRP) to all household members.¹³

¹³ The Household Reference Person (HRP) is the person responsible for the accommodation. When the responsibility is shared, the oldest person is chosen and in case of identical age, the HRP title is attributed to the male.

Here, we present the seven identified economic stress items and corresponding questions asked about the household as well as those asked of each individual (16 years and over). On each measure we distinguish those experiencing difficulty and those not experiencing difficulty. The first five items were asked in relation to the household as a whole while the last two items were asked of each individual.

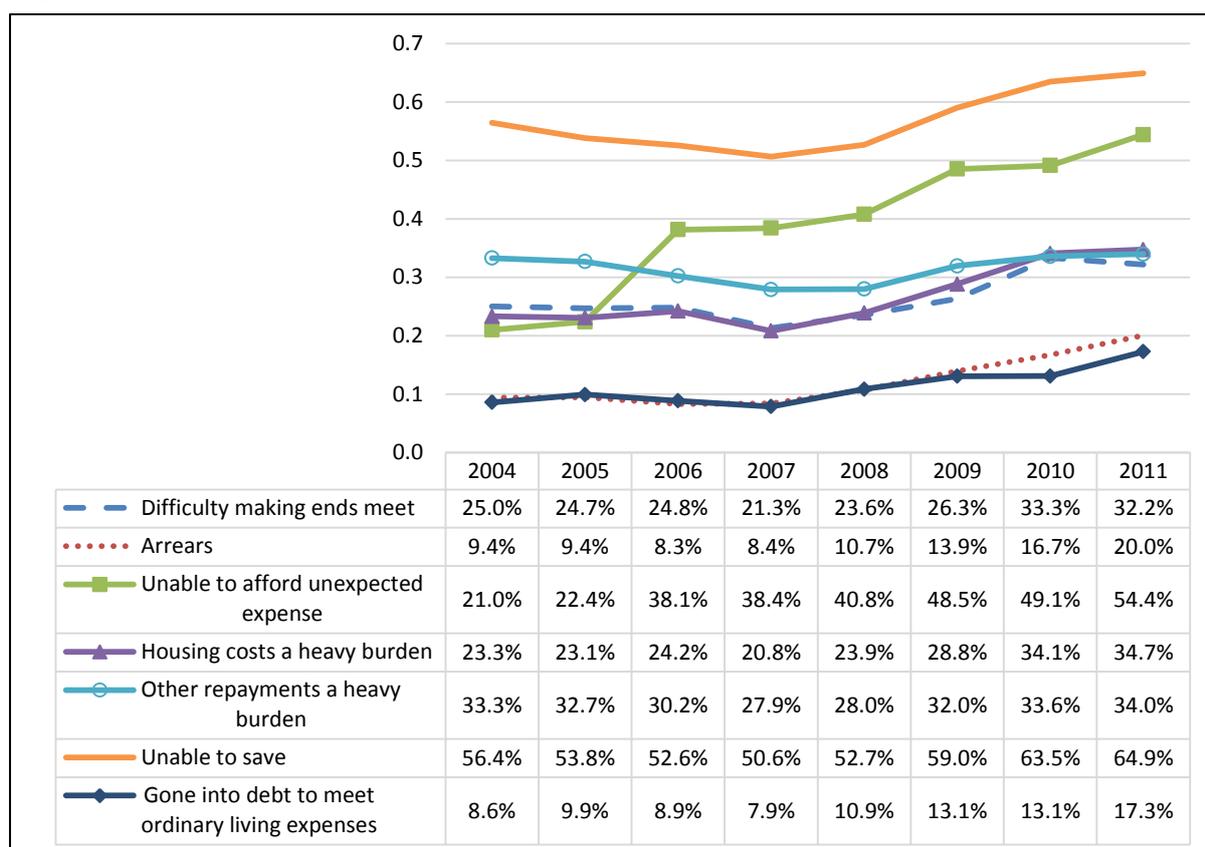
- The first item, relating to ability to make ends meet, is based on this following question: 'A household may have different sources of income and more than one household member may contribute to it. Thinking of your household's total income, is your household able to make ends meet, namely, to pay for its usual necessary expenses?' Seven possible answers were offered, ranging from 'very easily' to 'great difficulty'. Responses indicating 'great difficulty' or 'difficulty' scored a value of 1 while the remaining categories were assigned a value of 0.
- Households were defined as having a problem with arrears (in the past 12 months) if they were unable to avoid arrears relating to their mortgage or rent, utility bills or hire purchase instalments. Those households scored a value of 1 while others were assigned a value of 0.
- The indicator relating to the financial burden of total housing cost was based on this question: '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?' Three possible answers were offered. Responses indicating a 'heavy burden' or 'somewhat of a burden' scored a value of 1 while the remaining responses were assigned a value of 0.
- The indicator of going into debt to meet ordinary living expenses was based on 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 scored a value of 1 while a negative one was assigned a value of 0.
- Those households reporting that they could not afford an unexpected expense without borrowing scored a value of 1 while the remainder were allocated a value of 0.¹⁴

¹⁴ In 2004 and 2005 no amount for the expense was mentioned in the question while from 2006 onwards a specific amount was given as an indication. The amounts ranged from €875 in 2006 to €1,145 in 2011.

- The indicator for financial burden of non-housing related loans was based on this question: 'Do you make repayments of debts from hire purchases or loans other than mortgages or loans connected with the house and if so how much of a financial burden is the repayment(s)?' Responses indicating a 'heavy burden' or 'somewhat of a burden' scored a value of 1 while the remaining category was assigned a value of 0.
- The indicator for ability to save was based on this question: 'Can you save some of your income regularly?' A negative answer was scored 1 while a positive one was assigned a value of 0.

Figure 1 presents the percentage of persons living in a household experiencing difficulty in relation to each of the items, running from 2004 to 2011. For all items, with the exception of the 'unexpected expense' item, we observe a general trend of stable or decreasing level of difficulty from 2004 to 2008 followed by a generalised increase from 2009 onwards as the economic recession hits Ireland.

The lowest levels of difficulty are found for the 'debt to meet ordinary expenses' and the 'arrears' items. For these two items, the levels range between eight and nine per cent between 2004 and 2008, before increasing to 17 per cent and 20 per cent respectively in 2011. For a second group of items ('difficulty to make ends meet' and 'housing cost being a burden'), the percentages range between 21 and 25 per cent between 2004 and 2008, before reaching a high of 32 per cent and 35 per cent respectively in 2011. We find a different pattern for the item about 'non-housing debt repayment being a heavy burden', which starts at 33 per cent in 2004 before falling to 28 per cent in 2008, and increases again to 35 per cent in 2011. The highest level of difficulty emerged in relation to the 'inability to save' item. The percentage of persons who were unable to save went from 56 per cent in 2004 to 53 per cent in 2008, before rising to 65 per cent in 2011.

Figure 1: Trends of economic stress across individual items, 2004–11

'Inability to afford unexpected expense' follows a quite distinctive pattern compared to the other items. In 2004–05, the rate was 21–22 per cent, but this increased sharply to 38 per cent in 2006, well before Ireland came into the recession. This was caused by changes made to the format of the question. Up to 2006, the question made no reference to the cost of the 'unexpected expense', but the 2006 version made reference to a hypothetical expense of €875, which led to an increase in the level of negative answers.

We now want to consider the possibility of using these seven items to create an aggregated measure of economic stress. In order to explore how closely related this set of items can be considered as a group, Table 1 presents the Cronbach's alpha measure of reliability. Starting with a set of seven items, the overall level of reliability is satisfactory at 0.759, which increased during the period observed.¹⁵

¹⁵ A reliability coefficient of 0.70 is at the higher end of the continuum for survey measures of this kind (Nunnally and Bernstein, 1994; Bland and Altman, 1997; De Vellis, 2003).

The analysis also showed that the alpha increased if the item relating to non-housing repayments was removed. Experiencing difficulty on such repayments first requires that the individual has access to such credit and has availed of it. The majority of households did not have non-housing loans (63 per cent of HRPs in 2011). Previous research on financial exclusion found that groups who were less likely to have such loans included people over 55 years, those at-risk-of-poverty and those in the lowest income deciles (Russell et al., 2011). We therefore excluded this measure from the economic stress scale. Column 3 presents the alphas for the six item scale; it excludes the item on non-housing loan repayments. This set of six items produces a slightly higher overall level of reliability at 0.766 across all years.

The last column presents another reliability coefficient for a set of five items; it excludes the 'unexpected expense' item. As Figure 1 illustrated, changes to this question in 2006 caused an increase in the rate of negative answers. This made this item inconsistent across the period under study so we excluded it from the final set. While this exclusion reduces the overall level of reliability, the alpha still reaches a satisfactory level of 0.725 across all years. The set of five items is therefore our preferred solution for a measure of economic stress for the purpose of this analysis.

Table 1: Cronbach's alpha level of reliability for economic stress, 2004 to 2011

	Cronbach's Alpha		
	7 items	6 items*	5 items **
2004	0.717	0.728	0.670
2005	0.741	0.756	0.714
2006	0.746	0.756	0.708
2007	0.741	0.744	0.712
2008	0.748	0.751	0.729
2009	0.759	0.764	0.724
2010	0.788	0.788	0.729
2011	0.785	0.790	0.748
Total	0.759	0.766	0.725

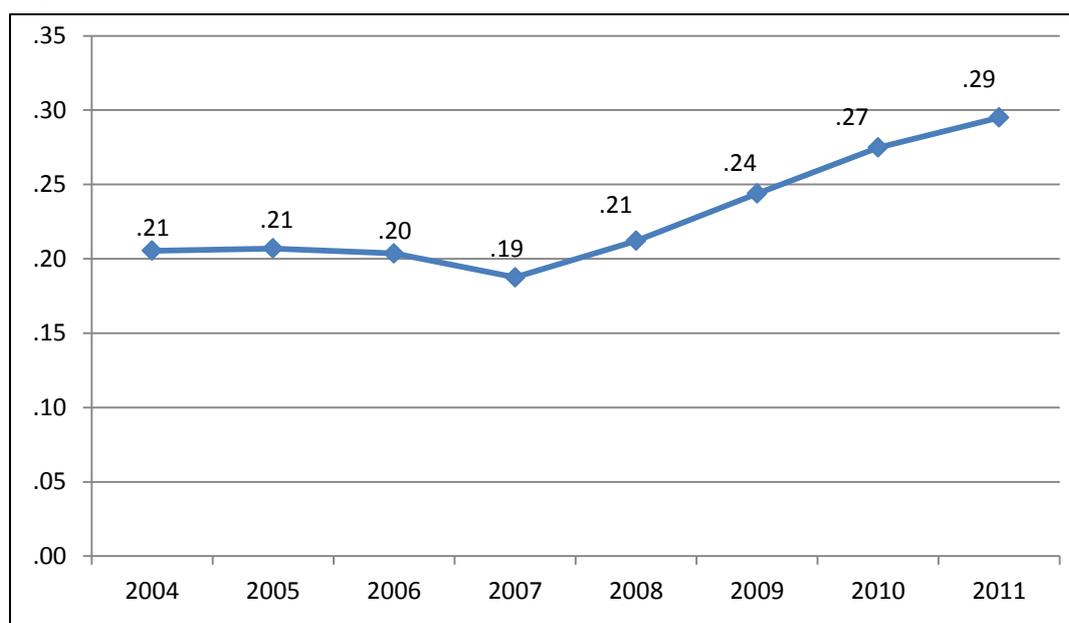
* Excluding the 'repayment of non-mortgage a heavy burden' item. ** Excluding from the previous set the 'unexpected expenses' item.

Together, these five items produce a high level of reliability, which justifies combining them into a single measure that facilitates interpretation. They also produce a better overall measure as each individual item represents an imperfect measure of the concept of economic stress. The simplest option is to add the score for each of the items producing then a scale ranging from 0 to 5 where 0 means that the individual is not deprived on all the items while a score of 5 means that the individual is deprived on all the items.

In order to take account of the contribution of individual components of economic stress to overall levels of stress, each economic stress item is weighted every year from 2004 to 2011 by its prevalence weight in the population. This means that if the proportion of the total population experiencing a difficulty increases in a specific year, that difficulty will have a lower weight for that year. Correspondingly, if the proportion experiencing a difficulty decreases over time, its weight will increase accordingly. So each item will be weighted differently every year according to its prevalence over time. The measure of economic stress for each single year is therefore an additive scale, made up of the score of each item weighted by its corresponding prevalence weight and normalised with the score ranging from 0 to 1. A score of 0 means that the individual is not experiencing economic stress on any of the items while a score of 1 means that the individual is experiencing difficulty on all the items.

2.2 Economic stress over time

Figure 2 presents the mean level of economic stress from 2004 to 2011. The level is quite stable between 2004 and 2008, ranging from 0.19 to 0.21 with very little variation for most of those years. From 2009 onwards however, as the effects of the recession took hold, the level of economic stress increased gradually, reaching a high level of 0.29 in 2011.

Figure 2: Mean level of economic stress over time, 2004–11

Note: This shows mean levels of economic stress with prevalence weighted and standardised.

In this paper, we focus on period changes, comparing the situation in the pre-recession or boom period (2004 to 2008) to the situation during the crisis or bust period (2009 to 2011). This approach differs from the comparison of the highest point, or ‘peak’, of the boom period with the lowest point, or ‘trough’, of the recession, in terms of income or employment for example. In a period approach, the contrast is not as stark as that found in ‘peak and trough’ comparisons. For example, average household incomes in 2004 to 2006 were significantly lower than those observed in 2007 to 2008. Therefore the change in average incomes between 2004–08 and 2009–11 shows a substantially different picture than that produced by a simple comparison of 2008 and 2011 (see Table A2, appendix). It is worth noting that evaluations of the impacts of the budgets over the recession period take 2008 or 2009 as a starting point (Callan et al., 2013a; Callan et al., 2013b, Social Justice Ireland, 2013b), which means there are significant differences in the distributions that we analyse. A focus on peak to trough reveals that incomes adjusted for the Consumer Price Index (CPI) fell by 9.4 per cent between 2008 and 2011. However, it misses an equally distinctive aspect of the Irish experience: such incomes rose by 11.8 per cent between 2004 and 2008. Figure 2 shows that between 2004 and 2007, there was only a modest decrease in economic stress despite significant increases in income, while the corresponding decline in income between 2008 and 2011 was

associated with a sharp increase in stress levels. This suggests that factors other than income were playing a significant role in the later period. Our comparison of bust and boom allows us to take into account the distinctive nature of the Irish case involving a significant boom followed by a sharp recession. A peak to trough analysis captures the impact of the latter but misses the context provided by the former.

3. Level of Economic Stress by Socio-economic Characteristics

3.1 Measurement of relative income position and social class

The theoretical conception of social class employed in this paper is that developed by Goldthorpe (2006a) and implemented in the European Socio-economic Classification (ESeC) (Rose and Harrison, 2006). It focuses on relational as well as distributive aspects of inequality, taking into account not only the hierarchical aspect of class but also the impact of different forms of employment. Individuals are understood to possess certain resources and experience a variety of constraints by virtue of the class positions they occupy. As Goldthorpe (2006b) observes, one of the primary objectives of schemas such as ESeC is to bring out the impact of different class positions as they bear on individuals' security and prospects.

Class analysis employing this schema differs therefore from those where class is defined in terms of relative income position such as deciles or quintiles (Dallinger, 2013). As Atkinson and Brandolini (2013) have shown, while social stratification by the class categories of the Goldthorpe schema and the approach of clustering by income are clearly correlated, the match is far from perfect. They note that while both variables can contribute to identifying patterns of social stratification, their conceptual primacy varies across disciplines. Economists tend to start from income or expenditure. As Gornik and Jänniti (2013, p. 9) note, in their discussion of the issues involved in defining the middle class, what economists refer to as the 'middle class' might more accurately be described as those households that fall in the 'middle' – that is, in the middle of the income distribution.

Within this income-based framework, authors generally develop 'class classifications' in two ways (Gornik and Jänniti, 2013, p. 10). The first involves aggregating income bands into deciles or quintiles. With this approach the size of classes remains constant over time. Atkinson and Brandolini (2013, p. 78) note that the EU uses as its main income inequality measure the ratio of the income share of the top 20 per cent to that of the bottom 20 per cent; transfers away from the middle 60 per cent could, if made proportionately, leave measured income inequality unchanged. They are the 'forgotten' middle. An alternative approach establishes class groups involving

intervals defined by percentages of median household income (Atkinson and Brandolini, 2013, p. 82).

The economics literature is said to be ‘converging’ (Ravallion, 2010, p. 446) on a definition of the income limits for the middle income group: 75 per cent and 125 per cent of the median. Atkinson and Brandolini (2013) note that we may either accept ‘the premise that middle-class living standards begin when poverty ends’, as Ravallion (2010, p. 446) states, or take instead 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, p. 5). Atkinson and Brandolini (2013) note that in the EU, the former criterion would bring us to identify the lower point with the at-risk-of-poverty line, set at 60 per cent of the median, whereas the second criterion would rationalise the 75 per cent cut off point as defining the ‘margins’ of poverty as plus one-quarter of the at-risk-of-poverty line. The middle class can then be said to be those ‘comfortably’ clear of being at-risk-of-poverty. They note that the rationale for the bottom cut off point implies that there exists a ‘lower middle class’, comprised of people whose income is in the range of 60–75 per cent of the median and who are neither poor nor middle class. We could propose that there is also an ‘upper middle class’ between the middle class and the rich or affluent by taking the 125 per cent cut off point, which is one-quarter less than the income level that identifies the rich. The implicit ‘richness line’ would equal 167 per cent of the median. This would mean dividing the population into five groups.

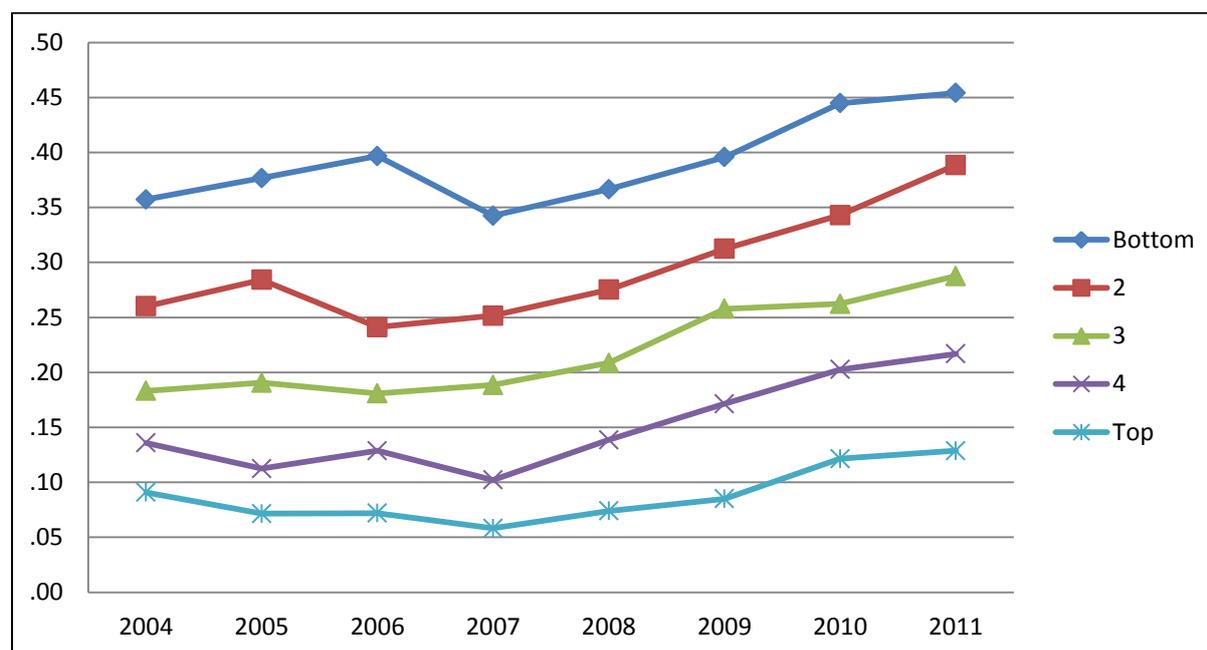
Obviously the number of categories identified and the labels attached to them is to some extent arbitrary and one may wish to employ different schemas. Here, in addition to providing descriptive detail relating to quintile bands, in line with our discussion above, we provide a set of analyses distinguishing five income categories as set out below in Table 2.

Table 2: Income categories and corresponding household equivalised income thresholds for 2011

Income ranges	Income classification	Corresponding income thresholds for 2011
< 60% of median equivalised household income	Income poor	Less than €10,903
60–74% of median equivalised household income	Precarious income class	€10,903 to less than €13,628
75–124% of median equivalised household income	Lower middle income class	€13,628 to less than €22,714
124–166% of median equivalised household income	Upper middle income class	€22,714 to less than €30,164
167% of median equivalised household income	Affluent class	€30,164 and above

3.2 Trends in the socio-economic distribution of economic stress

We begin by describing the trends in economic stress across the traditional income quintiles. First, as expected, there is a linear relationship between the household income position and the level of economic stress whereby economic stress increases as the household income gets lower. Individuals at the bottom of the income distribution experience the highest level of economic stress across the whole period, rising from 0.35 in 2004 to 0.45 in 2011. Those at the top of the income distribution had values ranging from 0.09 in 2004 to 0.13 in 2011. Across all income quintile positions the level of economic stress was relatively stable between 2004 and 2008. Post 2008, the level of economic stress rose sharply up to 2011. The absolute magnitude of the increase was broadly similar for the bottom four quintiles while it was substantially lower for the top quintile. Thus, while the rank ordering of economic stress levels remained stable over time the upper quintile remained largely insulated from exposure to such stress. However, given the very different starting points of the quintiles, the picture in relation to relativities is very different. Since 2004 the sharpest proportionate increase has been experienced by the third and fourth quintile, at 57 per cent and 60 per cent respectively, while the lowest increase was experienced by those in the bottom income quintile, at 27 per cent.

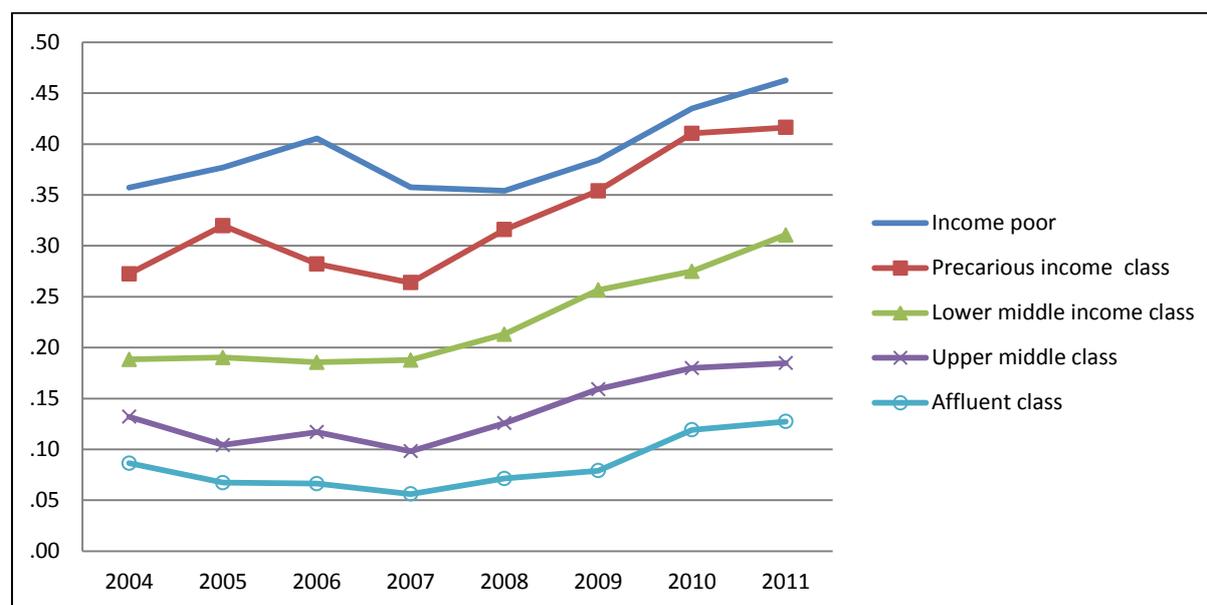
Figure 3: Mean level of economic stress by household income quintile, 2004–11

In Table 3 we show the distribution of individuals across the income categories we have created, using ratios of median household equivalised disposable income. The proportion below the 60% median income poverty line declined from 19.4 per cent in 2004 to 14.1 per cent in 2009 before rising to 16 per cent in 2011. The precarious income class amounted to 12.7 per cent of households in 2004 and was of almost identical size in 2011 but rose to approximately 16 per cent between 2007 and 2009. The size of the lower middle class was fairly uniform across time but rose slightly from 34.3 per cent in 2004 to 37 per cent in 2011. The upper middle class, while also relatively stable showed a slight decrease from 17.3 per cent in 2004 to 15.7 per cent in 2011. Finally the affluent class size oscillated over time but rose from 16.3 per cent in 2004 to 18.4 per cent in 2011.

Table 3: Household income distribution by household income categories, 2004–2011

	2004	2005	2006	2007	2008	2009	2010	2011
	%	%	%	%	%	%	%	%
Income poor	19.4	18.5	17.0	16.5	14.4	14.1	14.7	16.0
Precarious income class	12.7	13.6	13.8	16.0	16.3	15.8	14.6	12.8
Lower middle income class	34.3	33.5	34.9	32.1	36.2	36.5	36.7	37.0
Upper middle class	17.3	18.6	16.6	17.5	16.6	17.6	16.0	15.7
Affluent class	16.3	15.8	17.7	18.0	16.5	16.1	18.1	18.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Figure 4 shows the trends in level of economic stress for each of these income segments between 2004 and 2011. For each category we observe broadly similar trends, with levels remaining relatively stable between 2004 and 2007, showing some signs of increase in 2008 and then rising steadily between 2009 and 2011. We also observe a tendency for the gap between the income poor and the precarious and lower middle income groups to narrow over time. This conclusion is confirmed in Table 4, where we compare the economic stress levels for the income segments for 2004–08 and 2009–2011. The smallest absolute increases in stress were observed for the affluent and income poor classes with respective increases of 0.041 and 0.058. For the precarious income group, the increase in stress scores was 0.10, while for the lower middle class the increase was 0.09 and the upper middle class recorded a rise of 0.06. So in terms of absolute levels of economic stress, we observe a squeezing of the intermediate income segments – both the middle classes.

Figure 4: Mean level of economic stress by household income categories, 2004–11

Once again the absolute increases in stress levels observed above occurred from very different starting points for each of the income segments. In order to capture this change, Table 4 reports the percentage change in stress levels for each of the income categories. It shows that the relative increases in stress levels were actually most modest for the income poor and the precarious income class, with respective increases of 15.8 per cent and 34.4 per cent. The largest relative increase of 59.3 per cent occurred at the other end of the spectrum, for the affluent class. For the upper middle class the relevant figure was 51.4 per cent, while the increase for the lower middle class was 45.2 per cent.

Another way to look at these figures is to focus on the ratio of economic stress scores for the affluent class and other classes. For the income poor this, ratio fell from 5.4 to 3.9. For the precarious class, the ratio went from 4.2 to 3.6 and for the lower middle class the respective figures were 2.8 and 2.1. For the upper middle classes it went from 1.7 to 1.4. Thus, over time, the disadvantage experienced by the income poor group declined relative to the other groups while the relative advantage of the affluent class also declined in relation to all other classes. The middle classes also experienced some decrease in the advantages that characterised their position in the 2004 to 2008 period.

Table 4: Mean economic stress by income categories and increase over time, 2004–08 and 2009–11

	2004–2008	2009–2011	Difference	% increase
Income poor	0.3706	0.4291	0.0585	15.8
Precarious income class	0.2915	0.3917	0.1002	34.4
Lower middle class	0.1935	0.2809	0.0874	45.2
Upper middle class	0.1150	0.1741	0.0591	51.4
Affluent class	0.0690	0.1099	0.0409	59.3
Total	0.2031	0.2713	0.0682	33.6

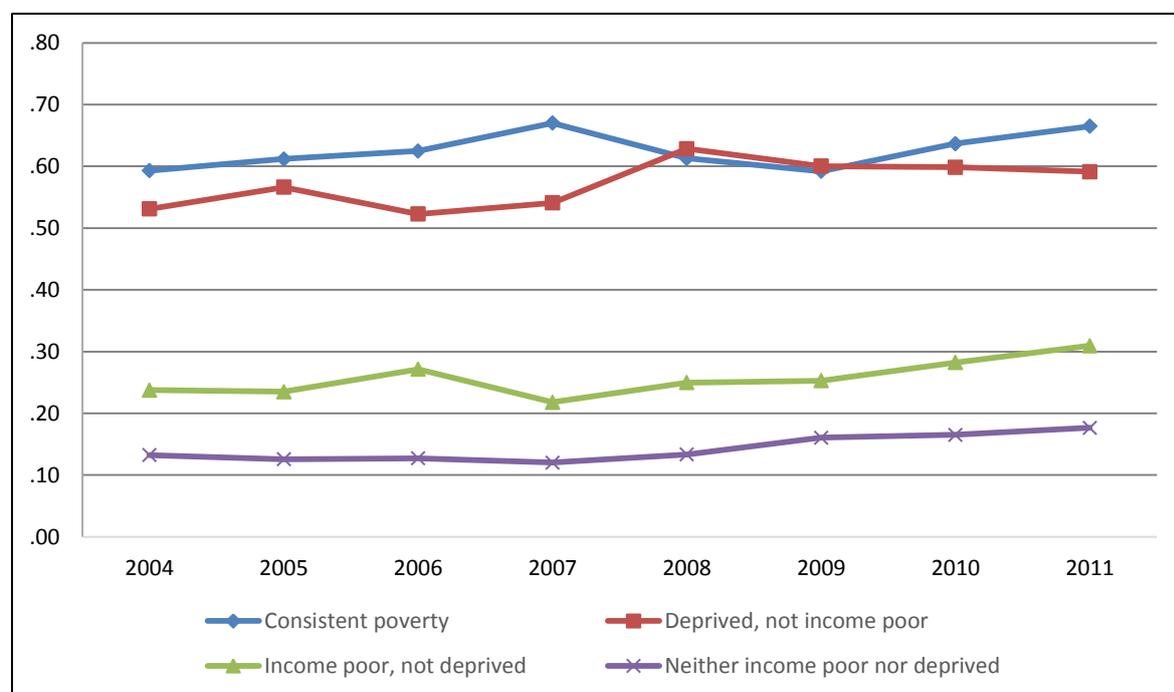
Figure 4 illustrated that economic stress is related to income poverty but what is the relationship between economic stress and the measures of basic deprivation and consistent poverty used in the Irish national anti-poverty policies? Clearly, those who experience basic deprivation (deprived of two or more items on the basic deprivation scale) also experience high levels of economic stress (see Figure 5 and Table A1 in appendix). Taking the year 2011, for example, those who experienced deprivation but were not below the income poverty threshold had a mean economic stress score of 0.59 – double that of those who were income poor but not experiencing basic deprivation. In 2011, those in consistent poverty had a higher economic stress score (0.67) than those who were deprived but not income poor. The group who are neither deprived nor income poor have the lowest economic stress score of all.

Examining trends over time it appears that the levels of economic stress rose sharply for the deprived group in 2008, then fell marginally and after that remained stable. The group in consistent poverty showed a decline in economic stress from 2007 to 2009, followed by an increase after 2009. As noted in the introduction, this decline coincided with a period when, due to falling average household incomes, the poverty threshold actually rose, resulting in fewer households defined as consistently poor. This may account for some of this volatility. It should also be noted that the size of the categories was changing over the period. For example, the proportion of the population who were deprived but not income poor grew from 9.5 per cent in 2008 to 17.5 per cent in 2011, while the proportion who were neither income poor nor deprived fell from 76.1 per cent to 66.5 per cent.

Taking the average scores over the two time periods (Table 5) we find that the biggest proportionate increase in economic stress occurred for those who were neither income poor nor deprived, though it is clear from the graph (Figure 5) that they started from a much lower base than the other groups and remained advantaged during the recession.

In the models that follow, we consider how far the measure of deprivation overlaps with economic stress: are these two measures tapping into the same underlying experience or does economic stress provide an additional insight into the impact of recession?

Figure 5: Trends in economic stress by deprivation, income poverty and consistent poverty

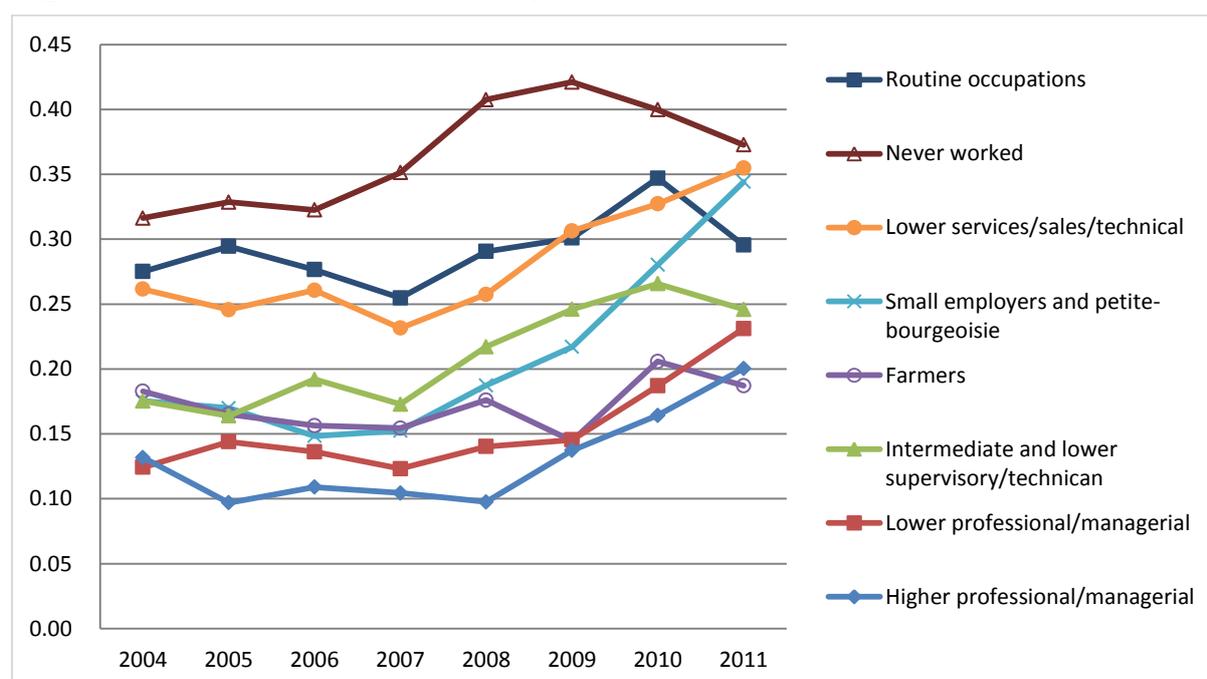


Note: Income poor <60 per cent median household income; deprived – lacking 2 or more of basic deprivation items; consistent poverty – income poor and deprived.

Table 5: Mean economic stress by income poverty, deprivation and consistent poverty, 2004–08 and 2009–11

	2004–2008	2009–2011	Difference	% increase
Neither income poor nor deprived	0.1276	0.1669	0.039	30.8
Deprived not income poor	0.5603	0.5963	0.036	6.4
Income poor not deprived	0.2417	0.2813	0.040	16.4
Consistent poverty	0.6206	0.6333	0.013	2.0
Total	0.2031	0.2705	0.067	33.2

Figure 6 explores the changes in the level of economic stress by the social class of the Household Reference Person (HRP), where we allocate the HRP social class status to all household members using the seven category version of the European Socio-economic Classification (ESeC) class schema as described in the glossary. There is a clear distribution of level of economic stress across social classes, whereby the lowest class experiences the highest level of economic stress and the most favoured class the lowest level. The 'higher professional and managerial' social class had an economic stress score of 0.13 in 2004 compared to a score of 0.32 for the 'never worked class', a disparity of 2.5:1.

Figure 6: Mean economic stress by HRP social class, 2004–2011

When the economic recession began in late 2008, all social classes experienced an increase in their level of economic stress. While levels of economic stress by class in 2011 are broadly similar to 2004 levels, some groups have experienced a much sharper increase than others. Table 6 shows the levels of economic stress by social class for 2004–08 and 2009–11. The self-employed in agriculture stand out from all other categories in showing effectively no increase in their level of economic stress. After this group, the smallest increases were observed for two groups at opposite ends of the class hierarchy – the professional and managerial group and the semi/unskilled manual group – with values ranging between 0.04 and 0.05.¹⁶ Figures ranged between 0.07 and 0.08 for ‘intermediate occupation and lower supervisory/technician’ and ‘lower services/sales/technical’. Finally the largest increase of 0.12 was observed for small employers and the ‘petite-bourgeoisie’. Thus there was some evidence of a non-agricultural, middle class squeeze.

Viewed in relative terms, it is clear that the position of the self-employed in agriculture remains highly favourable, involving only a 6.2 per cent increase in economic stress. The smallest proportionate increases outside this group are observed at the bottom of the social class hierarchy (14.3 per cent increase for the semi/unskilled manual class and 16.2 per cent increase for the ‘never worked’ class). For those who are middle class and mostly working as employees, the level of change ranged from 31 per cent for the ‘lower services/sales/technical’ class to 41 per cent for the professional/managerial class. Once again, the small employers and petite-bourgeoisie experienced a very high increase (70 per cent) in their stress levels. Analysis reveals that in order to understand change, we must take into account not only the hierarchical position of groups, in terms of opportunities and access to resources, but also distinctions in terms of employment status and relevant economic sector. Over time, the advantages enjoyed by the upper and middle groups have decreased, compared to the self-employed in agriculture and the lower social classes, as reflected in their experience of economic stress.

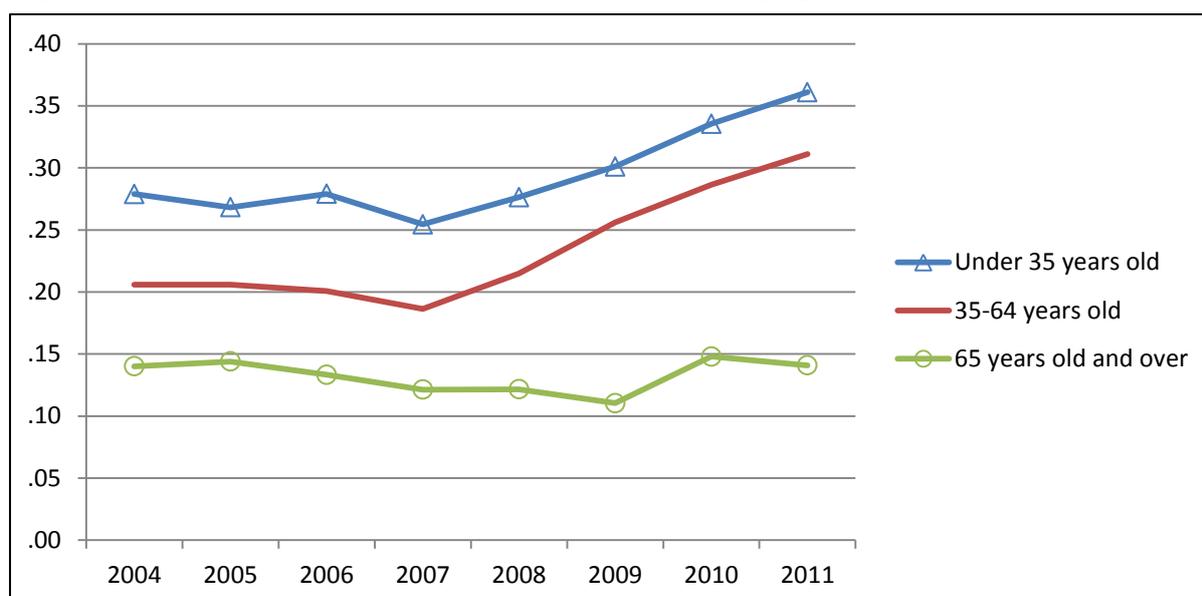
¹⁶ These are also termed the ‘routine’ class.

Table 6: Mean financial stress by HRP social class and increase over time, 2004–08 and 2009–11

	2004–08	2009–11	Difference	% increase
Higher professional/managerial	0.1075	0.1640	0.057	52.5
Lower professional/managerial	0.1336	0.1774	0.044	32.8
Intermediate occupation and lower supervisory/technician	0.1850	0.2524	0.067	36.5
Self-employed in agriculture	0.1673	0.1777	0.010	6.2
Small employers and petite-bourgeoisie	0.1666	0.2832	0.117	70.0
Lower services/sales/technical	0.2514	0.3294	0.078	31.0
Semi/unskilled manual occupations	0.2782	0.3179	0.040	14.3
Never worked	0.3435	0.3991	0.056	16.2
Total	0.2031	0.2713	0.068	33.6

In Figure 7 we show the trends in economic stress for 2004 to 2011 broken down by age group. At each point in time, the level of stress declines with age. For those aged 65 years and over, there clearly has been little change but for those aged under 35 years and those aged 35–64 years, we observe the now familiar pattern of relatively little change for 2004–07 and a steady increase from 2008 on with the increase being somewhat steeper for the 35 to 64 age group.

In Table 7 we compare the outcomes for age groups for 2004–08 and 2009–11. For those 65 years and over, there is very little change. An increase in economic stress level of 0.06 is observed for the under 35 age group. This rises to 0.08 for the 35 to 64 age group. In relative terms we observe an increase of 1.2 per cent for the oldest age group. For the youngest age group this rises to 22.4 per cent and finally to 40.4 per cent for the intermediate age group. The relative disadvantage experienced by the 35 to 64 age group relative to those aged 65 years and over increased from 1.5 to 2.1, while for those under 35 years, the respective figures were 2.1 and 2.5.

Figure 7: Mean level of financial stress by HRP age group, 2004–2011**Table 7: Mean financial stress by HRP age group and increase over time, 2004–08 and 2009–11**

	2004–08	2009–11	Difference	% increase
Under 35 years	0.271	0.332	0.061	22.4
35–64 years	0.203	0.285	0.082	40.4
65 years and over	0.132	0.133	0.002	1.2
Total	0.203	0.271	0.068	33.6

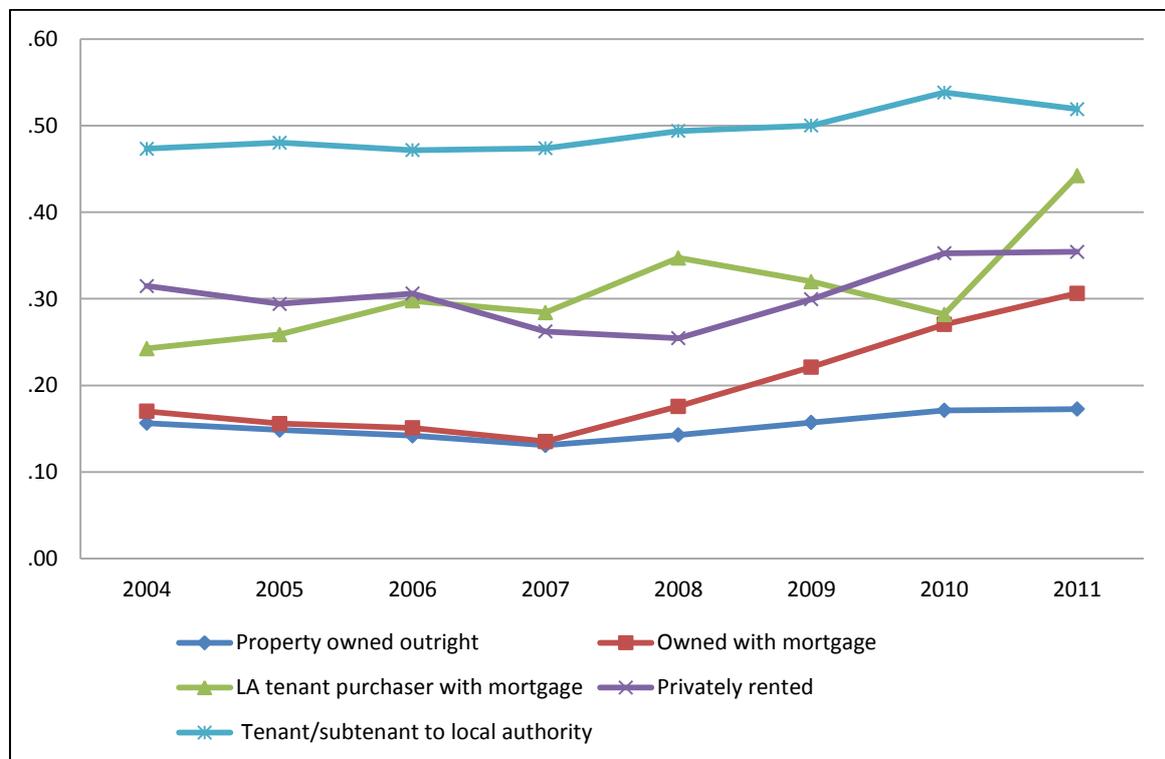
Figures from the Central Bank showed that in 2009, 3.3 per cent of principal dwelling houses with mortgage accounts were in arrears of more than 90 days and that this increased to 17 per cent at the end of June 2013 (Coggin, 2013).¹⁷ In light of this, Figure 8 presents the extent of economic stress across household tenure for the period 2004 to 2011.

Between 2004 and 2011, tenants and sub-tenants to local authorities experienced the highest level of economic stress, with values ranging from 0.47 in 2004 to 0.54 in 2010. At the other end of the spectrum, for the period 2004–07, property owners with or without a mortgage shared a low level of economic stress, ranging from 0.13 to 0.17 with a slight advantage to those without a mortgage.

¹⁷ No data were collected prior to 2009.

The economic stress faced by individuals living in privately rented accommodation and local authority purchasers with a mortgage fell between these two extremes. After 2007, the level of economic stress for property owners without a mortgage increased at a modest pace; it was at 0.13 in 2007 and at 0.17 in 2011. By contrast, economic stress increased very sharply for property owners with a mortgage, going from 0.14 in 2007 to a high of 0.31 in 2011, a level of economic stress almost identical to those living in privately rented accommodation.

Figure 8: Mean economic stress by household tenure, 2004–11



4. Modelling Strategy

The graphs presented above highlight that economic stress has increased across Irish society over the period of the economic recession. Economic stress has spread to groups in the population that were previously protected from such worries. In the following models we seek to develop our understanding of the nature of this change. The models take account of both the difference in levels of stress for different social groups but also, crucially, the extent of change over time. The data are grouped into two time periods: the pre-recession period (2004 to 2008) and the recession period (2009 to 2011).

Two possible processes drove change in economic stress during the recession. Firstly, the underlying risk factors may have become more widely distributed across the population. For example the proportion of households that are dependent on social transfers may have increased (due to high unemployment), or the proportion of households with children may have risen. Such compositional change could lead to rising economic stress even if the relationship between welfare dependency and economic stress remained constant. Secondly, the relationship between risk factors and economic stress may have changed; for example, the relationship between having a mortgage and financial strain may have increased over time.

To examine the changing impact of risk factors, we examined the interaction between key explanatory variables and the period effect. These interaction estimates show how the risk associated with each characteristic has changed over time (in comparison to the reference group). This allows us to examine whether some social groups suffered disproportionately over the period as suggested in the literature (outlined above) relating to stratification and life-course effects. For example, is there evidence that the middle class or middle income groups have experienced a greater than average increase in economic stress? Have mortgage owners been disproportionately hit? Are younger households experiencing greater levels of stress over time than older households?

As the dependent variable (economic stress) is continuous, we estimate ordinary least squares (OLS) regression models. Each explanatory factor (along with its

interaction with the time period where appropriate) is added sequentially so that the significance of each can be examined. The dependent variable has been normalised so as to have values ranging from 0 to 1.

4.1 Model results

Economic stress is examined through a series of four nested regressions. Model 1 contains only the year or period effect and shows that economic stress in 2009–11 was six per cent higher than in 2004–08. Model 2 adds both income class and social class. Five income classes are included, with the affluent households (>167% median income) as the reference group. It also includes the interaction of the income class categories with period effects. The patterns outlined in Figure 4 are confirmed by this model that provides estimates of the net effect of income classes. For the period 2004 to 2008, economic stress is clearly stratified by income class. Compared to the most affluent class, economic stress levels of the income poor were 0.274 higher; the gap was 0.193 for the precarious income class, 0.102 for the lower middle class and 0.035 for the upper middle class (see Table 8, Model 2 results).

When we focus on change over time we observe significant increases over time for the precarious income group and the lower middle income group. For the precarious income group, the increase in stress levels was 0.053 higher than for the higher professional and managerial class, while for the lower middle group it was 0.045 higher. The change over time for the income poor and the upper middle class did not differ significantly from that for the affluent class (see Table 8, Model 2 results).

A broadly similar pattern is found if we substitute income quintiles for the income class categories. Individuals located in the second and third quintiles show the greatest increase in economic stress during the recession. However, distinctions between groups are weaker when the quintile measure is used (models not shown).

The effects of social class are somewhat muted because such effects could be expected to operate to significant extent through income class, which is controlled for in the model. Results for social class suggest that in the first period (2004 to 2008), stress levels were highest among the 'semi-unskilled manual' and 'never worked' classes, as well as the 'lower services/sales' occupations. The 'self-employed' and

the 'lower professional managerial' categories did not differ significantly from the 'higher professional/managerial' category.

During the recession period, the most important social class changes relate to the self-employed. However, they operate in opposite directions for the self-employed in agricultural and non-agricultural classes (small employers and petite-bourgeoisie). For the former we see a decline in stress level of 0.057 while for the latter we see an increase of 0.057 which results in the net gap between this class and the semi-unskilled class being reduced from 0.087 (0.068 - (-0.019)) to 0.030. Unsurprisingly, income groups and social class together accounted for a significant proportion of variance in economic stress, at 16.1 per cent¹⁸.

Table 8: OLS regression models of economic stress

	(1)	(2)	(3)	(4)
Time period 2009–11	0.0630***	0.033***	-0.0223**	-0.032***
<i>Economic class (ref=affluent)</i>				
Income poor (<60 per cent)		0.274***	0.221***	0.108***
Precarious class		0.193***	0.173***	0.097***
Lower middle class		0.102***	0.087***	0.063***
Upper middle class		0.035***	0.030***	0.032***
Income poor (<60 per cent)*09–11		0.016	0.021	-0.009
Precarious class*09–11		0.053***	0.051***	0.003
Lower middle class*09–11		0.045***	0.055***	0.010
Upper middle class*09–11		0.018	0.022*	0.002
<i>Social class (ref=high salariat)</i>				
Lower salariat		0.000	0.009	0.001
Self-employed in agriculture		0.036***	0.040***	0.018**
Self-employed non-agriculture (Small employer/petite bourgeoisie)		-0.019	0.021	0.030**
Intermed and lower supervisory/tech		-0.019*	0.009	0.014
Lower services/sales/tech		0.065***	0.055***	0.023***

¹⁸ The R-square value indicates the proportion of variance that is explained by the given model.

Semi/unskill manual/never worked		0.068***	0.064***	0.022***
Self-employed in agriculture*09–11		-0.057**	-0.028	-0.014
Self-employed non-agriculture *09–11		0.057***	0.047***	0.045***
Age (ref= 65 years and over)				
Under 35 years			0.086***	0.100***
35–44 years			0.064***	0.079***
Age 45–54 years			0.058***	0.078***
Age 55–64 years			0.072***	0.077***
Age 35–44 years * 09–11			0.026	0.019
Age 45–54 years *09–11			0.032**	0.023**
Children < 18 years in household			0.0391***	0.024***
Children * 09–11			0.0116	0.023**
Housing tenure (ref=owned outright)				
Mortgage			0.028***	0.027***
Private rented			0.091***	0.043***
Local authority rental			0.219***	0.104***
Rent free			0.081**	0.013
Mortgage *09–11			0.063***	0.053***
Social welfare (ref=Soc Welfare <=25 per cent of income)				
Soc welfare >25 per cent of income				0.058***
Soc welf>25 per cent *09–11				0.038***
Deprivation score				0.902***
Constant	0.203***	0.0568***	-0.0514***	-0.057***
Observations	102535	102535	102535	102535
R-squared	.012	0.173	.269	.470
Prob > chi2	.000	.000	.000	.000

*** p<0.01, ** p<0.05, * p<0.1

Note non-significant interactions with year were removed from the model for parsimony.

Source: SILC microdata, weighted. Robust standard errors controlling for clustering by household.

Model 3 adds life-course related variables, including age of head of household (HRP) and presence of children. Housing tenure is also related to period in the life-course, with a higher proportion of older households falling into the ‘owned outright’ category and a higher percentage of younger households in the private-rented

sector. Therefore housing tenure is added alongside age and presence of children.¹⁹ The major contrast in the first period was between those in households where the HRP was over 65 years and all others, with the difference ranging from 0.058 for those aged 45–54 years, to 0.072 for those aged 55–64 years. Over time, stress levels for those aged 45–54 years increased significantly with coefficients of 0.032. We further explore the interactions between age and other explanatory variables in age disaggregated models below.

Another element of the life-course hypothesis is tested when we add a variable representing whether or not there are children in the household. Controlling for all other factors, those in households with children reported significantly higher levels of economic stress (adding 0.039 to the stress score). There is no additional period effect of having children in Model 3; however, in Model 4, when deprivation and social welfare are controlled, those with children are shown to experience a higher rise in economic stress in 2009–11. This suggests that there is an interaction between deprivation, welfare receipt, and the presence of children. The introduction of life-course variables accounts for the changing impact of economic stress for those in agricultural self-employment between periods. Life-course related factors (and their interactions with period effects) therefore have a significant bearing on economic stress, accounting for an additional 9.6 per cent of variance in stress scores when included in the model.

Consistent with the arguments outlined above in relation to housing debt and mortgage arrears, housing tenure is found to exert an independent influence on economic stress, even when we control for income, class and other factors. Local authority tenants report the highest level of stress, with a coefficient of 0.219; however, they experienced no increase in economic stress over the period.²⁰ In 2004–08, mortgage holders reported scores that were only 0.028 higher than those for outright home owners. However, they reported the steepest rise in economic

¹⁹ Earlier analysis, not shown, found that the pattern of age by period effects was altered depending on whether housing tenure was included. Without housing tenure the situation of those aged 35–44 years deteriorated to a greater extent, but this was accounted for by a greater concentration in the 'mortgage holder' category.

²⁰ Housing tenure and housing tenure by year interaction explains an additional nine per cent of variation when added to the model. Without any other variables it can account for 17 per cent of variance.

stress over the period examined. They experienced an increase in their stress score of 0.063 in 2009-11.

In Model 4, we seek to take material circumstances into account. The basic deprivation indicator is particularly important. However, on the basis of further exploratory analysis, we also compare those drawing less than 25 per cent of their income from social welfare and those drawing more than 25 per cent; and the changing impact of this difference over time. In the first period those drawing more than 25 per cent of their income from welfare sources had stress scores that were 0.058 higher. In the second period, this had increased to 0.096 (0.058 + 0.038). Adding the social welfare and basic deprivation variables explains a further 20.1 per cent of the variance, with the latter playing the major explanatory role, giving a total R square value of 0.470.

In the first period (2004 to 2008), adding these material circumstances variables reduce the income poor and precarious class effects by approximately half but has more modest effects for the differences between the middle classes and the affluent class. Their introduction also accounts for the increased effects for the income poor and precarious classes over time. We are left with significantly reduced net income class effects that are uniform across the period. However, taking these factors into account plays no role in accounting for the increased impact of those in non-agricultural self-employment. Clearly the impact on this group is associated with recessionary consequences that go beyond basic deprivation.

4.2 The interaction of income class and life-course effects

The analysis reported above provides an account of overall trends in the population as a whole. However, further analysis revealed a significant pattern of interaction between income class and age group. In other words, class effects cannot be understood independently of life-course stage and vice versa. In order to present and facilitate this somewhat complex pattern of interactions, Table 9 sets out separate equations for three HRP age groups – those under 35 years, those aged 35 to 64 years and those aged 65 years and over – for the impact of income class in both periods. In each case we first present the gross effects of income class and the

changes between periods and then report the net effects when social class and the range of controls included in our earlier analysis are introduced.

The first equation relating to HRPs under 35 years shows that the impact of being in the income poor class and the precarious class actually declined over time with respective coefficients of -0.099 and -0.055, although only the former coefficient is statistically significant. In other words, the gap in stress levels between these classes and the affluent class narrowed over time. Since there was no evidence of significant change over time for the middle classes, the two lowest income classes also improved their positions in comparison with these classes.

At this stage of the life-course, once we have controlled for income class effects, social class effects (with the exception of agricultural self-employment) are not statistically significant. This is likely to reflect the fact that many of the benefits of higher social classes only emerge over time as factors such as incremental salary scales, promotions and other forms of career advancement come into play, while advantages such as lower unemployment risks will already be captured by income classes.

It appears that welfare, taxation and labour market effects over the period eroded the advantage of the middle and affluent classes in this early life-course group, while the lower income classes including a significant number of lone parents, and which had exceptionally high levels of economic stress in the boom period, found their relative disadvantage in stress reduced in the recession period (2009-11).

It is notable that it is at this early stage of the life-course that having children has the greatest effect on economic stress. Introducing social class and the control variables produces a modest reduction in the interaction coefficients between income and period, to -0.077 for the income poor and -0.041 for the precarious group, with the former remaining significant. It is notable that the coefficient for the interaction of non-agricultural self-employment with period is effectively zero for this age group.

A different situation is observed for the middle life-course group (aged 35-64). There is a significant increase over time regarding the impact on stress levels for those in

the precarious class and the lower middle class, with respective coefficients of 0.059 and 0.064. Here, the pattern of coefficients is consistent with a ‘precarious class and lower middle class squeeze’ effect. Introducing social class and in particular basic deprivation and social welfare dependence reduces these interaction effects to close to zero (0.013 and 0.017, respectively). In contrast with the situation for the youngest age group, the coefficient for the interaction of those in non-agricultural self-employment (small employers and petite bourgeoisie) and time period of 0.066 is highly significant.

Table 9: OLS regression of economic stress by HRP age

Variables	Under 35 years		35–64 years		65 years +	
	(i)	(ii)	(i)	(ii)	(i)	(ii)
2009–11	0.071***	0.018	0.039***	-0.034***	-0.019	-0.021
<i>Economic class (ref=affluent)</i>						
Income poor (<60 per cent)	0.407***	0.109***	0.317***	0.115***	0.126***	0.068***
Precarious class	0.343***	0.091***	0.267***	0.112***	0.106***	0.053***
Lower middle class	0.209***	0.082***	0.118***	0.064***	0.059***	0.031***
Upper middle class	0.044**	0.021	0.051***	0.037***	0.011	-0.001
Income poor (<60 per cent)*2009–11	-0.099*	-0.077*	0.029	0.005	-0.008	-0.003
Precarious class*2009–11	-0.055	-0.041	0.059**	0.013	0.027	0.014
Lower middle class*2009–11	0.013	-0.015	0.064***	0.017	0.046**	0.024*
Upper middle class*2009–11	0.018	-0.035	0.016	0.008	0.041**	0.031*
<i>Social class (ref=high salariat)</i>						
Lower salariat		0.015		-0.004		0.007
Self-employed in agriculture		0.032*		0.014		0.011
Self-employed non-agriculture (Small employer/petite bourgeoisie)		0.022		0.023		0.034*
Inter and lwr supervisory/technical		-0.010		0.009		0.025***
Lower services/sales/tech		0.028		0.017*		0.029***

Semi unskilled manual/never work	0.000			0.019**		0.042***
Self-employed in agriculture*2009–11	-0.016			-0.015		-0.010
Self-emp*2009–11	0.001			0.066***		-0.013
Children < 18 in hh	0.040***			0.017***		0.034
Children * 2009–11	0.007			0.033***		-0.015
Housing tenure (ref=owned outright)						
Mortgage	0.021			0.032***		0.097***
Private rented	0.043**			0.058***		0.003
Local authority rental	0.125***			0.110***		0.034**
Rent free	-0.016			0.049		-0.022
Mortgage *09-11	0.063**			0.056***		-0.060
Social welfare (ref=Soc Welfare <=25 per cent of income)						
Soc welfare >25 per cent of income	0.076***			0.053***		-0.010
Soc welf>25 per cent * 09-11	0.039			0.039***		0.017
Deprivation score	0.912***			0.897***		0.789***
Constant	0.079***	0.020	0.068***	0.024***	0.058***	0.039***
Observations	11304	11304	67682	67682	23549	23549
R-squared	0.192	0.484	0.197	0.470	0.054	0.284

*** p<0.01, ** p<0.05, * p<0.1

Source: EU SILC microdata, weighted. Robust standard errors controlling for clustering by household.

Model (i) is the gross effects of income class and period.

Model (ii) is the net effects of income class and period, controlling for social class and other factors included in the above analyses.

Finally, for those aged 65 years and over, we observe increases over time for the lower and upper middle classes, with respective coefficients of 0.046 and 0.041, producing a ‘middle class squeeze’ profile. This occurs in a context where income class effects account for a smaller proportion of variance for this age group compared to the younger ones: 5.4 per cent compared to just less than 20 per cent. This is in line with the decreased role of market incomes at this stage of the life-course. As with the younger age group, the coefficient for interaction between those in non-agricultural self-employment and the time period is close to zero. The ‘crisis’ of the small employers and petite bourgeoisie is entirely a mid-life-course phenomenon.

In order to provide a detailed account of the impact of such effects, Figure 9 documents the predicted effects from the models relating to gross income class effects outlined in Table 9. For the youngest life-cycle group, the income poor class stress levels actually declined by 0.027. For the precarious class, a modest increase of 0.020 was observed. The increases for the remaining classes were substantially higher, ranging from 0.079 to 0.092. As a consequence, we observe a systematic narrowing of difference between the two lowest income classes and the middle and affluent classes. It is important to remember that the stress levels for these younger, low income age groups are, at both points in time, at the upper end of the continuum; but no significant deterioration in their situation is observed over time.

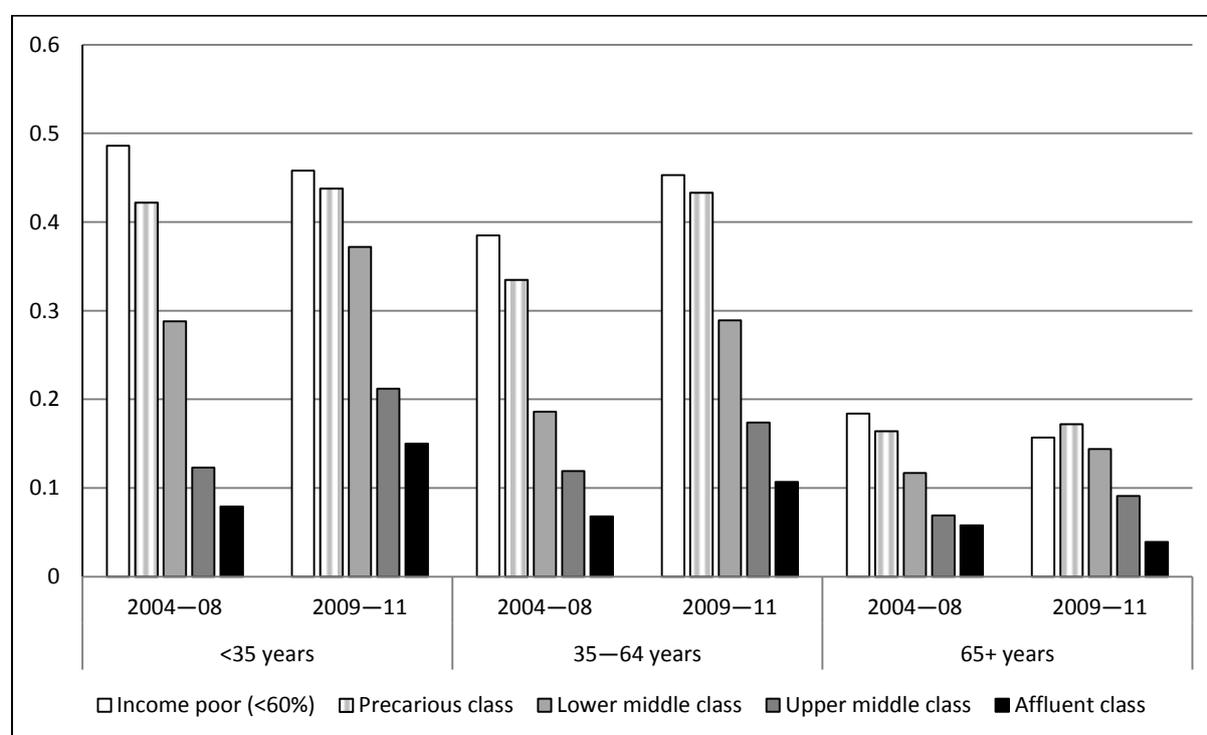
Regarding the middle life-course group (35 to 64 years), it is clear that economic stress increases for all income categories. The income poor category reports an increase of 0.068, which resulted in the stress levels for the middle age group in this income category reaching the same levels as the income poor in the youngest age group in the second period (0.453 vs. 0.459). However, the sharpest increases, of 0.098 and 0.102, are observed for the precarious and lower middle classes respectively. For the upper middle and affluent classes, the respective increases are 0.055 and 0.039. As a consequence of these changes, the gap between the income poor and precarious classes evident in the early period disappears, while that between the income poor and the lower middle is somewhat reduced. In contrast, the advantage, in terms of lower economic stress, enjoyed by the upper middle and affluent class increases.

Stress scores are lower for the older life-course group (aged 65 and over), at both periods and for all income class categories. However, the pattern of change over time differs from the other life-course groups. For the income poor and affluent classes, stress levels actually decline over time. For the precarious class there is a modest increase and the sharpest increases of 0.028 and 0.022 are for the lower and upper middle classes respectively.

Over time, differences between the life-course groups increased significantly in the affluent and upper middle classes, and were reduced in the income poor class. For

the lower middle class, variation across time was modest. Finally, for the precarious class the gap between the youngest and middle life-course groups was eliminated. Both income class and life-course position contribute to economic stress; the range of scores goes from 0.039 for the affluent older group (in 2009–11) to 0.486 for the youngest income poor group (in 2004–08). This is a differential of 12.5:1. However, the manner in which they combine is far from straightforward. Clearly, significant further exploration of the processes within life-course groups is required to provide an adequate account of the underlying mechanisms.

Figure 9: Predicted economic stress scores by income class, age group and time period



Note: These estimates are derived from the simple models (i) in Table 8 above that contain only period, income class and period by income class interactions.

5. Discussion and conclusions

The economic crisis has had a detrimental effect on the livelihoods of many Irish households. Unemployment soared, average household income fell significantly and the numbers of households in consistent poverty rose substantially. Yet while rising unemployment and poverty figures are a visible sign of the recession's impact, it is likely that the effects of such extensive declines in Gross Domestic Product (GDP) and severe cuts in public expenditure have spread considerably further than those who have directly experienced job losses or who fell into the seven per cent of the consistently poor in 2011. Increases in taxation, declining wages and working hours, and reductions to state transfers (both universal and means-tested), have impacted across the social and income distribution, while mortgage arrears have spiralled among groups who were previously well protected from financial difficulties. The scale of these effects has led to questions as to whether vulnerability has become more weakly linked with individuals' social class (Whelan and Maître, forthcoming), whether the distribution of the costs of the recession via public policy has been regressive or progressive (Callan et al., 2013b) and whether the burden of recession has been disproportionately borne by specific social groups – 'the squeezed middle', 'hard-pressed families' or the 'vulnerable'.

Purely income-based poverty measures have failed to pick up on the rising hardship because the general decline in income levels led to the poverty threshold falling in value. One way of addressing this deficit is to include measures of basic deprivation as is the case with the consistent poverty measure. Here we have employed a range of indicators to create an index of economic stress. The measure is potentially more subjective than income or indeed than the basic deprivation measure because it includes (the respondent's) judgements regarding how difficult they find making ends meet, or the scale of the burden involved in meeting their financial commitments. The scale also includes more objective items such as whether or not the household is in arrears on utility bills, housing or other repayments. Insofar as subjective dimensions are included in the measure, it is open to the influence of comparative reference groups and adaptation. Two households with the same income and needs may perceive their situation differently, because their comparison with previous circumstances varies or because they compare their situation to different reference

groups. The adaptation theory suggests that over time individuals or households adjust their expectations to their situation. However, our analysis suggests that changes in stress levels between the boom and bust period for income class groups, which has been our major focus in this paper, are largely accounted for by changes in objective circumstances and the changing impact of such circumstances.

On each of the five items considered, there was a strong upward trend in economic difficulty. By 2011 even the least commonly experienced difficulty (going into debt for ordinary living expenses) was recorded by 17 per cent of the population (up from nine per cent in 2004). The most frequently recorded problem (inability to save) was experienced by 65 per cent of individuals by 2011 (up from 56 per cent in 2004).

It is clear from our analysis that the experience of economic stress has become more widespread over the period and has affected a wider range of households than before the crisis. Levels of economic stress rose across all income class groups from income poor (<60 per cent median) to affluent (over 167 per cent median income). Indeed it was the precarious income group (75–124 per cent of median), the upper middle group (125–166 per cent of median) and the affluent group that recorded the highest proportional increase in economic stress over the period. The models that examine the absolute (as opposed to proportionate) size of the increase show that over the population as a whole it was not the affluent or the income poor groups that saw the greatest increase; rather, two of the middle income groups (precarious class and lower middle class) experienced the greatest rise in stress.

The affluent income class group remained relatively insulated from stress. The stress levels of the precarious income and lower middle class have not reached the high levels of the income poor group; however, the gap did narrow and these groups also experienced a deterioration of their situation relative to the affluent class. So there is clear evidence of a squeeze for the precarious and lower middle income class groups. When social class is added to the analysis, in the first period the contrast persists between the professional and managerial class and the non-agricultural self-employed on the one hand, and self-employed in agriculture and the working classes on the other. Taking income class into account, change over time is concentrated in the self-employed social classes but takes quite different forms for the agricultural

and non-agricultural sectors. The self-employed in agriculture were relatively insulated from the recession and saw their stress levels decline. The small employers and petite-bourgeoisie, on the other hand, were exposed to particularly severe consequences of the recession in the construction, retail and other sectors and reported significantly increased stress levels. Taken together with the income class effects, this provides some additional support for the notion of middle-class squeeze.²¹

Adding life-course type variables to the analysis reveals a range of additional impacts on economic stress that are consistent with our expectations. However, with the exception of accounting for the improvement in the relative position of the self-employed in agriculture, they play a small role in explaining the effects of income class and social class and the changes over time in such effects. Mortgage holders have seen a substantially higher increase in economic stress than those in other forms of housing tenure, which narrows but does not reverse the advantage this group had prior to the recession. In terms of age it appears that those in the middle stage of the life-course fared worse in terms of economic stress over the period.

Adding material circumstances variables to the analysis, the contrast between those with low social welfare dependence and all others and the changing impact of such dependency allows us to account for income class changes over time for the precarious and lower middle income classes. However, it does not allow us to account for the corresponding increases in level of stress for the small employers and petite-bourgeoisie.

Up to now, this discussion has related to the population as a whole. However, further analysis revealed that class effects are, to a significant extent, dependent on the life-course stage of the Household Reference Person (HRP). Before summarising the nature of the interactions between income class, social class and life-course it is worthwhile summarising life-course differences across classes. The raw figures

²¹ A somewhat different perspective is provided by Muhlau (forthcoming) using ESS data for individuals and a single item dichotomised variable. The question asks respondents how they are coping on their current income, using a four point response scale that was dichotomised, so that those finding it difficult or very difficult were contrasted with all others. However, our interpretation of Muhlau's findings is that they are broadly in line with the results reported in this paper.

showed that there was little absolute or proportional change in the stress scores of those aged 65 years and over between the boom period and the recession period. The proportionate increase in stress scores was greater for those aged 35 to 64 years compared to those aged under 35 years. Controlling for income, social class, children and housing tenure, the period increase in stress was greatest for those aged 35 to 54 years. The period effects for this mid-life-course group were even greater when housing tenure was excluded from the model, suggesting that mortgage debt plays a role for this group.

Where the HRP is aged 35 to 64 years, the pattern of results described for the general population above largely hold. In the first period, income class effects are stronger for this group than they are for those at the later stage of the life-course. But they are weaker than they are for those at the earlier stage. However, over time the effects for the precarious and lower middle income classes increase, as does the impact for those in non-agriculture self-employment (small employers and petite-bourgeoisie). As with the population as a whole, the income class effects can be explained by taking into account basic deprivation and social welfare dependency although these variables do not explain the effect for non-agricultural self-employment.

The situation for the younger life-course group is quite different. For both the income poor and the precarious class, but particularly the former, increases in stress levels were less sharp than for the other income classes. In the case of the income poor, an absolute although modest decline was observed. No change in the situation of the small employers and petite-bourgeoisie was observed. Controlling for other factors reduced but did not entirely eliminate the income class effects.

Finally, for the later life-course group, class effects were generally weaker. For this group, change over time was concentrated in increased levels of economic stress for the lower and middle class groups, although once again no change was observed in the situation of the small employers and petite-bourgeoisie. The pattern of results for the older life-course group provides the most clear cut example of a 'middle class squeeze', though the period effects are smallest for this age category.

It is clear from our findings that economic stress was strongly influenced by social stratification factors such as income class and social class for both of the time periods we have considered. Such effects can be accounted for, to a substantial extent, by factors such as basic deprivation and welfare dependency. However, it is also clear that the pattern of change over time is not one of risk polarisation. Instead, in the middle of the life-cycle the squeeze encompasses the precarious class and the lower middle class; both of these groups experience a deterioration of their situation relative to classes both above and below them. The deteriorating situation of the small employers and petite-bourgeoisie for this stage of the life-course contributes to this picture. The changing pattern of income class effects can be accounted for by the changing pattern of basic deprivation and the pattern and changing impact of welfare dependency.

At the early stage of the life-course, rather than polarisation we observe a relative improvement in the situation of the lower classes. For the later stage of the life-course, we observe a pattern of middle-class squeeze, though the extent of change over time for the older age group is modest. At the early and later stages of the life-cycle, factors captured in EU-SILC data are less successful in accounting for class effects. Longitudinal data would enable the identification of specific factors involved for groups.

Our analysis has provided clear evidence of the substantial impact of both class and life-course effects or, as they have been described as in the social investment literature, 'old' and 'new' risks. However, rather than 'old' class-related risks being displaced by 'new' life-course risks, following Pintelon et al. (2013) and Whelan and Maître (2008) we find a complex pattern of interaction in which income and class effects are conditional on phase of the life-course and life-course effects are dependent on class position. Understanding the changing role of class and life-course factors is greatly facilitated by moving beyond a focus on income in order to develop a multi-dimensional perspective that encompasses basic deprivation and economic stress.

The findings we have presented are consistent with the conclusion by Whelan and Maître (2013) that changing economic vulnerability, in relation to multi-dimensional

risk profiles for income poverty, basic deprivation and economic stress, was consistent with the middle-class squeeze thesis, as viewed in social class terms. They noted that implications of these changing patterns of relative risk would depend on the manner in which they are experienced. They suggested that 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 findings we have presented seem consistent with that view.

Since 2011 there have been significant further cuts in public sector pay and tax changes, such as the introduction of a property tax and additional cuts in public sector pay introduced in 2013 (see Callan et al., 2013a and 2013b). These are not captured in the current analysis and may affect subsequent patterns of economic stress. The substantial changes that have occurred since 2011 underline the importance of timely data on households' incomes and living conditions and the need to devote resources to minimising the time lag for the release of this crucial data. The analyses also stops well before the labour market recovery noted in 2013 (CSO, 2014). It is likely that in an upturn, middle-class groups will benefit disproportionately from increased employment and a rise in property values. Nevertheless, dealing with the potential political pressures arising from the unprecedented levels of economic stress for middle income class groups and the self-employed social classes, while sustaining the social welfare arrangements that have in significant part protected the economically vulnerable, presents formidable challenges in terms of maintaining social cohesion and political legitimacy.

The economic stress measure picks up an additional aspect of the experience of recession that is not captured by purely income-based measures of recession. The measure that we have tested here is a robust multi-item measure, which is more reliable and stable than a single item measure of stress. The economic stress measure produces patterns of distribution across social, demographic and economic grounds that are consistent with our expectations. It produces patterns of change over time that are explicable in terms of the life-course and social stratification processes that we have outlined in the paper. The measure of economic stress is strongly associated with deprivation, though it has a greater subjective dimension, but even controlling for deprivation it picks up changes in underlying conditions that

reflect differences in life-course position, exposure to housing debt and particular economic stress factors associated with running a business in the recession period. Further tracking of economic stress measures would be useful for making sense of individual responses to recession and recovery, including political, health and behavioural responses. However this would require longitudinal data, which are not currently available. Our understanding of the processes involved would benefit from extending the analysis to encompass a comparative European perspective, although data availability would almost certainly require that a more simplified analysis would be necessary.

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Appendix Tables

Table A1: Basic deprivation score by economic class and period

	2004–2008	2009–2011	Difference
Economic class			
Income poor	0.147	0.155	0.008
Precarious class	0.101	0.137	0.026
Lower middle class	0.043	0.075	0.026
Upper middle class	0.014	0.031	0.017
Affluent class	0.007	0.011	0.004
Total	0.058	0.077	0.019
Eta²	0.123	0.118	
N	70,692	33,567	

Table A2: Changes in mean annual equivalised income adjusted to 2011 prices (CPI)

	2004	2005	2006	2007	2008	2009	2010	2011	Change 2008 to 2011	Change 2004–08 to 2009–11 ¹
Bottom	6958	7078	7768	8059	8364	8431	7080	6399	-1964	-342
2	9956	10212	10693	11627	12061	12413	11381	10761	-1300	608
3	11927	12247	12700	13674	13969	14413	13444	12878	-1091	675
4	14354	14575	14917	15695	16010	16474	15354	14755	-1254	418
5	16803	17026	17331	18416	18663	19105	17802	16913	-1751	292
6	19596	19941	20039	21396	21455	21865	20573	19653	-1802	212
7	22380	22914	23038	25163	24577	25069	23517	22548	-2029	97
8	25918	26283	27112	29387	28854	29066	27356	26614	-2240	168
9	31093	31571	32925	35841	34825	34886	34354	32482	-2342	656
Top	52477	55710	58070	58933	57825	54948	56187	51393	-6432	-2427
Total	21159	21766	22472	23826	23666	23684	22710	21449	-2218	36

¹ Mean income for the period are based on the annual average levels recorded in the preceding columns
Source: Analysis of SILC micro-data 2004 to 2011.

Glossary

At-risk-of-poverty thresholds: Income thresholds derived as proportions of median income. These are based on the household income adjusted for household size and composition (referred to as equivalised income). A household at-risk-of-poverty has an adjusted (or equivalised) income below 60 per cent of the median adjusted household income. The at-risk-of-poverty rate takes account of household income from all sources, number of adults and number of children in the household. There are some minor differences in the income concept and the equivalence scale between the Irish and EU measures of at-risk-of-poverty.

At-risk-of-poverty: A term used at EU level to denote whether a household's income falls below the 60 per cent of median income threshold.

Basic deprivation: People who are denied – through lack of income – at least 2 items or activities on this index / list of 11 are regarded as experiencing relative deprivation. This is **enforced deprivation** as distinct from the personal choice not to have the items. 11 basic items are used to construct the deprivation index:

- unable to afford two pairs of strong shoes
- unable to afford a warm waterproof overcoat
- unable to afford new (not second-hand) clothes
- unable to afford a meal with meat, chicken or fish (vegetarian equivalent) every second day
- unable to afford a roast joint or its equivalent once a week
- without heating at some stage in the last year through lack of money
- unable to afford to keep the home adequately warm
- unable to afford to buy presents for family or friends at least once a year
- unable to afford to replace any worn out furniture
- unable to afford to have family or friends for a drink or meal once a month
- unable to afford a morning, afternoon or evening out in the last fortnight for entertainment.

The indicator of basic deprivation was developed by the Economic and Social Research Institute using data from the CSO Survey on Income and Living Conditions. See Maître B, Nolan B and Whelan C (2006) *Reconfiguring the Measurement Of Deprivation And Consistent Poverty in Ireland*, Dublin: ESRI, for further information on the indicator. This is the measure of deprivation used in the *NAPinclusion*.

Consistent poverty: Measures individuals who are both at-risk-of-poverty and experiencing basic deprivation.

Cronbach's Alpha: A measure of reliability (i.e. internal consistency). It informs us how closely related a set of items are as a group.

Decile: One-tenth of a sample divided into ten equal parts to show how income, for example, is spread throughout the population; each decile represents where a person's or household's income is

located, ranging from the bottom decile (lowest tenth or 10 per cent) to the top decile (highest tenth or 10 per cent).

Disposable income: Tax and social insurance contributions are summed to household level and subtracted from the gross household income to calculate the *total disposable household income*.

Equivalence scales: A set of relativities between the needs of households of differing size and composition, used to adjust household income to take into account the greater needs of larger households. In Ireland the national scale attributes a weight of 1 to the first adult (aged 14+) and 0.66 to each subsequent adult and a weight of 0.33 to each child. International comparisons such as the one done by Eurostat uses the Modified OECD scale which attributes a weight of 1 to the first adult (aged 14+) and 0.5 to each subsequent adult and a weight of 0.3 to each child.

Equivalised income: This refers to household income from all sources adjusted for differences in household size and composition (number of adults and children). It is calculated by dividing total disposable (i.e. after tax) household income by the equivalence scale value. It can be interpreted as income per adult-equivalent.

European Socio-economic Classification (ESeC): This is a social class classification system designed to be used across the EU for comparative research (Rose and Harrison 2007, 2010). The ESeC is an occupationally-based classification (based on present or previous occupation) but has rules to provide coverage of the whole adult population. The information required to create ESeC is:

- occupation coded to the minor groups (i.e. 3-digit groups) of EU variant of the International Standard Classification of Occupations 1988 (ISCO88 (COM))
- details of employment status, i.e. whether an employer, self-employed or employee
- number of employees at the workplace
- whether a worker is a supervisor
- economic sector (agriculture or other industries).

EU-SILC: European Union Statistics on Income and Living Conditions; this is a voluntary household survey carried out annually in a number of EU member states allowing comparable statistics on income and living conditions to be compiled. In Ireland, the Central Statistics Office (CSO) have been conducting the survey since 2003 (see SILC, below). Any data as compiled by Eurostat and any reference to the questions or questionnaire in the household survey is here referred to as 'EU-SILC'.

Gini coefficient: This measures the statistical dispersion of the income distribution of individuals or households within a country. It is a measure of income inequality where a value of 0 represents perfect equality, while a value of 1 represents total inequality.

Gross Domestic Product (GDP): This measures the total output (finished goods and services) of the economy within the border of a country in a specific time period.

Household: A household is usually defined for statistical purposes as either a person living alone or a group of people (not necessarily related) living at the same address with common housekeeping arrangements – that is, sharing at least one meal a day or sharing a living room or sitting room.

Household equivalent (or equivalised) income: Household income adjusted to take account of differences in household size and composition by means of equivalence scales.

Lone parent: A parent who has primary custody of a dependent child and is not living with the other parent.

Lower middle class: Those whose income is in the range of 60 to 75 per cent of the median and who are neither poor nor middle class.

Material deprivation: Non-monetary measures of ownership of consumer goods and living standards.

Mean: The average value (for example, the average income in a sample obtained via household survey).

Median: The value that divides a sample in half (e.g. the income level above and below which half the people in a sample fall).

Median income: This is calculated by ranking the population by equivalised income from smallest to largest and the median or middle value is extracted. This is considered a more appropriate measure than mean income which can be skewed by extreme values.

'New' social risks: These are more associated with younger stages of the life cycle and are mainly to do with entering the labour market and with care responsibilities at the stage of family building.

Ordinary least squares (OLS) regression: A generalised linear modelling technique that describes the relationship between a continuous outcome and one or several explanatory variables.

'Old' social risks: These tend to involve mainly horizontal distribution across the life cycle from working age groups and older people.

Petite-bourgeoisie: The 'petite-bourgeoisie' is a French term used in sociology to classify the lower section of the middle class that has less wealth and social status than the upper middle class. It includes categories such as shopkeepers and lower clerical staff. This term is a social class classification while 'lower middle class' is used as an income class classification.

Quintile: One-fifth of a sample divided into five equal parts to show how income, for example, is spread throughout the population; each quintile represents where a person's or household's income is located, ranging from the bottom quintile (lowest fifth or 20 per cent) to the top quintile (highest fifth or 20 per cent).

Reliability: The extent to which a set of items is measuring a single underlying construct. For example, the extent to which the 11 items in the basic deprivation scale are all capturing basic deprivation. It is usually measured by Cronbach's alpha.

SILC: The Survey on Income and Living Conditions (SILC) is the Irish component of an EU-wide exercise to gather data on income and living conditions. The Central Statistics Office (CSO) is responsible for carrying out the survey in Ireland. SILC is a voluntary household survey carried out annually and allowing comparable statistics on income and living conditions to be compiled across the EU. The CSO produces data and analysis in accordance with Irish national poverty targets, indicators and related issues.

Social transfers: These are cash and near cash (e.g. free television licence) receipts other than those related to market income (income from employment, self-employment, interest, dividends and property). Social transfers include unemployment payments, old age and survivor's benefits, illness/disability payments, children/family related allowances, housing allowances and other social welfare payments. Social transfers also include occupational pensions.