Crisis, Response and Distributional Impact:

The Case of Ireland

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1. Introduction

Ireland is one of the countries most severely affected by the Great Recession. National income fell by more than 10 per cent between 2007 and 2012, as a result of the bursting of a remarkable property bubble, an exceptionally severe banking crisis, and deep fiscal adjustment. The crisis culminated in a bail-out being required from the EU and IMF as the state's borrowing costs on the financial markets became unsustainable. Ireland's response to the crisis, as part of an Economic Adjustment Programme agreed at the time of the bail-out, is of particular interest, being widely seen as a "test case" for what is often described as the austerity approach. This paper focuses on the income distribution consequences of the crisis and of the state's response, rather than on its merits or otherwise as a macroeconomic strategy: these consequences will be an important consideration in any overall assessment, and of relevance to other countries undergoing stagnation and fiscal 'correction'. For this purpose it makes use of the latest available microdata, notably the 2011 round of the Survey on Income and Living Conditions (SILC))[1].

The macroeconomic and labour market context in which income inequality trends have occurred, and central features of the fiscal policy response, are summarised in Section 2 . Key elements include a rise in unemployment from about 4 per cent to 14 per cent; sharp rises in taxation; reductions and restrictions on welfare payments; and progressively structured reductions in public sector pay. Section 3 sets out the basic results on income distribution over the period 2008 to 2011, during which most of the fall in average incomes occurred. Our exploration of changes in inequality over this period has three main elements examined in the succeeding sections.

In Section 4, we consider some important issues concerning data and methods, which could have a bearing on the results. These include the treatment of lump-sum payments which became more common (especially in the public sector) due to early retirement and redundancy schemes. We also discuss the issue of representativeness of the survey data on income distribution, using the income distribution statistics as reported by the Revenue authorities as an external check.

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[1]We are grateful to the Central Statistics Office for access to the SILC data.. The authors alone are responsible for the analysis and interpretation of these data.

Section 5 uses decompositions of inequality by income source and by population sub-group to identify some factors behind the observed changes, and to guide further investigation. Section 6 explores how much of the total change in inequality is due to changes in tax and transfer policy, and how much is due to changes in market incomes – including the loss of income for those becoming unemployed. Finally, Section 7 sets out key conclusions and priorities for further analysis.

2. *Macroeconomic Context*

The focus of this paper is on the impact of the Great Recession on Ireland's income distribution – both directly and via the way policy has responded. In order to understand the context in which the recessionary forces were operating, it is necessary to keep in mind the broader backdrop. Over the years 1994 to 2007, economic growth in Ireland was among the highest in the OECD. (see Figure 1 for the rise in GDP per capita). The period 1994 to 2000 saw an annual average growth rate in real GDP of over 7%. This growth was accompanied by sustained increases in the numbers in employment, rising from 1.2 million in 1994 to 2.1 million by 2007. Unemployment fell to just over 4% in 2000 and remained around this level until 2008 (Figure 1). Ireland had long been a country of net emigration, but this trend reversed as significant numbers of Irish emigrants returned and immigrants from other countries were attracted to Ireland.

Figure 1 : Unemployment Rates and GDP per Capita, 1995-2011
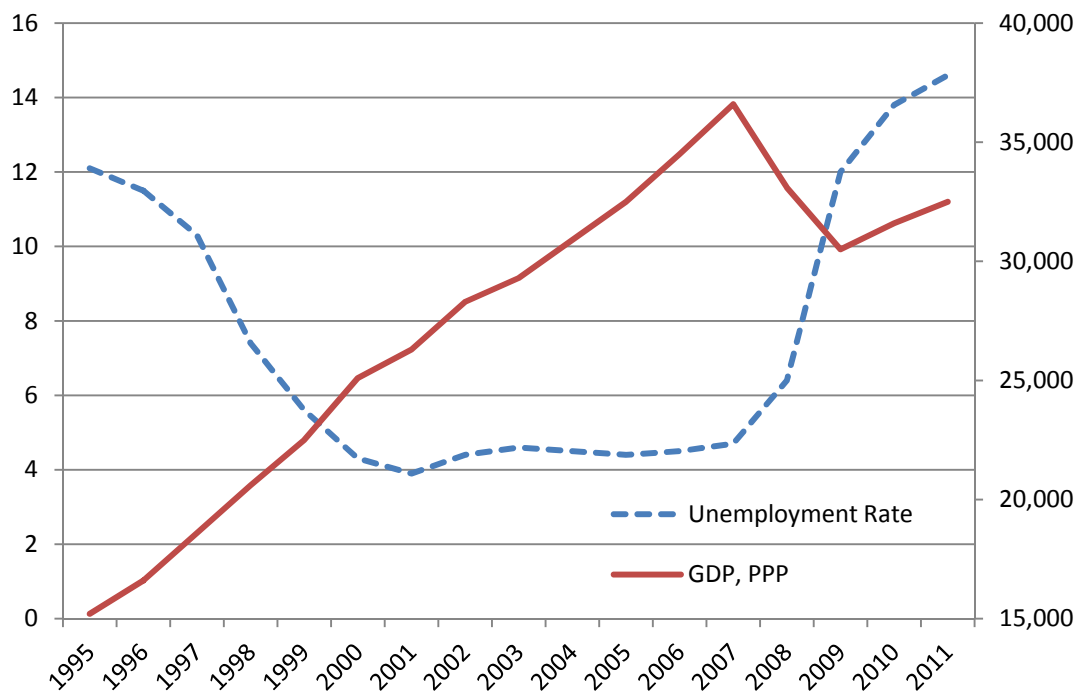
Ireland's economy entered recession in 2008, and by 2010 GDP per capita had fallen by more than 13 per cent while unemployment soared to almost 14 per cent. This scale of economic deterioration was driven by three main factors:

- The effects of worldwide recession on a small and very open economy, compounded by
- a dramatic collapse in property prices and in activity and employment in the construction sector, upon which the Irish economy had become heavily reliant, and
- a banking crisis whereby the Irish government was required to come to the aid of banks which were deeply exposed by the extent of their property-related lending.

The banking crisis resulted in the government guaranteeing both investors and bondholders and led to unsustainable yields on Irish bonds as government debt grew. These unsustainable yields led to the Irish government seeking a financial 'bailout' from the EU, the ECB and the IMF in 2010.

The nature of the recession, and in particular the severity of the downturn for the construction industry, has contributed to a sharp differential in the evolution of the male and female

unemployment rates. Figure 2 shows that the unemployment rates for men and women were similar, at about 4 to 5 per cent, for the years 2003 to 2007. By 2011, the male unemployment rate had risen by 13 percentage points, while the female unemployment rate had risen by about half that much.

Figure 2: Male and Female Unemployment Rates, 2003 to 2011
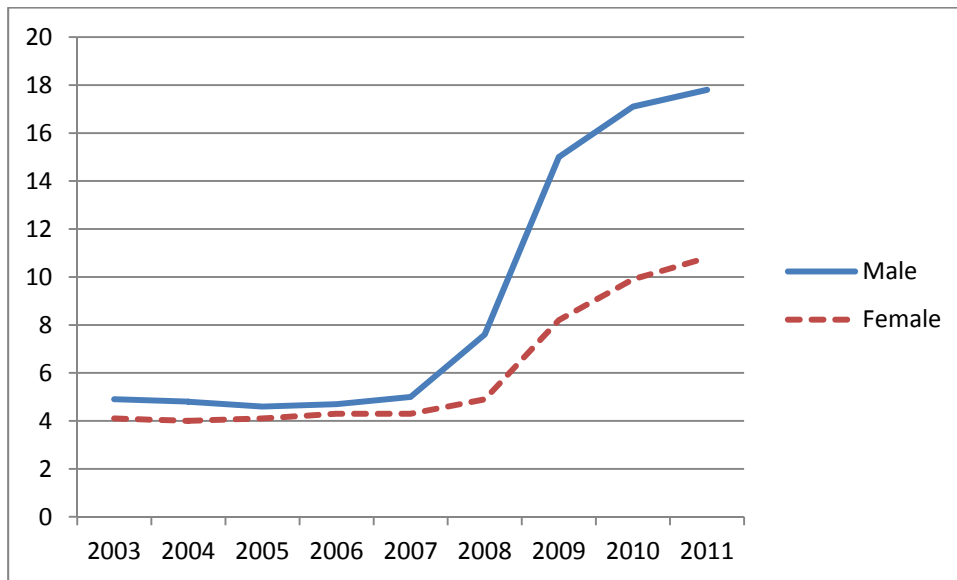
Source: EUROSTAT

What about developments in wages for those in employment? Table 1 shows that on average, there has been a small rise in hourly earnings over the 2008 to 2012 period, but there is a great deal of diversity across sectors. Sectors are ordered in the table from those with the most negative change to those with the greatest increases. There were falls of 5 to 6 per cent in public administration and defence, and in finance and insurance; but increases of 7 to 8 per cent for those in industry and in education. Wages in public sector organisations were reduced first by via a 'Pension Related Deduction' (PRD), introduced in 2009, whereby the first €15,000 of annual earnings were exempt, but a 5% levy was paid on the next €5,000 of earnings, 10% paid on earnings between €20,000 and €60,000 and 10.5% on earnings above €60,000. Later, in 2010, a straight pay cut for public sector workers was implemented, with a reduction of 5% on the first €30,000 of salary, 7.5% on the next €40,000 and 10% reduction on the next €55,000. New entrants were also to be hired on salaries 10% lower than the level payable to current staff. The evolution of average wages in the public sector has also been

affected by compositional shifts. For example, a policy of incentivized early retirement, made available to those aged over 50, may have tended to remove from the payroll more of those with above average wages and thereby depress average wages. A further complication is that the system of incremental pay scales means that the composition of the workforce as between those (typically older) at the top of their scale and those who would benefit from annual increments can affect the extent of observed increases in pay.

Table 1: Hourly Wages by Sector, 2008 to 2012

	% change, 2008-2012*
Public administration & defence	-6.2
Finance/insurance	-5.3
Electricity/water/waste	-2.6
Transport & storage	-2.0
Construction	-1.8
Accommodation/food service	-1.6
Health & social work	-1.4
Arts/entertainment/recreation	0.8
Administrative/support	1.2
Professional/scientific/technical	2.4
Wholesale & retail	3.6
Information/communication	4.5
Industry	7.3
Manufacturing	7.8
Education	8.3
Mining	12.5
Private sector	2.4
Public sector	1.7
All sectors	3.0

Note: *Average of Q1 to Q3 for both 2008 and 2012

As well as the cuts to public sector pay, the deterioration in the economy and in the government's fiscal position led to a variety of tax and benefit changes between 2008 and 2011. Looking first at the taxation side:

- indirect taxes were increased
- income tax rates were held stable but other ways of increasing the direct tax 'take' were exploited:

o An income levy, payable on gross income (excluding social welfare payments) was introduced in 2009 at an initial rate of 1% on annual income up to €100,100 and 2% on income in excess of that. These income levy rates were subsequently doubled, as was the Health Levy. Both levies were then replaced in 2011 by a "Universal Social Charge" (USC) –a new form of income tax - with exemptions for annual income below €4,004 and a progressive structure above this level with rates of 2%, 4% and 7%.

o The income ceiling above which no further social insurance contributions were payable was first raised substantially, and then abolished in 2011.

o In 2011 the standard rate band of income tax was reduced (from an annual €36,400 to €32,800) as were the main tax credits.

o A €200 per annum charge on non-principal private residences was introduced in 2009 as was a flat-rate 'household charge' or property tax of €100 in 2011 - both payable by the owner of the property. This was the precursor to a full scale value-related property tax coming into force in mid-2013

o Tax relief on pension contributions was also reduced, with the annual earnings limit for determining maximum tax-relievable contributions down to from €275,239 in 2008 to €115,000 by 2011, while employee pension contributions also became liable for PRSI and the USC.

On the social welfare side, income support rates were actually *increased* in 2009. The Budget for that year was brought forward from December to October 2008, and the full scale of the problems was not yet evident. However, the Budgets of 2010 and 2011 then reduced the rates of support provided by most social welfare schemes applicable to those of working age, and made deeper cuts in the universal Child Benefit payment. Payments to young unemployed people were reduced very substantially.. Rates of payment for old age pensions, however, have remained unchanged to date.

3. Income Inequality, 2008 to 2011

We now look at overall trends in conventional measures of income inequality in Ireland over this turbulent crisis period. We focus, as is standard, on household income adjusted for the size and composition of its members – i.e. 'equivalised' - and on data from the main household surveys capturing household incomes for large representative samples, carried out by the Central Statistics Office.[2] Table 2 shows Gini coefficients for disposable income (per adult equivalent) for the years 2005 to 2010 derived from the SILC surveys carried out each year, together with the corresponding figures from the Household Budget Surveys (conducted only every 5 years) for 2004/5 and 2009/10.

Table 2: *Gini Coefficient Equivalised Disposable Income Among Persons Ireland 2005-2010*

	SILC	*Household Budget Survey*
2005	0.324	0.317
2006	0.324	
2007	0.317	
2008	0.307	
2009	0.293	
2010	0.316	0.316
2011	0.311	

Sources: SILC: Survey on Income and Living Conditions, 2011 & revised 2010 results ISSN 2009-5937 and www.cso.ie
HBS: 2004-2005 from CSO (2007) p. 19; 2009-2010 from CSO (2012) p. 29

Notes: The equivalence scale used here, and elsewhere unless otherwise stated, is 1 for the first adult, 0.66 for other adults (aged 14 or over) and 0.33 for each child (aged under 14). This is the scale used in the official measure of poverty in Ireland, and is close to that implied by the structure of social welfare payments.

Whether taking 2007 or 2008 as the end of the bubble/start of the recession, the Gini coefficient is very similar at that point and at the latest available date, 2011 – a slight fall from the 2007 level, and a slight rise from the 2008 level. Indeed, over a longer period (1994

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[2] The equivalence scale is the one used in Ireland's official measures of poverty: 1 for the first adult, 0.66 for other adults, and 0.33 for children aged under 14. This approximates the scale used in social welfare payments.

to 2009) which includes the strong growth of the Celtic Tiger era, Nolan *et al.* (2012) show that the Gini coefficient remains in the range 0.31 to 0.32 for almost all years.. Against this backdrop, the fall in the Gini to 0.29 in 2009, the first year in which the full effects of the recession were felt, is quite striking: this is the lowest level the Gini has reached in Ireland, by some measure, over the years since 1980. Gini coefficients calculated from the Household Budget Survey remained constant between 2005 and the next time the HBS was undertaken in 2009/10, and are in line with the SILC findings.

Data on decile shares calculated from SILC and presented in Table 3 give some insights into how the observed changes in the Gini coefficient in that survey are arising. We see that the most striking changes are in the share of the top decile and bottom deciles. First we consider changes between 2008 and 2011. The shares of both top and bottom deciles fall by 0.5 per cent of income (implying, of course, a much sharper fall in average incomes of the bottom decile). Increases in shares are found for the 7th, 8th, and especially the 9th decile. Other deciles see little or no change in their share of overall income.

Against this broad stability over the full period, there were significant shifts on a year-by-year basis. The 2009 pattern confirms the reduction in inequality suggested by the sharp fall in the Gini: in fact, the 2009 distribution Lorenz-dominates the 2008 distribution. By contrast, there is an increase in inequality (again meeting the Lorenz dominance criterion) between 2009 and 2010. The Lorenz curves for 2008 and 2011 cross, however.

Table 3: *Decile shares of equivalised disposable income among persons*

Decile	2008	2009	2010	2011	Change 2011 over 2008
	%	%	%	%	% point
Bottom	3.5	3.6	3.1	3.0	-0.5
2	5.0	5.3	5.0	5.0	0.0
3	5.9	6.1	5.9	6.0	0.1
4	6.8	7.0	6.8	6.9	0.1
5	8.0	8.1	7.8	7.9	-0.1
6	9.2	9.2	9.1	9.2	0.0
7	10.2	10.6	10.3	10.5	0.3
8	12.2	12.3	12.4	12.4	0.2
9	14.7	14.8	14.8	15.2	0.5
Top	24.5	23.3	24.7	24.0	-0.5

Source: Authors' analysis of SILC data 2008-2011.

The picture of changes in the income distribution can be complemented by a brief summary of changes in measures of poverty (Figure 3 and Table 4). The percentage of individuals falling below 60% of median equivalised income (the Laeken indicator for "at risk of poverty" fell from 2005 to 2009, rising thereafter but with a net fall overall. The elderly (aged 65 plus) were the main exception to this pattern, with a substantial net fall in the risk of poverty over the full period 2005 to 2011.

Table 4 shows how average real incomes declined sharply over the recession. The EU's "anchored" poverty measures examine poverty lines which are set in the usual way (60% of median income) for a base year, and then simply increased in real time. This is of particular interest in the present context, where real incomes in 2004 and 2011 are very close to each other (within about 1%). Analysis on this basis, with a poverty line anchored in 2004 – and then almost coinciding with the standard 2011 poverty line – shows risk of poverty on this anchored basis falling more sharply, and then rising sharply, with a net fall overall.

Figure 3: *Percentage of Persons Below 60% of Median Relative Income Poverty Line, Ireland 2005-2011*
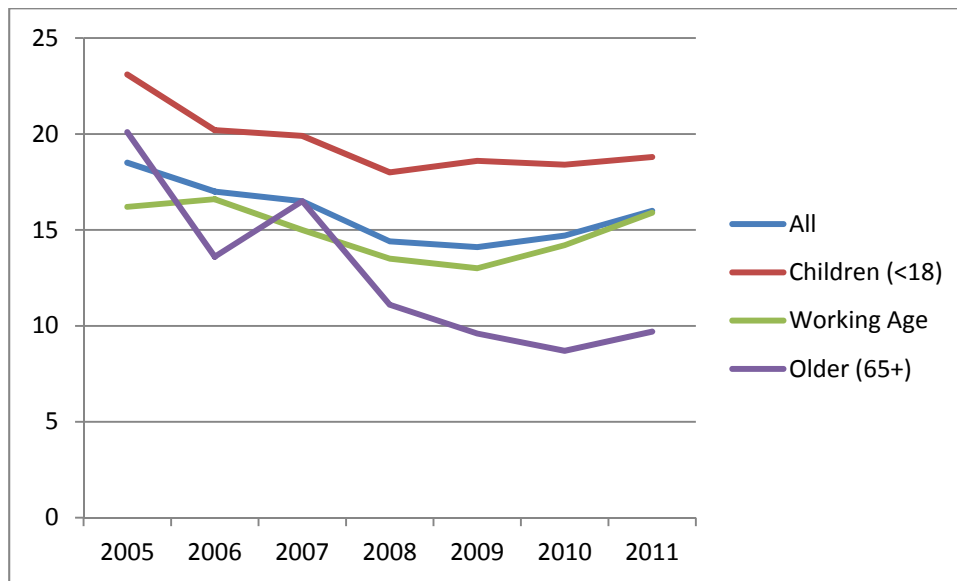
Source: CSO SILC Reports, 2005-2011.

Table 4: Measures of Income and Risk of Poverty, Ireland 2004-2011

	2004	2005	2006	2007	2008	2009	2010	2011
Income	€	€	€	€	€	€	€	€
Mean real equivalised disposable income (per individual, base 2004, CPI deflator)	18,773	19,286	19,929	21,130	20,962	20,998	20,125	19,003
	%	%	%	%	%	%	%	%
At risk of poverty rate (60% median income in each year)	19.4	18.5	17.1	16.5	14.4	14.1	14.7	16.0
At risk of poverty rate anchored at 2004 (60% of 2004 median income, in real terms)	19.4	18.0	15.7	11.5	10.4	11.0	13.2	16.1
At risk of poverty rate anchored at 2007	-	-	-	16.5	14.4	15.6	19.6	21.2
Consistent poverty rate	6.6	7.0	6.6	5.1	4.2	5.5	6.3	6.9
Deprivation rate (enforced deprivation of 2 or more items from a set of 11 basic deprivation indicators)	14.1	14.8	14.0	11.8	13.8	17.1	22.6	24.5

Source: CSO Statistical Release Feb 2013- SILC 2011 and revised 2010

4. Methodological Issues

We highlight here two methodological issues which could potentially have a significant impact on the results. The first relates to the treatment of retirement and redundancy lump sum payments; the second concerns the representativeness of the samples.

Treatment of Lump-Sum Receipts

Abramovici (2006) notes that EU-SILC variable definitions sometimes include lump-sum benefits explicitly, and sometimes not. He also states that since the beginning of SILC the treatment of lump sum has been extensively discussed, with several proposals being made "to adapt lump sum to the concept of standard of living". The Irish experience in the years 2009 and 2010 brings these issues into sharp relief. Reduction in the size of the public sector workforce was a major goal in the programme agreed with the Troika. One of the key aspects of policy towards this goal was a major programme of early retirement, under specially incentivised terms. This had the effect of bringing forward many public sector retirements, effectively telescoping them into a shorter period of time, and increasing the numbers receiving lump sum retirement payments. Sharp increases in unemployment also boosted the numbers receiving redundancy payments. Overall lump sum payments amounted to 0.8 per cent of total disposable income in 2008. This rose to 1.3 per cent of income in 2009 and peaked at 2.2 per cent of income in 2010, before returning to 1.4 per cent in 2011.

Our understanding is that, where possible, SILC results across Europe *include* lump sum payments such as retirement and redundancy as part of income. This is certainly the case for Irish results published by the Central Statistics Office. The appropriate treatment for income distribution purposes is a matter of debate. For example, the Canberra Group (2012) treats lump sum retirement payments as capital transfers, which are excluded from the definition of income. Redundancy lump sums, however, appear to be included as part of income in the Canberra Group's preferred treatment.

In the absence of a clear consensus position, and given the sharply increased importance of lump sum payments in the Irish situation, we proceed as follows. The results reported

in this paper analyse the data including lump-sum receipts, in line with the SILC approach and CSO practice.. However, at a number of points we have also analysed an income construct which excludes both retirement lump sums and redundancy lump sums. We find that inclusion of these lump sums plays a role in the increase in the Gini between 2009 and 2010, raising it by about 0.005, but has little impact over the full period.

Sample representativeness

A second methodological issue is whether changes in the degree to which the SILC surveys represent the national situation could have had an impact on the observed increase in income inequality. The construction of weights for SILC in Ireland, as in most EU countries, tends to use demographic information. While this ensures representativeness on such dimensions as age and sex, it does not guarantee that the income distribution will be well represented. Callan et al. (2012) show that in 2010, SILC tends to underrepresent the number of families with high incomes, as compared with the revenue authorities' Income Distribution Statistics. The key issue here is whether such underrepresentation has increased or decreased – if the representation of higher income households improved between 2008 and 2010, this could contribute to a measured increase in inequality, purely because of changes in the success of the sample in capturing the extent of high incomes. We have examined this issue more closely using the SWITCH tax benefit model, which constructs a distribution of gross income from SILC 2008 and 2010 on a tax-unit basis, and Revenue's *Income Distribution Statistics*. We find no evidence to suggest that SILC, with the weights constructed using demographic information, has become more representative of high income tax units.

5. Decomposing Inequality Levels and Trends

Before considering formal decomposition methods, it is useful to examine how the pattern of changes in decile shares seen above is broken down in terms of the major income components. Table 5 shows the changes in shares of total equivalised disposable income by decile, and the contributions of each of the main income sources to these changes. For most deciles, falls in income shares due to employee income and self-employment income are partly offset by increases in transfers. Higher taxes are paid by those in the upper half of the income distribution, especially those in the 9th and 10th deciles. The top decile is exceptional in that employee income contributes strongly to a sharp rise in the share of the decile in total income, offset by a reduction arising from lower self-employment income.

Table 5: *Composition of changes in decile shares of income, 2008-2011*

Decile	Change in share of total equivalised disposable income	Employee income	Self-emp't income	Other direct	Transfers	Taxes
			of which:			
Bottom	-0.5	-0.3	-0.2	-0.1	0.1	0.0
2nd	0.0	-0.3	0.0	-0.1	0.3	0.0
3rd	0.1	-0.2	-0.2	-0.1	0.6	0.1
4th	0.1	-1.3	-0.3	-0.1	1.5	0.2
5th	-0.1	-0.3	-0.5	0.0	0.8	-0.1
6th	0.0	-0.6	-0.4	-0.1	1.3	0.0
7th	0.3	0.2	-0.3	0.0	0.7	-0.4
8th	0.2	0.7	-0.7	0.0	0.9	-0.6
9th	0.5	0.4	0.8	0.0	0.5	-1.3
10th	-0.5	4.8	-2.9	-0.7	1.3	-3.0
All	0.1	3.0	-4.7	-0.9	7.9	-5.2

The pattern of the contribution of transfers warrants closer investigation. Much of the increase occurs in middle income deciles (4 to 7). The changes for lower income deciles are more limited. This may reflect the fact that the major change in transfers was the rise in unemployment compensation. Given that an annual income concept is used, such transfers will often be received by individuals with some employment income for part of the year. Households containing these individuals are less likely to be in the lowest income deciles, compared with those depending wholly on social security payments. Furthermore, there may

now be greater numbers of self-employed in the bottom decile, and they would have limited entitlements to benefits: this is a matter for further investigation.

The contribution of transfer payments to the rise in the income share of the top decile is unusual, and arises in part from the inclusion of retirement and redundancy lump sum payments, as these can boost income to levels which bring the recipients into the top decile.

We now turn to results based on the Shorrocks (1982a) decomposition of inequality by income source[3]. Table 6 shows that in 2008, the share of inequality accounted for by employee income was 63 per cent, while the share of self-employed income was 48 per cent. Tax and social insurance contributions had an equalising impact which increased over time.. In 2011, the disequalising impact of employee income was much greater – but there was a fall in the disequalising impact of self-employed income.

Table 6: *Decomposition of Income Inequality by Income Source*

	Employee income	Tax on income and social contributions	Self-Employed Income	Private Pensions	Benefits	Other Income	Total
2008	63.3	-30.7	48.2	0.5	1.0	17.7	100.0
2009	94.2	-41.0	28.1	1.5	8.6	8.6	100.0
2010	90.5	-51.3	36.0	3.0	14.6	7.2	100.0
2011	114.6	-53.3	19.6	0.6	7.4	11.0	100.0

The disequalising impact of benefits in 2010 arises from the lump-sum payments (pensions and redundancy) referred to earlier. When these are excluded, benefits had a small equalising impact – but far less so than taxes. This result contrasts strongly with the findings of what Fuest et al. (2010) term the "standard approach": an examination of how inequality indices change in moving from market income to gross income (via the addition of benefits) and then to disposable income (with the deduction of taxes and social insurance contributions).

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[3] This has been implemented in Stata by Jenkins (2009).

Table 7 shows how decile shares and summary inequality indices change through these "stages of redistribution". These results suggest that both benefits and taxes play a strong role in the reduction of inequality. Market incomes collapsed for the bottom 3 deciles, their share of market income falling from just under 3 per cent to 0.5 per cent. This was moderated by transfers, where the fall in share was about 1 percentage point. When taxes are also taken into account the share fell by 0.5 percentage points. The share of top income deciles in market incomes rose, but again this was moderated both by benefits and taxes.

Table 7: Income inequality measures for Market, Gross and Disposable Incomes, 2008 to 2011

Decile	Market 2008	Market 2011	Gross 2008	Gross 2011	Disposable 2008	Disposable 2011
Bottom	0.0	0.0	3.0	2.5	3.5	3.0
2	0.4	0.0	4.4	4.1	5.0	5.0
3	2.5	0.5	5.2	5.0	5.9	6.0
4	4.5	2.8	6.2	5.8	6.8	6.9
5	6.8	5.2	7.2	6.9	8.0	7.9
6	9.0	7.9	8.7	8.3	9.2	9.2
7	11.2	11.3	10.0	10.1	10.2	10.5
8	13.9	15.0	12.5	12.5	12.2	12.4
9	18.3	20.5	15.3	16.1	14.7	15.2
Top	33.5	36.8	27.6	28.6	24.5	24.0
Gini	0.519	0.586	0.357	0.380	0.309	0.311
Theil	0.344	0.371	0.233	0.249	0.178	0.165

The Reynolds-Smolensky indices of redistribution by taxes and benefits (Table 8) help to summarise these findings. They suggest that the impact of the transfer system is about 3 times larger than that of the tax system.

Table 8: Reynolds-Smolensky Indices of Redistribution, 2008-2011

Reynolds-Smolensky indices	2008	2009	2010	2011
Transfer system	0.16	0.19	0.20	0.21
Tax system	0.05	0.06	0.06	0.07
Taxes and transfers	0.21	0.25	0.27	0.28

Paul (2004) points to the major reason why the Shorrocks (1982a) factor source decomposition attributes a lower role for benefits in reducing inequality. One of the axioms

underlying the decomposition is that "a given income source makes no contribution to aggregate inequality if every household receives equal income from that source". Paul argues that this requirement is at odds with the idea that "if each household receives a constant positive income from a source, then the aggregate inequality declines"

Fuest et al (2010) expand on this, in the context of a strong contrast between the "standard" approach and the Shorrocks factor decomposition across all 27 EU countries. They note that within the standard approach "equally distributed transfers imply an inequality reduction. In the decomposition approach, such transfers have a zero inequality contribution because their correlation with disposable income is zero. Therefore, these two different normative foundations of the two approaches are to some extent responsible for the differing results".

Table 9: *Decomposition by Population Sub-Group - number of earners in household*

Number of Earners in Household	Population share				Mean Income (€000 per year)			
	2008	*2009*	*2010*	*2011*	*2008*	*2009*	*2010*	*2011*
0	17%	21%	25%	25%	14.4	14.3	14.0	13.5
1	29%	33%	36%	33%	22.4	21.0	19.9	19.5
2	36%	33%	31%	34%	28.0	29.5	29.2	28.3
3+	18%	13%	9%	8%	25.9	28.5	29.2	25.5

	Income share				Gini			
	2008	*2009*	*2010*	*2011*	*2008*	*2009*	*2010*	*2011*
0	11%	13%	16%	16%	0.23	0.22	0.27	0.27
1	28%	30%	32%	30%	0.34	0.27	0.29	0.28
2	43%	42%	41%	45%	0.28	0.26	0.27	0.27
3+	19%	15%	12%	10%	0.22	0.21	0.22	0.21
All households					0.31	0.29	0.32	0.31

	2008	*2009*	*2010*	*2011*
Within-Group Inequality	0.25	0.16	0.21	0.17
Between Group Inequality	0.02	0.03	0.04	0.04

Table 9 decomposes contributions to total inequality by the number of earners per household. The proportion of households with no earner rises sharply between 2008 and 2010, from 17 per cent to 25 per cent. The balance between within-group inequality and between-group

inequality also changes. Within-group inequality falls, but between group inequality (based on number of earners) rises. Mean incomes rise for households with 2 or more earners, but fall for those with no earner or one earner

## 6. The Role of Taxes, Transfers and Public Sector Pay Policies

There is strong interest in many countries in assessing the distributional impact of austerity measures. Traditional decomposition methods focus on changes between observed outcomes in a base year, with its associated tax/transfer policy, and an end-year, with its associated policy. Such approaches may, for example, identify an increase in social assistance income, but cannot say if this arises from increased generosity of benefit payments or from an automatic increase in the incidence of transfers as unemployment rises. Bargain and Callan (2010) propose a decomposition which has particular advantages in addressing such questions. The approach may be summarized as follows (see Bargain and Callan, 2010 for fuller details). The decomposition partitions the total change into a part which reflects changes in policy, and all other sources of change. A counterfactual policy designed to be distributionally neutral plays a key role: this is simply the base year policy, indexed by the growth or decline in a broad measure of income[4]. The impact of policy change is then measured by estimating inequality measures under this counterfactual "distributionally neutral" policy and under actual policy, as simulated using a tax benefit model. Where possible this is done for both base year and end year data: the average of the two can be interpreted as a Shapley value decomposition.

Work along these lines is currently under way (Bargain et al., 2013) and early results suggest that while market incomes raised inequality over the 2008-2010 period, the impact of policy tended to reduce inequality somewhat. Figure 4 gives a broader picture of the impact of policy over the 2008 to 2012 period. Here the analysis is based on 2010 data, and on a "distributionally neutral" policy which indexes 2008 policy in line with the fall of 1.8 per cent in average weekly earnings over the period. The analysis includes the main changes in income tax, social insurance contributions and the introduction of income levies as well as changes in benefit payment rates. In addition, the modeling includes the impact of reductions in public sector pay, which were progressively structured.

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[4] When data for base year and end year are available, the change in gross income provides a natural indexing factor; where income growth must be based on forward looking estimates, changes in weekly earnings are often used.

Figure 4: *Impact of Income Tax, Welfare and Public Sector Pay Policy Changes, 2008-2012 - percentage change by decile of equivalised disposable income*
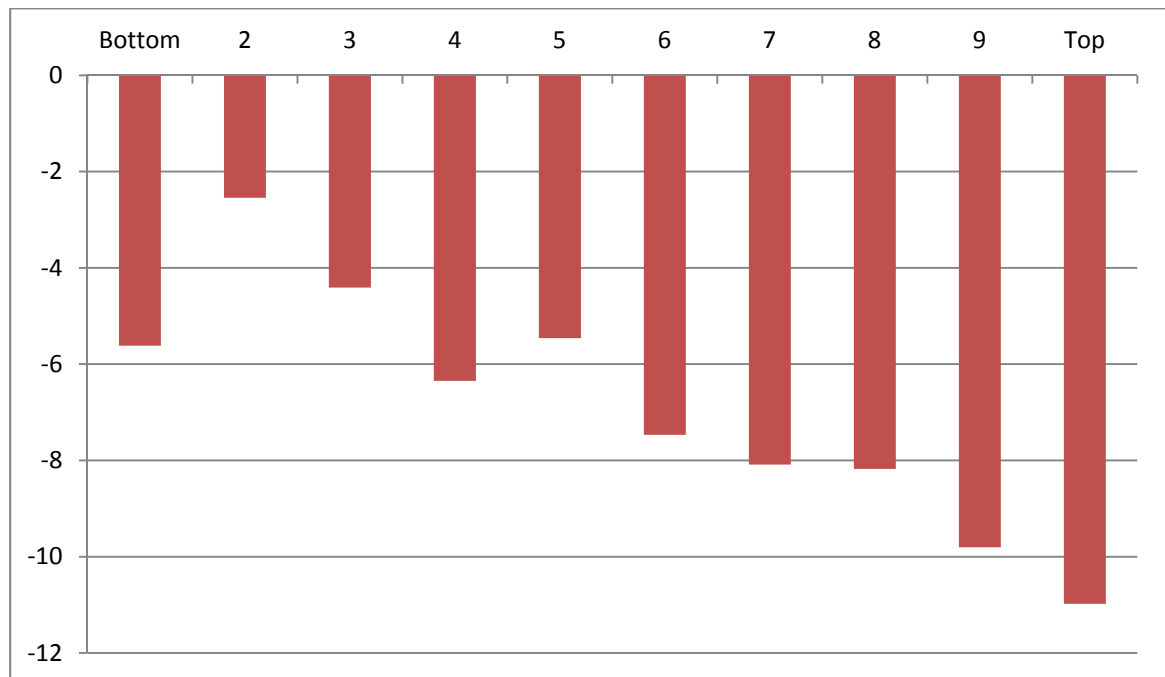
Policy changes led to falls of 10 to 11 per cent for the top two deciles and close to 8 per cent for the next 3 deciles. The pattern in the lower half of the distribution is more mixed, with losses of 5 to 6 per cent for deciles 1, 4 and 5, and smaller losses (2 to 4 per cent) for deciles 2 and 3. A key factor in this is that payment rates for pensioners were held constant, while there were explicit cuts in payment rates for those of working age, and deeper cuts in Child Benefit.

7. Conclusions

Summary measures of inequality have been broadly stable in Ireland over a long period, from the early 1990s through to the start of the current recession. There were, however, some significant shifts on a year-by-year basis in the years 2008 to 2011, during which average incomes fell sharply as Ireland experienced the full force of a major recession. The year by year pattern shows a fall in inequality in 2009, reversed in the following years. Some of this is directly attributable to the timing of policy changes, with an increase in welfare payments in 2009, while taxes and levies were sharply increased. Later years saw more emphasis on expenditure cuts, and less on income-based taxes. Over the full period 2008 to 2011 the major changes have involved losses for both bottom and top deciles, with gains focused on the rest of the upper half of the distribution.

Decomposition analyses find that employment income acted to increase inequality, while changes in self-employment income partially offset this. The large rise in unemployment was a major factor in increasing concentration of employment income, but there was also an increase in employment income in the top decile relative to others. This was partly offset by falls in self-employment income for the top decile.

What of the impact of policy changes over the period? Analysis using the Bargain-Callan decomposition suggests that the net impact of policy changes was equalizing over the 2008 to 2010 period. A broader analysis of the 2008 to 2012 period also finds that policy changes tended to reduce incomes by more at the top of the distribution than in the bottom half. The pattern of losses in the bottom half of the distribution reflected the fact that pensioner payment rates were held constant, while those for people of working age were reduced.

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