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Yours inclusively? Income mobility in Ireland, 10 years of tax record microdata

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YOURS INCLUSIVELY? INCOME MOBILITY IN IRELAND, 10 YEARS OF TAX RECORD MICRODATA

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ABSTRACT/RÉSUMÉ

Yours inclusively? Income mobility in Ireland, 10 years of tax record microdata

While policymakers are rightly concerned about evidence of rising income concentration at the top, it is often wrongly assumed that the same rich individuals stay rich. In reality, the membership of this group are in a state of constant flux. This new study, based on more than 20 million tax records over 10 years, examines the highest income earners in Ireland but also who moves up and down the income ladder over time. While income inequality has increased in most OECD countries, in Ireland it has been broadly stable for most of the income distribution. The top 10% of income earners receive 1/3 of total income and pay around 2/3 of all income tax. Unlike other OECD countries, the top 1% has not expanded its gross income share, partly due to long range downward mobility during the recession for those with the highest incomes. Moreover, more progressive taxation has also reduced the top 1 per cent's share of disposable income. This paper finds that income inequality increases with age and differs dramatically across economic sectors – the difference between the top 1% and the median is greatest in the professional, financial and health sectors. In the professional sector for example, the top 1% threshold is 12 times the median compared to 3 times in the public sector. The share of employment in these sectors has grown contributing to greater income inequality but also higher upward income mobility. Indeed, the analysis in the paper shows upward income mobility is higher for those working in finance, professional and technical occupations and among the young, those living in Dublin, and those changing jobs. Finally, there is also evidence that economic mobility has declined among median income classes over the past 10 years in Ireland – relatively fewer workers are now moving up or down the income ladder than before.

Keywords: Income distribution; inequality; growth; tax; income mobility; administrative data.
JEL codes: D31; D63; E24; H24.

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Inclusivement vôtre ? L'analyse des microdonnées fiscales révèle la dynamique et la mobilité des revenus en Irlande

Alors que les décideurs sont à juste titre préoccupés par les signes d'une concentration croissante des revenus au sommet, on suppose souvent à tort que les riches restent riches. En réalité, la composition de ce groupe est en constante évolution. Cette nouvelle étude, qui s'appuie sur plus de 20 millions de dossiers fiscaux sur 10 ans, examine les revenus les plus élevés d'Irlande, mais aussi les personnes qui montent et descendent l'échelle des revenus au fil du temps. Alors que l'inégalité des revenus a augmenté dans la plupart les pays de l'OCDE, elle a été globalement stable en Irlande pour la plus grande partie de la distribution des revenus. Les 10% les mieux rémunérés perçoivent un tiers du revenu total et paient environ deux tiers de l'impôt sur le revenu. Contrairement aux autres pays de l'OCDE, la part des revenus bruts captée par les 1% les plus riches n'a pas augmenté, en partie à cause de la forte mobilité à la baisse qui a eu lieu pendant la récession pour les plus riches. De plus, une imposition plus progressive a également réduit la part du revenu disponible des 1% les plus riches. Cette étude documente que l'inégalité des revenus augmente avec l'âge et varie considérablement d'un secteur économique à l'autre - la différence entre le centile supérieur et la médiane est la plus grande dans les professions libérales, le secteur financier et celui de la santé. Pour les professions libérales, par exemple, le seuil du premier centile correspond à 12 fois la médiane, contre 3 fois dans le secteur public. La part de l'emploi dans ces secteurs a augmenté, contribuant à une plus grande inégalité des revenus mais également à leur plus grande mobilité à la hausse. En effet, l'analyse dans le document montre que la mobilité à la hausse des revenus est plus élevée chez ceux qui travaillent dans la finance, les professions libérales et techniques et parmi les jeunes, les personnes vivant à Dublin et ceux qui changent d'emploi. Enfin, il apparaît également que la mobilité économique a diminué entre les classes de revenu médian au cours des 10 dernières années en Irlande - relativement moins de travailleurs montent ou descendent désormais dans l'échelle de revenus.

Mots-clés : distribution du revenu ; inégalités ; croissance ; fiscalité ; mobilité sur l'échelle.
Classification JEL : D31 ; D63 ; E24 ; H24

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Yours Inclusively? Income Mobility in Ireland, 10 Years of Tax Record Microdata

By Seán Kennedy, David Haugh and Brian Stanley[1]

Introduction

1. Income shares of the top 1% have risen in many countries in recent decades (Alvaredo et al., 2013). At the same time, for those on more modest incomes, wage increases have been modest in the recovery since the Global Financial Crisis (OECD, 2018). These trends are partially responsible for growing inequality in many OECD countries generating intense discussion on the extent to which all citizens participate in national prosperity.

2. In most countries, income inequality is measured at a moment in time using survey data due to its availability (Jäntti and Jenkins, 2014). In contrast, this paper examines distributional and income mobility dynamics in Ireland using a unique longitudinal dataset drawn from the administrative tax records. It extends previous analysis by Kennedy et al. (2016) by presenting greater distributional statistics, mobility analysis and leveraging more recent population level data. It finds that in Ireland upward income mobility is the highest among the lowest income deciles and upward mobility decreases with income.

3. This paper is structured as follows: The next section describes the data and its advantages and limitations. Section 3 provides an in-depth examination of the distribution of income and taxes by age, gender, sector of employment. Section 4 analyses the mobility of individuals across the income distribution. Section 5 presents a panel model to investigate what factors influence income mobility. This is followed by a brief conclusion.

4. The main findings of the paper are:

- In 2015, the top 10% earned one-third of all income (36%). Internationally this is below the United Kingdom (39%) and the United States (47%) but above Australia (32%) and New Zealand (31%) in 2013. In Ireland, this top 10% group paid two-thirds of all Income Tax (61%) and half of the Universal Social Charge (51%). By comparison, all other deciles 1 through 9 produce two-thirds (64%) of all income and paid 39% and 49% of Income Tax and USC respectively.
- Real income thresholds in 2015 for the top 10%, 1% and 0.1% are EUR 77,530, EUR 203,399 and EUR 618,307 respectively (Figure 1). The thresholds differ greatly by sector. For example, the threshold for the top 10% in the professional sector (EUR 110,320) is more than double that of administration (EUR 52,390). Similarly, the same

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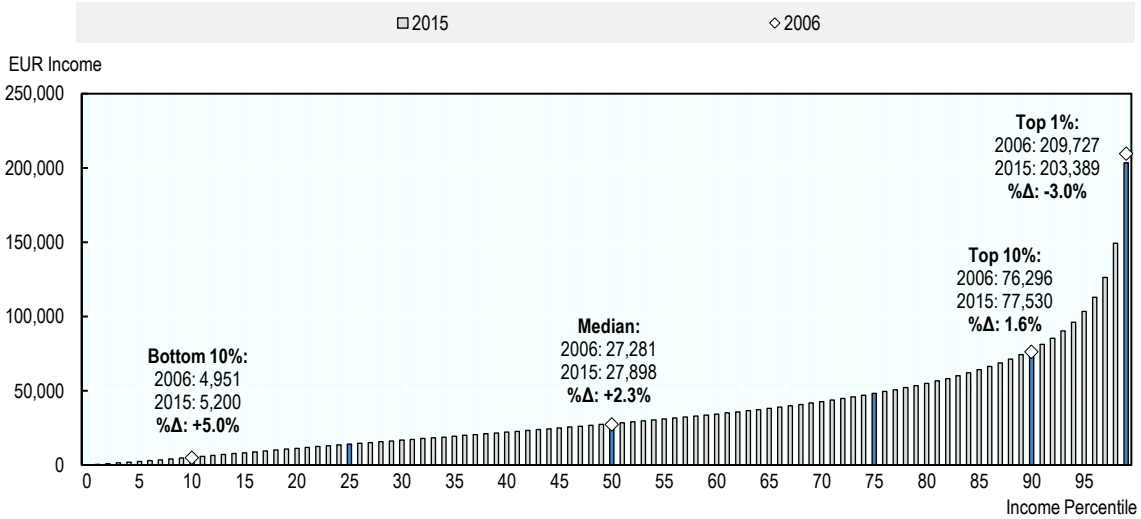
threshold is a third higher for self-assessed (self-employed) (~EUR 100,000) compared to Pay As You Go (PAYE) (EUR 75,000).

- According to an analysis of Income Tax stability, of those in the top 0.1% of contributors in 2006, one-quarter (25%) remained in the top 0.1% by 2015. This group of just fewer than 1,500 taxpayers have consistently paid 3 to 6% of all Income Tax in Ireland.
- A further analysis of income mobility shows that of those in the top decile in 2006, over half (57%) had remained by 2015. Between 2006 and 2009, a period of high incomes growth, incomes grew much faster among lower percentiles compared to higher percentiles. Between 2012 and 2015, the trend reversed, with increases largest at the top of the distribution (Figure 1).
- An analysis of incomes by age shows that incomes typically peak between 40 and 55 years, similar to trends in the United States.
- Only 18% of 25-year-old new entrant tax payers pay Income Tax compared to 60% of all 25-year-olds reflecting lower initial starting incomes for new entrants.
- A panel regression analysis shows income mobility is higher among the young and those living in Dublin. The highest upward mobility is experienced by those working in public administration, education, health.

Figure 1. Gross Income Distribution in Ireland, 2006 and 2015 (2015 prices)



Note: 2015 prices; previous years deflated by the consumer price index.
Source: Analysis of Irish tax administration data.

Data

5. The analysis in this paper is based on the Irish Revenue's administrative Income Tax records, which follow the entire population of approximately 2.2 million tax units over the 10-year period from 2006 to 2015.[2] The data are compiled using Income Tax returns filed by self-assessed taxpayers (Form 11) and employers on behalf of PAYE (Pay as You Go) employees (Form P35).

6. The unit of analysis in the data are tax units and not individual taxpayers. The difference arises in the case of married couples or civil partners who elect for joint assessment. These cases represent two taxpayers and either one or two incomes but only count as one tax unit.[3] Tax units are categorised under six personal statuses by law: single males, single females, married two-earners, married one-earners, widowers and widows. For simplicity, the word taxpayer is used to refer to tax unit hereafter.

7. An important distinction is whether taxpayers are predominantly PAYE employees or self-assessed (or self-employed) individuals. In this dataset, taxpayers are assigned to one of the two categories conditional on which category comprises a greater proportion of overall income. It is important to note that PAYE employees in a Revenue context include individuals in receipt of occupational pensions. In addition, in the self-assessed taxpayer population, there is a wide diversity of taxpayers ranging from local part-time businesses with small incomes to high net worth individuals employing many employees. The sector of employment relates to the sector of the employer (not the employee).[4] Each taxpayer is associated with one sector in each year. Although taxpayers may have multiple trades or businesses, the data report here on based on the primary trade identified by the taxpayer. The region of employment relates to the region of the taxpayer's residence, not the region in which the employer is registered with Revenue or the location of the business activity of the taxpayer.[5]

8. In an attempt to broadly examine the impact of the recession on incomes and mobility in Ireland, three equal length overlapping periods are chosen as follows: 2006 to 2009, 2009-to 2012 and 2012 to 2015. The period from 2006 to 2009 captures the initial impact of the recession from close to peak economic activity to the bottom. While the economy began to expand after 2009, household income and employment continued to fall until 2012.[6] Between 2012 and 2015 employment and household income increased and the

2. The same population data are also used to produce Revenue's income distributions statistics, available at: http://www.cso.ie/px/pxeirestat/pssn/rv01/homepagefiles/rv01_statbank.asp.

3. Married one-earning and married two-earning couples represent approximately 17% and 21% of taxpayers in 2015.

4. For self-assessed taxpayers, sector relates to the sector of the business taxpayer.

5. Region is drawn from Revenue's General Compliance Districts (GCDs). A relatively small number of high net worth individuals deal with Revenue's Large Cases Division (LCD) which is classified as a region in this analysis.

6. Median equivalised real disposable income reached the bottom in 2013. Household income refers to the median real household disposable income according to SILC 2015, available at (Table SIA12): http://www.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=SIA12&PLanguage=0

rate of output growth accelerated. For simplicity, these three periods are loosely referred to hereafter as the recession, stabilisation and early recovery periods.[7]

9. The mobility analysis in Section 1 restricts the sample to taxpayers aged 25 and above leaving approximately 1.5 million in each year. This follows common practice in the mobility literature, which attempts to remove from the analysis changes in income that are attributable to the transition from school to work. The distributional analysis in Section 0 makes no such restrictions to a taxpayer's age and contains approximately 2.2 million tax cases in each year.

10. Compared with survey data, tax record data has several advantages (Jenkins, 2001). First, coverage of the full taxpayer population allows for sub-group analysis while retaining adequate sample size. Second, incomes are largely free from measurement error such as misreported incomes or response bias. Third, as noted by Jenkins, tax records are often 'used as a validation gold standard against which to assess measurement error in survey-based income data'.

11. There are also limitations. Like most of the World Top Incomes Database (WTID) series the data in this paper are based on tax units. The data is not adjusted for household composition whereas survey data are typically based on an equivalisation of disposable incomes of households.[8].. Second, the data is confined to those who complete tax returns and does not cover those entirely reliant on untaxed benefits or undeclared income. Similarly, it is not possible to distinguish between full and part-time taxpayers. Therefore, tax record data can be seen as under-representing lower-income groups. Third, tax data are collected for the purposes of calculating tax liabilities. Unlike most survey data, tax record data have limited demographic data, such as educational attainment.

Developments in Income and Tax Distributions

12. One way of measuring the concentration of income inequality is comparing inter-decile ratios, which have the advantage of being both direct and intuitive. These measures are popular; (Piketty and Saez, 2014) argue that the 'simplest and most powerful measure' of inequality is the share of total income going to the top decile. Figure 2 compares high with middle incomes in Ireland over time. It does this using a related concentration measure - the P99/P50 ratio - and its component parts, namely, the top 1% income threshold and median income.

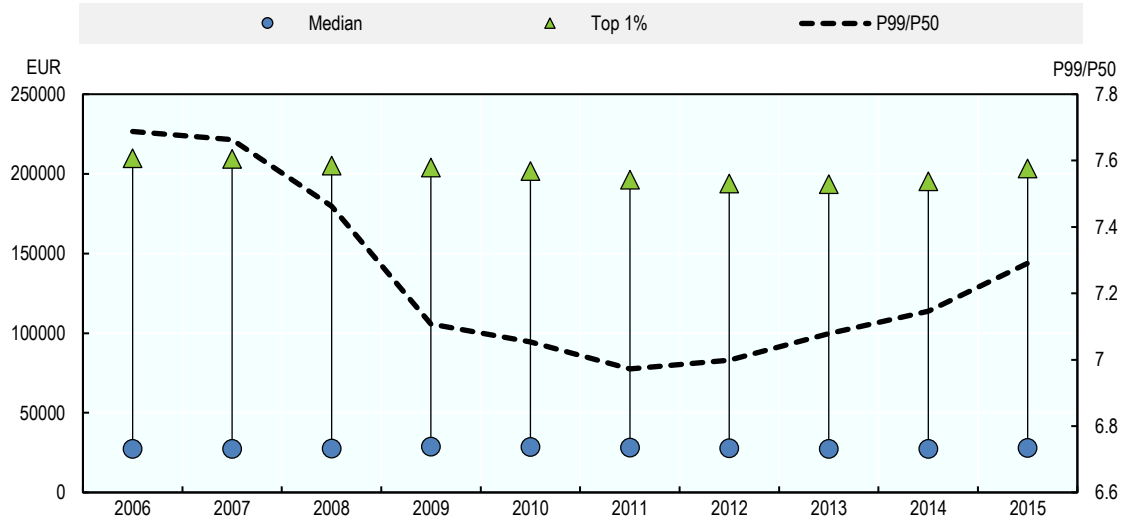
13. According to the analysis, the top 1% had significantly more income than middle earners in 2006 (7.7 times more), this fell sharply to 2011 (to 7.0 times) but has started to recover steadily since (7.3 times in 2015). A similar overall trend plays out for the P90/P50 ratio. This suggests that, on the basis of these concentration measures, real gross income inequality declined in Ireland during this period.

7. While economic output hit the bottom in 2009, earnings and employment lagged output and reached the bottom in 2012. As this paper is concerned with income distributions and mobility, the year 2012 is chosen as the cut-off between the recession and recovery period.

8. Equivalisation usually involves summing up all income in a tax-unit/household, and dividing it by an equivalence scale to take account of the total needs of the members of the unit, so for example a family of 2 adults with 1 child with the same total income as a childless couple would have a lower equivalised income than the childless couple.

Figure 2. Relative to middle earners, incomes of the richest 1% collapsed from a 2006 peak during the depths of recession but have recovered steadily in recent years

Income divide between the median and the top 10% by year, 2006 - 2015



Note: 2015 prices; previous years deflated by the consumer price index.
Source: Analysis of Irish tax administration data.

14. Table 1 displays real gross income thresholds in Ireland from 2006 to 2015. Median gross income peaked in 2009 and reached a bottom in 2014, which is a year later than household survey data9. By 2015, median incomes had still not returned to those peak levels. In 2015, the median gross income is EUR 27,898 and the income threshold for the top 0.1% is EUR 618,296.

15. To align with the economic cycle, the analysis of the data is divided into three equal-length periods as follows: 1. A boom and onset of recession period (2006 – 2009); 2. A recession and stabilisation period (2009 – 2012); and 3. A recovery period (2012 – 2015).

16. During the boom and onset of the recession period (2006 - 2009), incomes grew across most parts of the income distribution but had already started to decline for the top 1%, and particularly the top 0.1%. This suggests that the initial impacts of recession were experienced first by the highest income earners. During the subsequent recession and stabilisation period (2009 - 2012), incomes fell sharply across the distribution, with once again, the greatest income declines being greater at the top. After 2012 however, while incomes among the top decile began to recover, median incomes continued to fall for two more years. For that reason, during the recovery period (2012 – 2015), this trend of greater proportionate income falls at the top sharply reversed - while most incomes grew, growth was much faster among the highest earners. Overall, these data show how median and lower earners are relatively less sensitive to economic cycles; their incomes fall more slowly in downward cycles but also recover more slowly in upward cycles.

9. Median equivalised real disposable income reached the peak in 2008 according to SILC 2015, available at http://www.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=SIA12&PLanguage=0.

17. However, incomes measured using surveys declined more than recorded on the tax records(this may partly be because the tax records do not fully capture the fall in income in moving from employment to unemployment as the data does not include those entirely reliant on untaxed benefits).

Table 1. Real median incomes peaked in 2009 and reached a bottom in 2014

Selected real and nominal gross income thresholds in EUR in Ireland, 2006 - 2015

Year	Bottom Decile	Bottom 25%	Median	Top 75%	Top Decile	Top 1%	Top 0.1%
			A. Real Incomes				
2006	4,951	13,614	27,281	47,025	76,296	209,727	745,580
2007	5,056	13,906	27,320	46,965	76,537	209,355	727,120
2008	5,154	14,198	27,491	47,275	76,641	205,148	666,102
2009	5,186	14,733	28,696	49,091	78,730	203,963	617,971
2010	5,134	13,659	28,597	48,582	77,542	201,722	614,329
2011	5,306	14,847	28,171	47,703	75,921	196,417	578,927
2012	5,306	14,572	27,720	47,155	75,025	193,998	562,067
2013	4,721	13,901	27,347	47,098	75,130	193,569	564,260
2014	4,672	13,724	27,332	47,249	75,611	195,331	573,449
2015	5,200	14,080	27,898	48,228	77,530	203,389	618,296
			B. Nominal Incomes				
2006	4,576	12,582	25,214	43,462	70,515	193,835	689,085
2009	5,000	14,204	27,666	47,329	75,904	196,642	595,791
2012	5,284	14,514	27,609	46,967	74,726	193,224	559,825
2015	5,200	14,080	27,898	48,228	77,530	203,389	618,307

Note: 2015 prices; previous years deflated by the consumer price index.
Source: Analysis of Irish tax administration data.

Income Thresholds by Decile

18. Income thresholds by decile for gross income, PAYE income and self-assessed income in 2015 are provided in table 2. PAYE taxpayers generally earn more at the bottom half of the income distribution while self-assessed taxpayers earn increasingly more further up the distribution (Table 2). For instance, the top 10% of self-assessed taxpayers earn over EUR 100,000 while the top decile of PAYE taxpayers earns over EUR 75,000. For the top 1% and 0.1%, the self-employed earn a factor of more than 2 and 3 times that of PAYE workers.

Table 2. PAYE workers earn more at the bottom while self-employed earn increasingly more at higher incomes

Income thresholds by income type and decile, in EUR, 2015Type the subtitle here. If you do not need a subtitle, please delete this line.

	Gross Income	PAYE Income	Self-Employed Income
Bottom 10%	5,200	5,200	5,052
P20	11,224	11,445	9,613
P30	16,777	16,992	14,344
P40	22,147	22,297	20,288
P50	27,898	27,969	27,022
P60	34,334	34,282	35,212
P70	42,702	42,428	46,747
P80	54,989	54,304	64,860
Top 10%	77,530	75,824	102,548
Top 1%	203,399	182,360	444,640
Top 0.1%	618,307	476,965	1,501,750

Source: Analysis of Irish tax administration data.

Income Growth

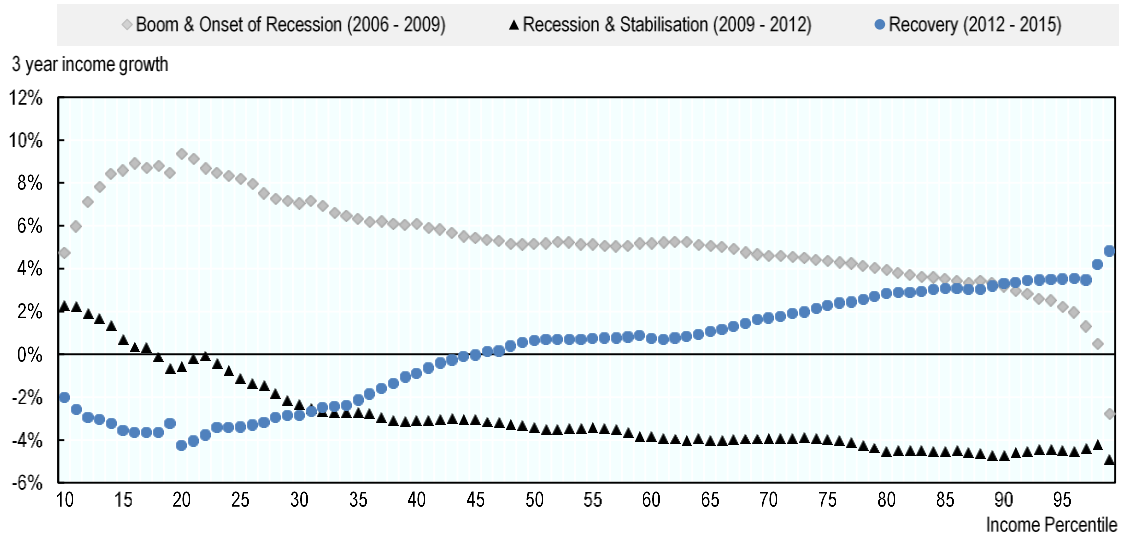
19. During the initial period of the boom and onset of the recession (2006 – 2009), incomes continued to rise, most quickly in the bottom of the income distribution (Figure 3). However, the extent of this rise is likely inflated by the severity of unemployment among young worker during the period (Bergin, Kelly and McGuinness, 2014), which based on the tax records gives the appearance of higher relative incomes among those who stayed[10]. Notwithstanding this, it remains generally the case that lower incomes increased faster and higher incomes increased slower during this period. Exceptionally, the top 1% were the only percentile to experience a significant income decline, likely reflecting their higher share of income from capital (such as shares) and property. During the recession and stabilisation period (2009 – 2012)[11], income growth was mostly negative and increasingly negative for higher incomes. Compared to the previous period, income growth rates are significantly lower across the full distribution. However, the previous trend of income growth decreasing with income remained. During the recovery period (2012 – 2015), the shape of this trend inverted: while overall wages growth was close to zero, incomes grew at the top but declined for the bottom 40% of tax units.

[10] In addition, there was increased part-time employment during this period, which on the tax records would .

[11] In 2012, median incomes are close to their lowest level following the recession.

Figure 3. During the recent recovery, incomes grew at the top but declined for the bottom 40%

Three-year income growth in Ireland - Recession, Stabilisation and Recovery



Note: 2015 prices. Previous years deflated by the consumer price index. Only incomes greater than 10th percentile are shown.
Source: Analysis of Irish tax administration data.

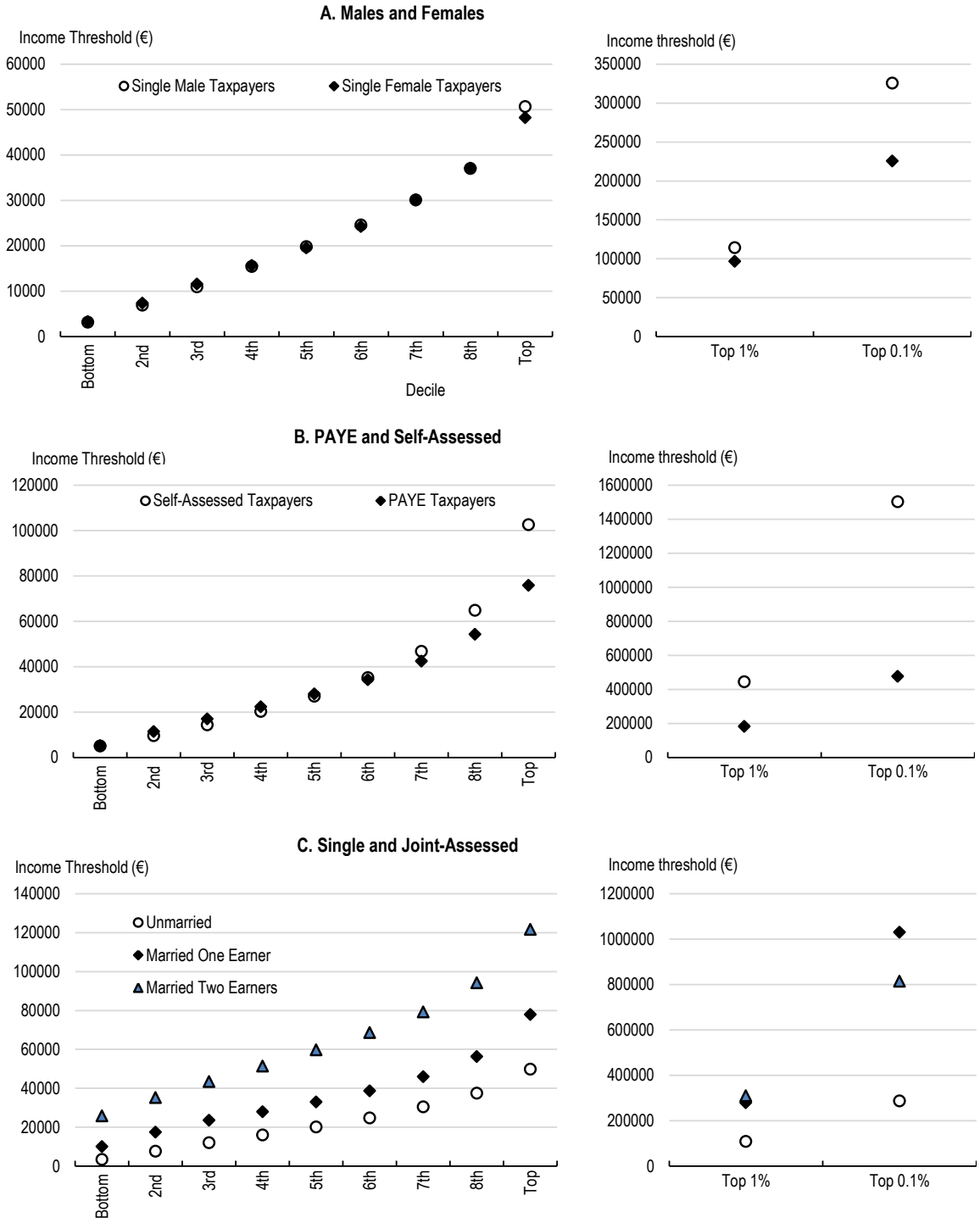
Income Distribution by Taxpayer Type

20. This section examines the distribution of gross income in 2015 for selected taxpayer cohorts. Figure 4 plots the income threshold for each decile for various taxpayer types. Overall, the analysis shows that the highest earning tax units (top 0.1%) in Ireland are self-assessed, married one-earner couples.

21. Females earn slightly more than males up to the median (Figure 4, panel A).[12] At the top of the income distribution single males earn more than their female counterparts. The difference is most pronounced for the top 1% and top 0.1% thresholds where males respectively earn 18% and 44% more.

12. The difference in means within each joint decile is significant at the 1% level for deciles 4, 6, 8 and 9.

Figure 4. Income Thresholds, 2015



Note: Sample sizes are as follows. Single males and females are 687,003 and 636,137 respectively. Self-assessed and PAYE are 194,342 and 2,090,016. Unmarried, married one earner and married two earners are 1,412,443, 384,525 and 487,390 respectively.
Source: Analysis of Irish tax administration data.

22. Figure 4, panel B plots the income threshold for each decile for self-assessed and PAYE taxpayers in 2015. While PAYE taxpayers generally earn more at the bottom half of the income distribution, self-assessed taxpayers earn increasingly more further up the distribution.[13] The top 1% of self-assessed taxpayers earns over twice that of PAYE taxpayers, while the top 0.1% earn over three times.

23. Figure 4, panel C shows the distribution of single and joint-assessed taxpayers. Married taxpayers with one income earn more than those who are unmarried. In turn, married taxpayers with two earners earn more than their single earning counterparts, reflecting dual incomes. However, the gap between one and two income couples narrows for the top 1% and reverses for the top 0.1%.

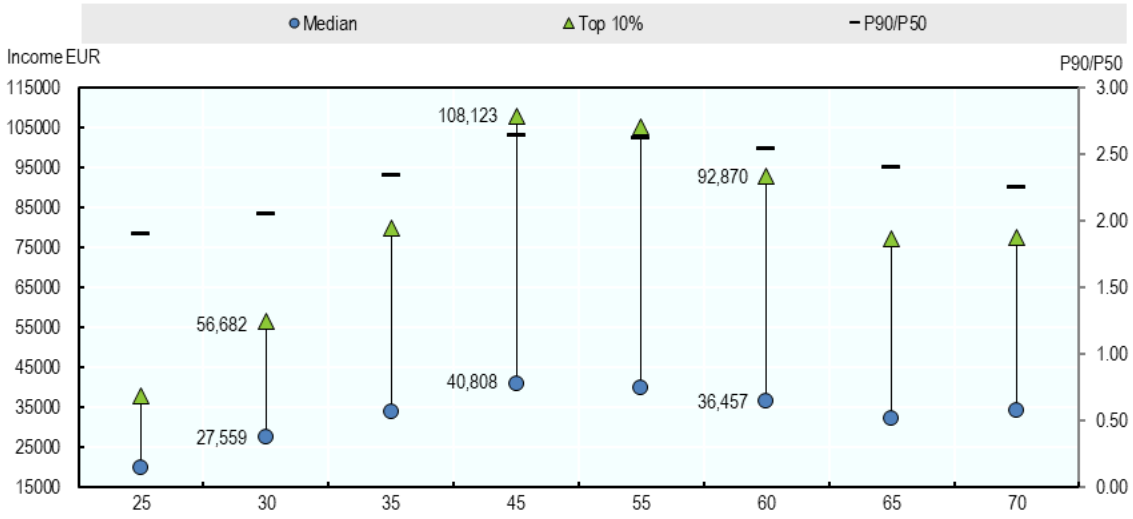
Income Distribution by Age and New Entrants

24. To obtain a life cycle perspective on income inequality and mobility this paper combines the age of taxpayers with their income at the individual taxpayer level. The analysis indicates that the gap between higher and median earners appears to widen with age up to about age 45 and starts to fall slowly thereafter (Figure 5). This means that income inequality is greatest among middle-aged workers and lowest among younger workers. For example, at age 30 median income is EUR 27,559 while the top 10% of 30-year-olds earn more than twice that amount. At age 45, the median has grown significantly (by 50%) to EUR 48,808 but so has the relative inequality divide - now the top 10% of 45-year-olds earn 2.7 times that amount. Viewed from an absolute inequality perspective, the top 10% of 30-year-olds earn about EUR 29,000 more than the median in their peer group. Among 45-year-olds, it is about EUR 67,000 more.

13. The difference in means within each joint decile is significant at the 1% level for deciles 2, 3, 9 and 10.

Figure 5. The divide between the top 10% and the median rises with age up to about 45

Income divide between the median and top 10% by age, 2015



Source: Analysis of Irish tax administration data.

25. Figure 6 shows the complete income distribution of taxpayers aged 15 to 90 in 2015 using the 10th, 25th, 50th, 75th and 90th percentiles. The classical life cycle earnings pattern is observed , in that, incomes typically peak between 40 to 55 years of age.

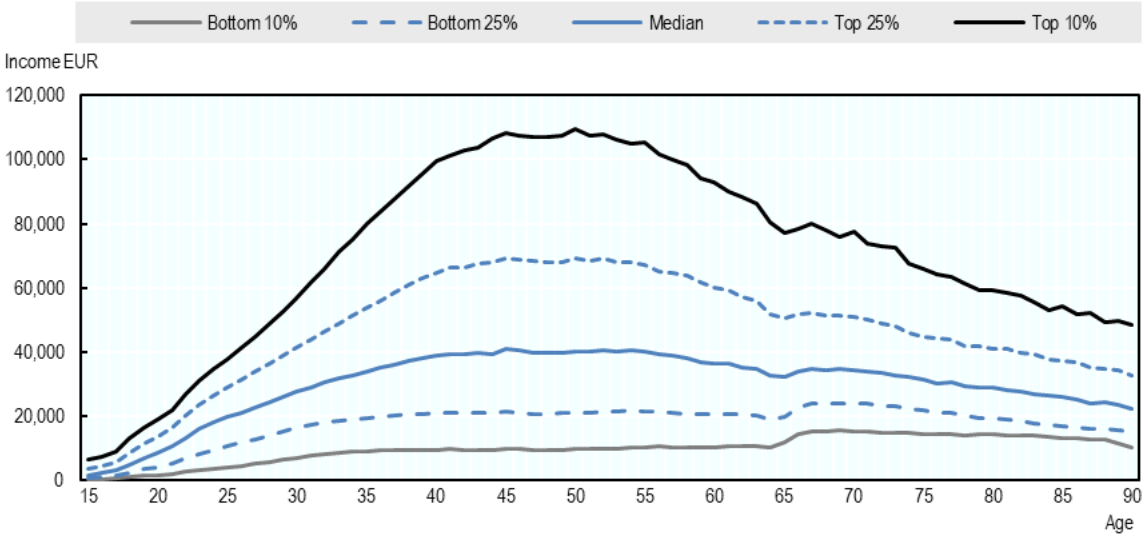
26. Two other general life-cycle trends appear broadly similar to earlier research from the US, albeit this is based on 2007 data (Auten et al., 2013). First, income growth is strong among young taxpayers. This is in part driven by students, a group more likely to undertake part-time work, who also transition from study to employment. Second, the rate of growth is larger for higher percentiles. However, the income by age profile below differs to the US with respect to older taxpayers in that incomes in Ireland of older workers increases across the income distribution at age 66 (Figure 6).

27. The increase in taxpayers' gross incomes at 66 years, coincides with eligibility for the state pension and many private pensions. This increase in income at 66 is sustained for a number of years for incomes below the 25th percentile, which may indicate that some taxpayers continue working for a number of years while in receipt of a pension. It is worth reiterating that the data cannot distinguish between part-time and full-time employment and does not extend to those entirely reliant on untaxed benefits.

28. More generally, these data provide a first point of departure for producing greater clarity on intergenerational inequality within countries. For example, this could include analysis on three related but distinct effects: an age effect (the stages of the life cycle), a period effect (economic conditions in the current period) and a cohort effect (the group's initial level of inequality). Isolating the contribution of each effect requires further modelling.

Figure 6. Incomes typically peak between 40 and 55 years of age in Ireland

Income distribution by age, 2015



Note: This figure is compiled using 2.05 million tax cases. The number of observations for taxpayers over the age of 90 falls below 2,000 and are not presented.
Source: Analysis of Irish tax administration data.

29. New entrants to the tax records are examined by age cohort in Table 3 in terms of the proportion and median income for each age group. For reference, the proportion and median incomes are shown in each of the first columns for all taxpayers, while the second column shows the proportion and median incomes of new entrants in 2015. To account for the possibility that taxpayers may only be employed during part of their first year, the third column presents the income of those who are recorded on the tax records for their second year in 2015.

30. New entrants are more likely to be the youngest taxpayers. Sixty percent of new entrants are aged 15 – 24 compared to 17% for all taxpayers. New entrants also earn significantly less than other tax payers across all age categories. For instance, a new entrant aged 15 – 24 typically earns EUR 3,424 compared to EUR 9,022 for all taxpayers of that age. However, the gap narrows for taxpayers for a second year in 2015 reflecting that new entrants (in their first year) commence employment during the tax year.

Table 3. For taxpayers of the same age, newer entrants to the tax records pay significantly less income tax and to a lesser degree USC

Income by age of for new entrants, 2015

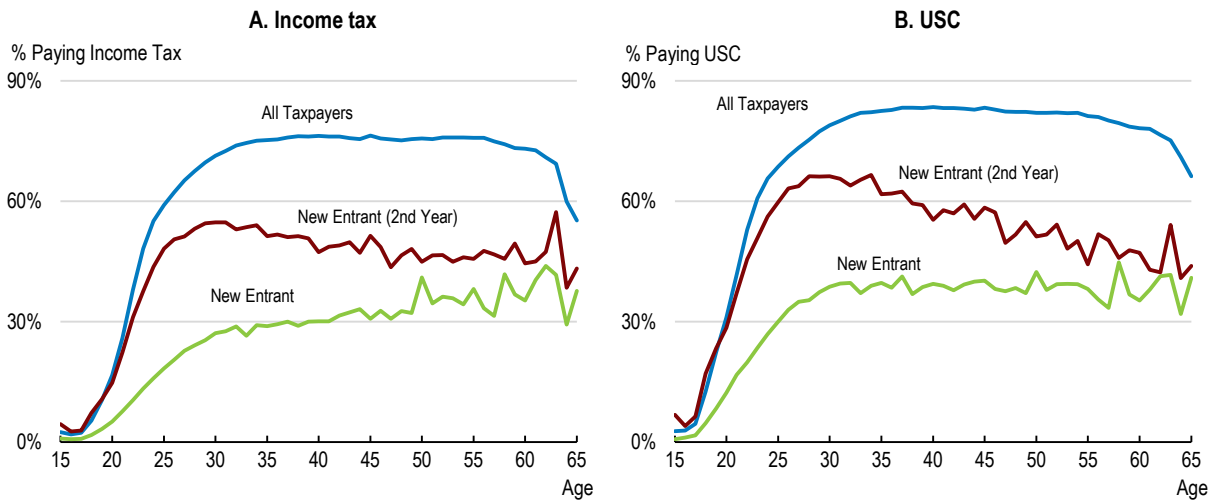
	Proportions (%)			Median Gross Income (EUR)		
Age Categories	All Taxpayers	New Entrant (1st Year)	New Entrant (2nd Year)	All Taxpayers	New Entrant (1st Year)	New Entrant (2nd Year)
15 – 24	17.2%	59.9%	57.9%	9,022	3,424	7,064
25 – 34	25.5%	21.0%	21.5%	26,152	8,486	17,597
35 – 44	20.4%	8.5%	8.8%	37,304	9,681	17,794
45 – 54	13.8%	4.9%	5.2%	40,297	9,963	16,145
55 – 64	10.4%	2.5%	2.8%	36,883	11,241	15,663
Age 65 +	12.8%	3.1%	3.8%	31,047	19,948	23,472

Note: Number of observations for All Taxpayers is 2,069,396; New Entrant (1st Year) is 139,427; New Entrant (2nd Year) is 115,731. New entrants are recorded as the year in which they first appear on the tax records from 2004 to 2015. It is possible that taxpayers' first registration with Revenue is prior to 2004.
Source: Analysis of Irish tax administration data.

31. New entrants to the tax records are examined further by age with respect to their entry into the tax net in Figure 7. For instance, only 18% of new entrants aged 25 pay Income Tax compared to 60% of all 25 year olds. For 25 year olds on the tax records for two years in 2015, 48% pay Income Tax.

32. A higher proportion of young new entrants pay Universal Social Charge (USC), a separate tax on income on top of the income tax with different rules and rates. Thirty percent of 25 year old new entrants pay USC in their first year and 60% pay USC in their second year. For comparison, 69% of all 25 year olds paid USC in 2015.

Figure 7. Percent of Taxpayers in the Tax Net by Age, 2015



Note: The number of observations for all Taxpayers is 2,051,952; New Entrant (1st Year) is 138,102; New Entrant (2nd Year) is 114,250. The number of observations for new entrants generally falls below 100 for taxpayers over 65 and are not presented. Income Tax does not include PRSI. New entrants are recorded as the year in which they first appear on the tax records from 2004 to 2015. It is possible that taxpayers' first registration with Revenue is prior to 2004.
Source: Analysis of Irish tax administration data.

Taxpayers Changing Employment

33. Taxpayers who change employment in 2015 are examined in Table 4 in terms of the proportion and median income for each quintile.14 Nearly 20 per cent of taxpayers between the age of 25 and 65 have multiple employments in 2015, of which, 4 per cent have three or more employments. To simplify the analysis, consideration is only given to taxpayers who have one employment before and after changing employers in 2015.15

34. Overall, taxpayers who change employers earn more than those who remain with the same employer. Taxpayers changing employers typically earn more before changing and subsequently experience higher income growth than those remaining with the same employer. Across quintiles, the extent of earnings growth diminishes for those on higher incomes whether they change employer or not.

35. Taxpayers in the bottom quintile are least likely to change employers. These taxpayers in 2014 experience the strongest earnings growth irrespective of whether they change employer or not. This may reflect the effect of transitory income insofar as their position in the bottom quintile was the result of a temporary income shock.

Table 4. Taxpayers who change employment earn more than those remaining with the same employer

Median taxable income (EUR) for taxpayers changing employment, 2015

	% changing employer	Not Changing Employer (median income EUR)				Changing Employer (median income EUR)			
		2014	2015	2016	% Change	2014	2015	2016	% Change
Total	100%	25,853	26,727	27,879	7.8%	26,115	27,650	29,785	14.1%
Bottom Quintile	15%	4,872	8,331	10,273	110.8%	5,619	10,423	13,808	145.7%
Quintile 2	23%	15,836	17,299	18,498	16.8%	16,039	17,758	19,524	21.7%
Quintile 3	22%	25,871	26,796	27,862	7.7%	25,738	26,776	28,235	9.7%
Quintile 4	19%	37,216	37,964	38,909	4.5%	37,137	38,872	39,803	7.2%
Top Quintile	22%	59,684	60,633	61,802	3.5%	61,375	64,284	64,143	4.5%

Note: Percent changing employer refers to the year 2015. Previous years deflated by the consumer price index. The number of taxpayers changing employment in 2015 is 66,749 representing 3% of all taxpayers. Taxpayers here refer to individual taxpayers according to the P35 records.
Source: Analysis of Irish tax administration data.

14. The income quintile is calculated in 2014, before the taxpayer changes employment and the same taxpayers' incomes are reported for 2015 and 2016.

15. Thus taxpayers who only have one employment in 2014, two employments in 2015 and one employment in 2016 are considered. Taxpayers who change employment in 2015 will have two records of employment for that year. These restrictions account for 3 per cent of all taxpayers.

Income by Sector

36. How do the incomes of the highest earners compare to the median across sectors?16 As discussed above, the P99/P50 ratio is 7.3 in 2015, down from a high 7.7 in 2006. However, these aggregate country-wide inequality measures do not capture the extent to which inequality is driven by specific sectors of the economy. Therefore, figure 8 shows relative income inequality across sectors by displaying the P99/P50 ratio and its component parts - the median and the top 1% income threshold.

37. In the professional, financial and health sectors of the economy, the income thresholds for the top 1% are dramatically higher. This largely explains the high levels of income inequality among these three sectors. For example, in the professional sector, the top 1% threshold is 12 times the median. By contrast, equality is greatest in the public, education and transport sectors. In the public sector for example, which has declined in size since 2006, the top 1% threshold is only about 3 times the median. In the accommodation & food services sector, which has the lowest incomes, income inequality measured in this way is a high 7 times the median (albeit this is likely affected by significant part-time employment).

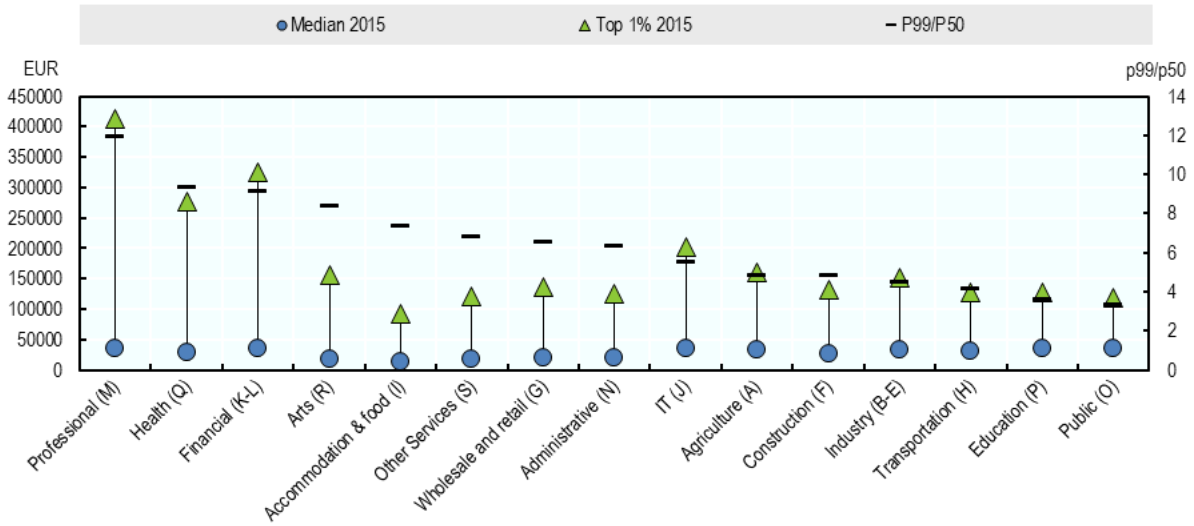
38. These large differences in income inequality across sectors highlight how overall income inequality could be significantly affected as workers change jobs over time. For example, if workers tend to shift from more to less equal sectors, and that level of sectoral inequality persists, inequality would be driven up without any changes in relative pay of high and low income earners within sectors. Indeed, this trend has occurred in Ireland. Since 2006, the proportion of taxpayers in the three most unequal sectors – financial, professional and health – expanded from one-fifth (19%) of the economy to one-quarter (26%) by 2015. Labour force survey data over the same period show broadly similar rising employment trend for these three sectors[17].A key driver of this expansion has been the financial sector. The sector also experienced the fastest growth in median incomes. It has the third highest level of inequality with a top 1% income threshold that is 9 times the median.

[16] The comparisons are using raw as opposed to equivalised incomes that take account of household composition.

[17] Labour force survey data in Ireland show a broadly similar proportional increase for these sectors from 20.3% in Q1 2006 to 24.4% in Q1 2015.

Figure 8. The income divide between the top 1% and the median is greatest in the professional, health and financial sectors

Income divide between the median and top the 1% by sector, 2015



Note: 2015 prices. Gross income in 2006 deflated by the consumer price index. For simplicity, the names of sectors are abbreviated. The data show relative rather than absolute mobility.
Source: Analysis of Irish tax administration data.

39. Table 5 provides further details by showing the proportions of taxpayers working in each sector for both 2006 and 2015, together with the income thresholds for the top 10% and top 1% of taxpayers. The wholesale & retail trade sector account for the greatest proportion of employment in 2015 (14%), which has been stable since 2006. The construction sector experienced the greatest relative contraction during this period, accounting for 11% of employees in 2006 and 5% in 2015. Overall, the data suggest that the average within-sector gross income inequality has declined since 2006.

Table 5. In the professional and financial sectors of the economy, the income thresholds for the top 1% are dramatically higher

Sectoral proportions and gross real income thresholds, 2006 and 2015

Sector (NACE code)	Proportion		Median Gross Income (€)		Top 1% Gross Income (€)	
	2006	2015	2006	2015	2006	2015
Agriculture, Forestry & Fishing (A)	6%	5%	27,806	32,767	174,720	159,817
Industry (B-E)	11%	8%	27,562	33,605	124,297	152,198
Construction (F)	11%	5%	24,118	27,272	141,352	131,852
Wholesale and retail trade (G)	15%	14%	16,825	20,603	116,082	135,882
Transportation & storage (H)	4%	4%	28,181	30,502	121,769	128,156
Accommodation & food services (I)	7%	8%	11,444	12,531	100,041	92,253
Information & communication (J)	4%	3%	29,786	36,492	170,900	202,141
Financial, insurance & real estate (K-L)	8%	13%	26,948	35,347	272,787	323,959
Professional, scientific & technical (M)	4%	5%	27,301	34,506	484,015	412,597
Administrative & support services (N)	5%	5%	17,368	19,814	110,326	125,639
Public administration & defence (O)	8%	7%	33,808	35,870	120,761	119,859
Education (P)	2%	5%	24,141	35,094	136,174	127,466
Human health & social work (Q)	7%	8%	28,295	29,664	285,737	276,909
Arts, Entertainment & Recreation (R)	1%	2%	17,555	18,560	136,812	155,576
Other Service Activities (S)	2%	3%	17,040	17,650	106,727	121,246

Note: 2015 prices. Gross income in 2006 deflated by the consumer price index. Columns may not sum to 100% due to rounding. NACE sectors T (Activities of households as employers) and U (activities of extraterritorial organisations) account for 4% of the proportion in 2006 and 2015 but not shown.
Source: Analysis of Irish tax administration data.

Income and Tax Shares by Decile

40. This section examines disposable income, gross income and income tax shares by decile. According to the analysis, the top decile receives over one-quarter (26%) of disposable income in 2015.[18] The top 1% and 0.1% receive around 7.5% and 2.8% of disposable income. The top decile receives over one-third (36%) of gross income in 2015 and contributes 61% of all Income Tax and 51% of USC. The top 1% contributes a similar amount of Income Tax compared to their share of gross income (approximately 11%) but the top 0.1% pay a larger share of Income Tax and a lower share of USC compared to their share of gross income.

18. Disposable income is calculated as gross income less Income Tax, USC and PRSI. (PRSI is calculated as gross income times the appropriate rate based on the PRSI class of the tax unit).

Table 6. The top decile receive one-third of income and pay 60% of all income tax and 50% of all USC

Share of gross income and income tax (EUR), 2015

	Disposable Income	Gross Income	Income Tax	USC
Deciles 1 to 9	73.80%	63.90%	39.30%	48.70%
Top Decile	26.20%	36.10%	60.70%	51.30%
Top 1%	7.40%	11.30%	10.60%	4.10%
Top 0.1%	2.80%	4.40%	5.70%	3.30%

Note: The full shares for deciles 1 to 9 are shown in Tables 7 and 8.
Source: Analysis of Irish tax administration data.

Income Share

41. In 2015, the top decile received 36% of gross income (Table 7).19 The share of the top 10% is similar to the share in the World Inequality Database (WID) for Ireland and around the median for the 20 countries with available data.20 It is below the United Kingdom (39%) and the United States (47%) but above Australia (32%) and New Zealand (31%) in 2013.21 Compared to 2006 levels, income concentration at the top 10% of the distribution falls during the recession in 2009 and again in 2011. Data from the WID database shows a similar pattern of a falling share of the top 10% in other countries in the financial crisis period including Canada, Spain, the United Kingdom, and the United States.

42. During Ireland's boom period in 2006, the top 0.1% of taxpayers earned 4.7% of all income. By 2015, that share fell slightly to 4.4 per cent. Comparing internationally in 2006, the very top incomes share in Ireland was similar to that in the United States but has since fallen to levels more similar to the UK and slightly higher than France and Spain prior to the crisis (Landais, 2008). The share earned by the top 1% also fell over the period 2006 to 2015, from 12% to 11% in gross terms. The 2015 result is similar to that in Germany prior to the crisis, where a similar taxpayer panel analysis showed that the top 1% received 9% and 3.6 per cent of gross income on average over the period 2001 to 2006 (Jenderny, 2016).

43. Looking across all deciles over the recession and stabilisation periods, income concentration fell in the top decile and increased in all other deciles (with the exception of the bottom). However, the incomes accrued mostly to the deciles just below the top decile. The top cohorts experienced an increase in their share once the economy began to recover post-crisis, which is similar to other countries. Table 7 also reports a common measure of inequality that expresses the concentration of the income shares above the 80th percentiles as a ratio of those below the 20th percentile (S80/20). By this measure, changes in inequality reflect changes at the top of the income distribution.

19. Income shares are published on the Revenue website. Available at: http://www.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=rva01&ProductID=DB_rv01&PLanguage=0

20. Data available at http://wid.world/.

21. 2012 for the United Kingdom.

44. For the highest earners (the top decile and above), the share of disposable income is always lower than the share of gross income. Over the past 10 years, disposable income shares have remained remarkably stable for most of the distribution. However, the share of disposable income of the highest income groups was increasingly lower between 2006 and 2015, reflecting the increasingly progressive income taxes introduce during this period, particularly the Universal Social Charge (USC) introduced in 2011.

Table 7. The income share of the very richest has fallen in both gross and disposable terms

Gross and disposable income shares by decile, 2006 – 2015

	Share of Gross Income				Share of Disposable Income			
	2006	2009	2012	2015	2006	2009	2012	2015
Bottom Decile	0.6%	0.6%	0.6%	0.6%	3.9%	4.0%	4.1%	4.1%
Decile 2	2.0%	2.1%	2.2%	2.1%	4.9%	5.1%	5.2%	5.0%
Decile 3	3.5%	3.7%	3.8%	3.6%	5.7%	5.9%	6.1%	5.9%
Decile 4	4.9%	5.1%	5.2%	4.9%	6.5%	6.7%	6.9%	6.7%
Decile 5	6.2%	6.5%	6.6%	6.3%	7.3%	7.6%	7.7%	7.6%
Decile 6	7.8%	8.0%	8.1%	7.9%	8.2%	8.6%	8.7%	8.6%
Decile 7	9.6%	9.9%	9.9%	9.7%	9.4%	9.8%	9.9%	9.9%
Decile 8	12.1%	12.4%	12.4%	12.3%	11.1%	11.5%	11.7%	11.7%
Decile 9	16.2%	16.6%	16.5%	16.4%	13.8%	14.2%	14.3%	14.3%
Top Decile	37.1%	35.1%	34.6%	36.1%	29.3%	26.5%	25.4%	26.2%
Top 1%	12.4%	10.3%	9.8%	11.3%	10.0%	7.4%	6.6%	7.4%
Top 0.1%	4.7%	3.4%	3.1%	4.4%	4.0%	2.4%	2.0%	2.8%
S80/S20	20.3	18.9	17.7	19.3	4.9	4.5	4.3	4.5

Source: Analysis of Irish tax administration data.

Income Tax and USC Shares

45. Income Tax and USC contributions are shown for each decile (in terms of gross income) between 2006 and 2015 in Table 8.[22] The top income deciles contribute a substantially higher share of the Income Tax and USC liability compared to lower deciles. Deciles above the 9th decile pay a higher share of Income Tax and USC receipts compared to their share of gross income, while the reverse is true for the lower deciles. The lower deciles contribute a larger share of USC receipts compared to their contributions to Income Tax receipts. However, the share paid by deciles below the top decile has fallen in 2015 compared to 2012 reflecting changes in the USC rates and bands in favour of those on lower incomes as well as a recovery in the share of gross income of the top decile from 2012 to 2015.

22. Income Tax does not include other taxes on income such as PRSI, health contribution or the income levy. Shares of the USC are shown separately for the years 2012 and 2015.

Table 8. The shares of income tax and USC paid by the top 1% and 0.1% have sharply risen in recent years

Share of income tax and USC contributions, 2006 - 2015

	Income Tax				USC	
	2006	2009	2012	2015	2012	2015
Bottom Decile	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Decile 2	0.0%	0.0%	0.1%	0.1%	0.2%	0.0%
Decile 3	0.1%	0.1%	0.1%	0.1%	1.3%	0.8%
Decile 4	0.5%	0.4%	0.8%	0.8%	2.6%	1.9%
Decile 5	1.8%	1.6%	1.8%	1.9%	4.2%	3.4%
Decile 6	3.3%	3.1%	3.4%	3.4%	6.4%	5.5%
Decile 7	5.8%	5.5%	6.1%	5.8%	9.0%	8.0%
Decile 8	10.4%	10.2%	10.8%	10.2%	12.6%	11.6%
Decile 9	17.6%	18.0%	17.8%	17.0%	18.2%	17.4%
Top Decile	60.5%	61.1%	59.0%	60.7%	45.4%	51.3%
Top 1%	9.5%	7.8%	7.0%	10.6%	1.4%	4.1%
Top 0.1%	3.6%	3.5%	2.7%	5.7%	0.9%	3.3%

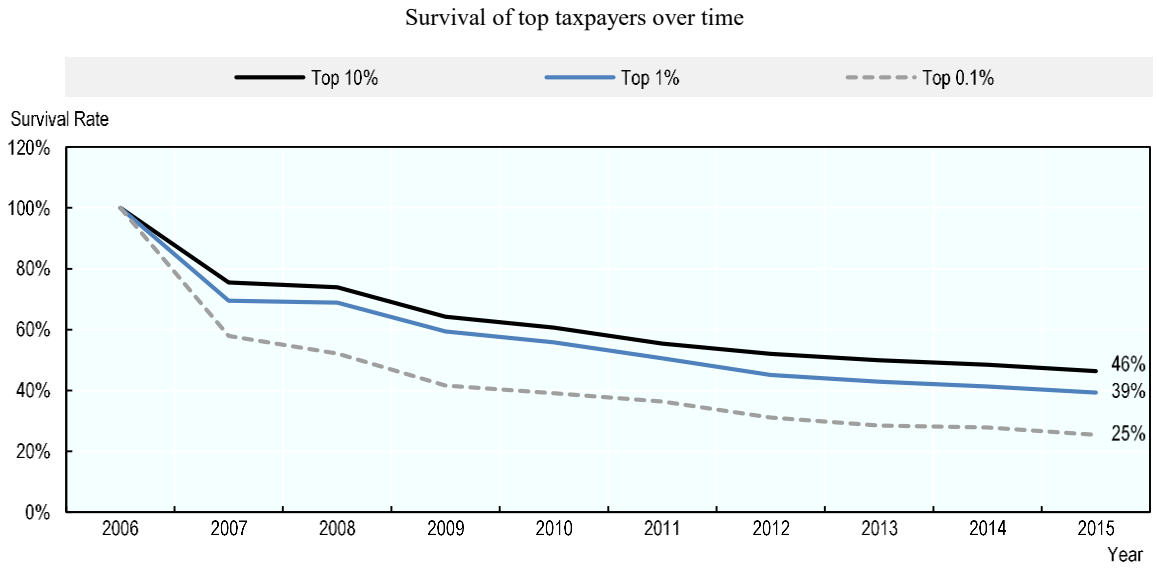
Source: Analysis of Irish tax administration data.

Survival Analysis

46. In this paper, survival is defined as the survival rate of taxpayers in the top 10%, 1% and 0.1% for each year. Survival is calculated as the proportion of taxpayers that remain in a percentile given that they were in that percentile in the initial year (2006). Forty-six per cent of those in the top 10% in 2006 were still in that decile by 2015 (Figure 9). This is similar to the United States for a similar length period where 38 per cent of those in the top 1% in 2000 remained there by 2009 (Auten and Gee, 2009) although this may have been reduced by a large recession at the end date. Indeed, over 5 year periods the survival rate (i.e. the percentage staying in the percentile) for the top 1% is on average 34% when the period did not include a year with a recession and 30% for all years (Auten and Gee, 2013).

47. For the top 10%, 1% and 0.1% cohorts, the survival rate in Ireland follows a similar trend over the period, declining sharply in the first year and falling by less in future years. This is consistent with some taxpayers receiving one off exceptional incomes that temporarily push them into the highest income groups. For the top 0.1% the pattern of sharp decline in the initial years can also be observed in Canada and France. In both countries after three years around 40% of the top 0.1% remain in that group as in Ireland (Saez and Vaell, 2005; Landais, 2008). In Germany, mobility of this high income group is lower with around 60% of the 0.1% income bracket remaining there after 3 years (Jenderny, 2016).

Figure 9. Survival of top taxpayers over time



Note: The number of taxpayers in the top 10%, 1% and 0.1% in 2006 are 95,190, 9,519 and 952 respectively. Due to a large number of missing values for tax paid in 2010, the average of 2009 and 2011 is taken as the survival rate for 2010.
Source: Analysis of Irish tax administration data.

48. The decline of taxpayers in the top 0.1% cohort is greater in 2007 and 2008 compared to the other cohorts perhaps reflecting the possibility that the very top taxpayers were affected to a greater extent during the early stages of the recession. Survival rates for the top contributors to income tax are similar to those for the top taxpayers over the full period (Figures 6 and 7).

Income Mobility

49. One way to measure income mobility is to examine the positional change of individuals in the income distribution over time (Jäntti and Jenkins, 2014). In this section, taxpayer mobility is measured using transition matrices.23

50. While the literature suggests a number of approaches to calculating transition matrices, this paper employs the following approach. First, a group of taxpayers is identified, for example, PAYE taxpayers or those working in a particular sector. Taxpayers under 25 years of age are excluded from the analysis as recommended by the literature

23. Transitions measure relative, not absolute, changes in the income position of taxpayers and the measures has a number of caveats. A taxpayer's relative position can fall even as their absolute income increases (and vice versa). Second, examination at two points in time does not allow for observing those who change their distributional position over the course of the reference period. Consequently, the analysis does not capture those who leave the workforce (due to deaths, unemployment, emigration and retirement) or those who enter it (through employment and immigration). Third, taxpayers observed in both years are less likely to 'drop-off'. They may be more representative of full-time than part-time employees. Finally, it is expected that annual transitions are more likely to exhibit less mobility, while longer horizon transitions will have greater mobility. Based on the literature, it is expected that there would be relatively greater mobility in the middle deciles.

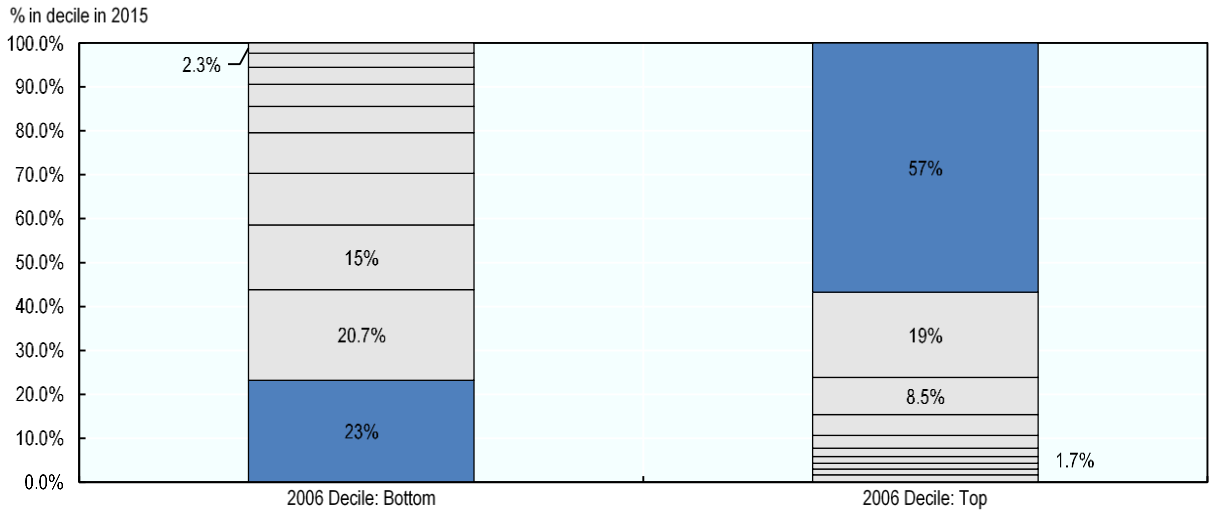
(Sawhill-Condon, 1992; Auten and Gee, 2009), in order to remove the unrepresentative 'school-to-work transition'. Second, two comparison years are chosen and only taxpayers observed in both years are kept. Keeping only individuals of certain characteristics, for example, of those who continued to complete tax returns for a certain period is in line with the literature (US Department of Treasury, 1992a, 1992b; Carroll et al., 2006). Third, two distinct gross income deciles are then calculated for each year. Finally, the taxpayer transition is calculated across the two years and presented graphically.

Mobility of Taxpayer Population

51. Of those in the bottom decile in 2006, 1 in 5 (23%) remain entrenched in that decile over the ten year period while 4 in 5 (77%) move upwards (Figure 10). In the middle decile, there is more mobility upwards (43%) than downwards (36%). Of those in the top decile in 2006, over half (57%) stay in that decile by 2015. This appears to be roughly similar to the United States, where around half of the top fifth of income earners remain in the top quintile after 11 years over the period 1970 to 1995 (Bradbury, 2011).[24]

Figure 10. Over the past decade in Ireland, over half of taxpayers stayed in the top decile

Income Mobility in Ireland, 2006 – 2015



Note: 1 162.462 taxpayers were observed in both years. Note: Survival rates in the previous section are smaller than the transition matrices since the taxpayers in the base year are dropped (who are not observed in both periods) for transition matrices while these observations are retained for the purposes of calculating survival rates.
Source: Analysis of Irish tax administration data.

24. The international comparisons that are made in the paper should be treated as approximate as the literature uses a large range of different definitions for whose income, what type of income and over what period. This makes exact comparisons difficult. In this case the data used by Bradbury (2011) for the United States calculation is different from that used in this paper in several respects. It is based on household data, it is post tax, post transfer and it is for the top quintile and it is during a different period.

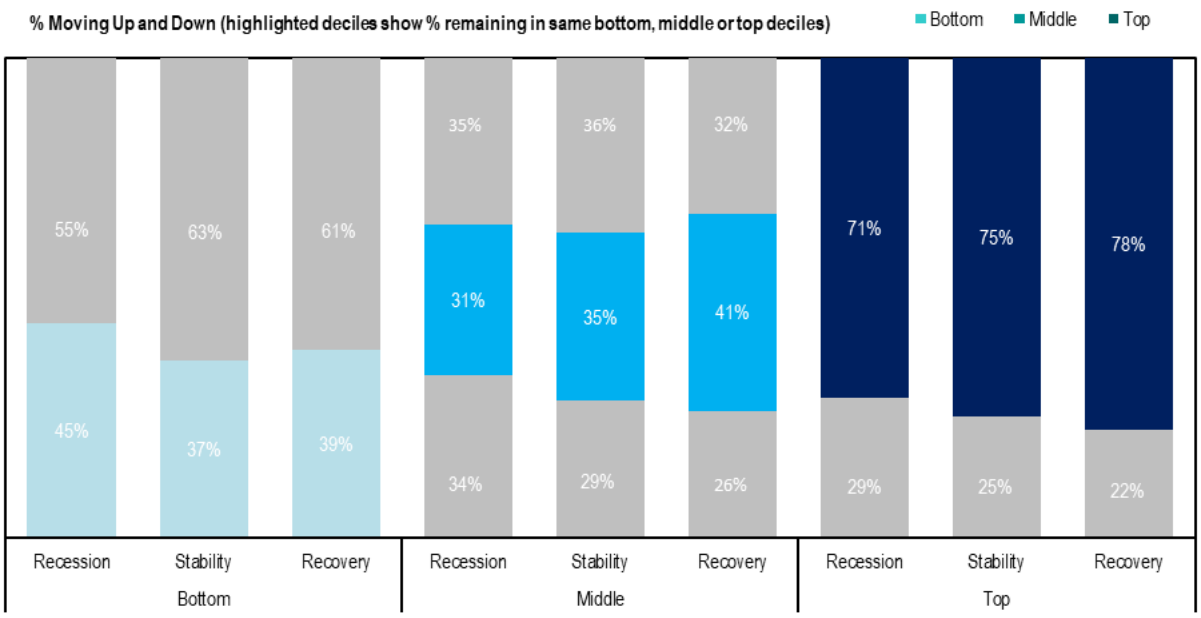
Mobility in the Boom, Recession and Recovery Periods

52. Mobility appears to vary over time, with changes correlated with large economic events and the business cycle. A comparison of the United States and the western states of Germany found intra-generational mobility over 5 year periods was higher in Germany prior to unification but subsequently is no different from the United States and possibly lower post 2000 (Bayaz-Ozturk et al., 2014).Compared to the previous mobility analysis, mobility is smaller because it is measured over a shorter timeframe.

53. Mobility for those in the bottom decile increased after the recession period (Figure 11). During the recession (2006–2009) 45% remained entrenched, while during the stability period (2009 – 2012) this fell to 37% and to 39% during the recovery (2012 – 2015). The proportions managing to stay in the top decile during the recession (71%) is lower compared to the stability (75%) and recovery (78%) periods. The expansion period from 2012 to 2015 exhibit similar survival rates to Germany during expansion, where over 2001-2006 around 78% of those in the top 10% remained there after 3 years (Jenderny, 2016).

Figure 11. During the recession, fewer taxpayers managed to stay in the top decile compared to the stabilisation and recovery periods

Income mobility in the recession, stability and recovery periods



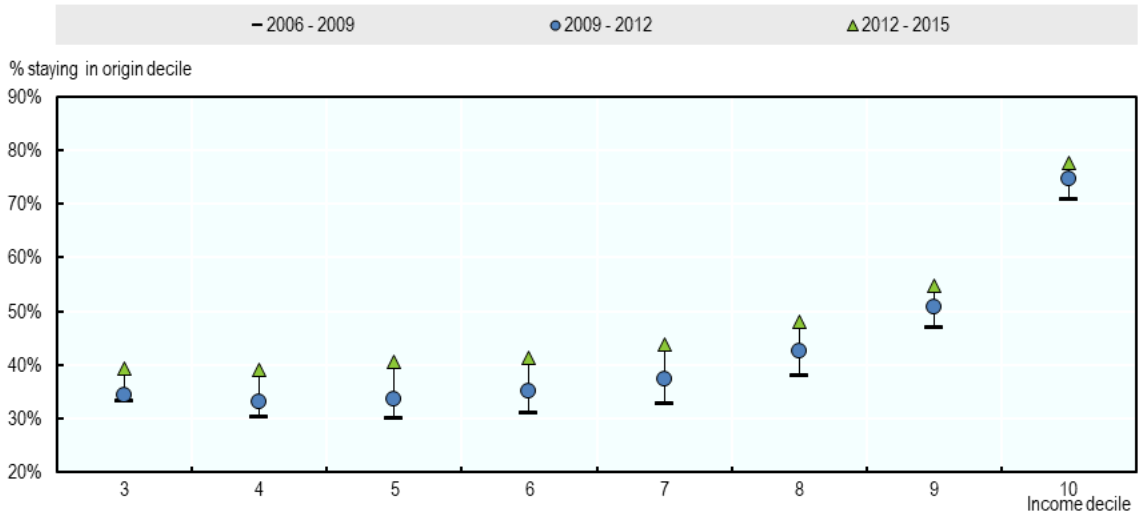
Note: 1,384,631; 1,383,115 and 1,525,057 taxpayers are observed in each year pair 2006-2009, 2009-2012 and 2012-2015.
Source: Analysis of Irish tax administration data.

54. What is the general direction of economic mobility in Ireland? From one year to the next, a taxpayer is either economically mobile (moving either up or down the income ladder) or immobile (staying on the same rung of the ladder). Figure 12 examines economic mobility at each decile by showing who stays in the same decile after selected 3 year periods. In the middle 6th decile, 1 in 3 (31%) stayed in that decile between 2006 and 2009. Between 2012 and 2015, this increased to 1 in 4 (41%). This trend of declining mobility in

each subsequent three-year period is observed across all deciles, but particularly among middle-income earners.

Figure 12. Economic mobility is decreasing, especially for middle income earners

% remaining in origin decile in selected 3-year periods, 2006 – 2015



Note: As discussed in the methodology section, tax administration data is less comprehensive and complete at the bottom of the income distribution so deciles 1 and 2 are excluded for the purposes of this analysis.
Source: Analysis of Irish tax administration data.

Modelling Factors Associated with Mobility

55. This section models the factors associated with mobility during the recession, stabilisation and early recovery periods. A balanced panel is developed for each sub-period following the approach taken in calculating the transition probabilities.

56. The dependent variable in the model is calculated as the change in a taxpayer's percentile position between the two periods. For example, if a taxpayer's gross income was in the 24th percentile in 2006 and in the 44th percentile in 2009 then the dependent variable is taken to be the 20 percentile rise the taxpayer undergoes in the income distribution. As before, the use of percentiles means that relative mobility is being examined here instead of absolute mobility.

57. Two specifications are considered to model the change in taxpayers' percentile position for each of the three periods. To assess the importance of taxpayers starting point in the income distribution, the first specification uses only the initial income deciles to explain taxpayers' percentile movement. The second specification extends the first by controlling for demographic and other characteristics including taxpayer age, region, tax status and sector worked. Adding age helps to control for the life-cycle income effects described above. As there is little variation in taxpayers' demographic information across each year demographic variables are included only for the latter year of each period. For

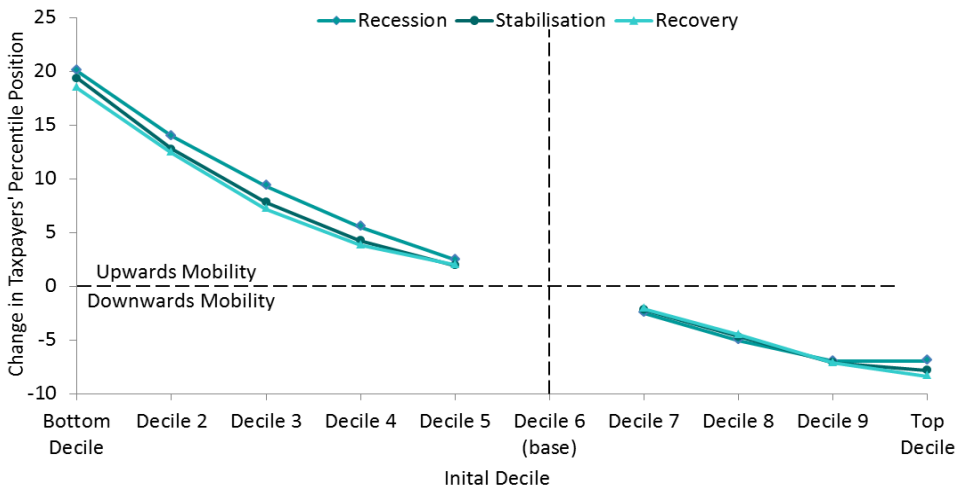
instance, in the 2006 to 2009 period a taxpayer's age and employment sector is taken to be that recorded in 2009. The results for both specifications are presented in Table 9.[25]

58. As all explanatory variables are categorical, a base category for each variable is specified which determines the base taxpayer against which coefficients are interpreted. In the first specification, the middle (sixth) decile is taken as the base category for the initial deciles. In the second specification, the base taxpayer for each period is taken to be a single male PAYE taxpayer, from Dublin, aged 45 to 54 years, working in the wholesale and retail sector and starting in the middle (sixth) decile. The inclusion of demographic information increases the explanatory power (measured by the R squared) of the model.

59. The starting decile is negatively related to the taxpayers' percentile movement (Figure 12).26 Taxpayers starting at deciles below the middle decile experience an increase in mobility relative to the middle decile and those starting above the middle decile experience a decrease. Furthermore, the downward trend in terms of coefficient magnitude is approximately linear. That is, for those starting in the bottom decile their upwards mobility is greatest. Conversely, for those starting in the fifth decile their upwards mobility is the smallest. This trend is the same for those starting in the top decile and just above the middle decile.

60. It is important to note that the greatest upwards mobility at the bottom decile and the greatest downwards mobility at the top decile are partly driven by the fact that taxpayers starting in the bottom decile cannot move downwards (and vice versa for those starting in the top deciles). However, the fact that the trend holds through to the middle deciles indicates that the underlying trend holds. This trend also holds for each of the three periods considered here. When examining the impact of the recession, stabilisation and recovery periods on mobility it is apparent that mobility over the three periods is broadly similar.

Figure 13. Coefficients on Initial Decile



Source: Analysis of Irish tax administration data.

25. The full table, inclusive of standard errors, is reported in the Appendix.

26. The same trend holds true with respect to the coefficients on the initial deciles in the first specification except that the coefficients are generally smaller by about two to three percentile points.

61. A taxpayer starting in the bottom decile in 2006 will move up approximately 20 percentiles by 2009 when compared to a taxpayer starting in the middle decile (Table 9). A taxpayer starting in the top decile in 2006 will move down approximately 7 percentiles by 2009 relative to a taxpayer starting in the middle decile.

62. Younger workers are the most mobile, which is consistent with the life-cycle of earnings presented earlier. The mobility of taxpayers aged 25 to 34 is around four to five percentiles higher than that of taxpayers among 45 to 54 years-old group. Taxpayers over sixty-five have lower upward income mobility when compared to taxpayers aged 45 to 54 years during the recession and recovery periods. However, their upward mobility is higher during the stabilisation period reflecting perhaps that their incomes were protected during an era of falling incomes.

63. Compared to taxpayers in Dublin, those outside of Dublin record a decline in mobility. However, the magnitude of the decline generally decreases in each period following the recession period. The greatest decline in mobility relative to Dublin is in the Borders Midlands West (BMW) region.

64. The mobility of single female taxpayers is greater than their male counterparts in the recession by about one percentile and by about half a percentile in the stabilisation period. However, this reverses in the recovery period where female mobility is lower than that of males by around 1.5 percentiles. Married taxpayers with two incomes experience around ten to eleven percentile points higher mobility than single males over all periods perhaps reflecting the greater earning potential of dual earners. Married taxpayers with one income observe higher mobility than single males but lower mobility relative to dual earning taxpayers. Widows and widowers also have higher mobility than single males during the recession though mobility is lower in the recovery period.

Table 9. Econometric Results

	Initial Income Only			All Variables		
	Recession	Stabilisation	Recovery	Recession	Stabilisation	Recovery
VARIABLES	(06 - 09)	(09 – 12)	(12 – 15)	(06 - 09)	(09 – 12)	(12 – 15)
Initial Decile: Bottom	18.06**	17.01**	16.82**	20.03**	19.38**	18.44**
Initial Decile: 2	11.85**	10.44**	10.26**	13.97**	12.76**	12.42**
Initial Decile: 3	7.65**	6.02**	5.45**	9.33**	7.80**	7.19**
Initial Decile: 4	4.49**	3.16**	2.68**	5.50**	4.25**	3.80**
Initial Decile: 5	2.02**	1.42**	1.46**	2.44**	1.93**	1.99**
Initial Decile: 6 (base)	-	-	-	-	-	-
Initial Decile: 7	-1.72**	-1.52**	-1.43**	-2.50**	-2.21**	-2.13**
Initial Decile: 8	-3.50**	-3.19**	-2.94**	-5.07**	-4.70**	-4.54**
Initial Decile: 9	-4.23**	-4.36**	-3.98**	-7.02**	-7.11**	-7.15**
Initial Decile: Top	-3.56**	-4.28**	-4.15**	-6.96**	-7.84**	-8.41**
Age 25-34				4.77**	4.05**	4.96**
Age 35-44				1.78**	2.09**	2.16**
Age 45-54 (base)				-	-	-
Age 55-64				-2.61**	-2.81**	-3.11**
Age 65+				-3.28**	0.92**	-3.17**
Dublin (base)				-	-	-
Borders Midlands West				-2.24**	-2.10**	-1.95**
East South East				-1.69**	-1.64**	-1.11**
South West				-1.39**	-1.10**	-0.89**
Large Cases Division				9.85**	6.73**	5.07**
Single Male (base)				-	-	-
Single Female				1.35**	0.48**	-1.63**
Married Two Earners				10.78**	9.68**	9.57**
Married One Earner				2.81**	2.55**	1.23**
Widow / Widower				2.71**	-0.14	-0.26**
PAYE (base)				-	-	-
Self Assessed				-2.79**	-3.16**	-1.73**
Wholesale and Retail Trade (base)				-	-	-
Agriculture, Forestry & Fishing				2.96**	4.75**	1.66**
Industry				2.53**	4.67**	3.98**
Construction				-6.30**	-3.53**	3.20**
Transportation and Storage				0.74**	1.14**	0.44**
Accommodation and Food Services				-3.46**	-4.37**	-4.39**
Information and Communication				4.79**	6.37**	6.58**
Financial, Insurance & Real Estate				3.42**	3.24**	2.37**
Professional, Scientific and Technical				2.35**	3.15**	5.15**
Administrative and Support Service				-1.86**	-2.42**	-0.90**
Public Admin. and Defence				5.98**	3.39**	1.94**
Education				2.85**	0.68**	2.47**
Human Health and Social Work				4.65**	1.23**	0.68**
Arts, Entertainment, Recreation				0.46*	-0.71**	-1.02**
Other Service Activities				0.87**	-1.65**	-2.52**
Other Sectors				3.20**	2.30**	3.46**
Constant	-2.67**	-0.82**	0.16**	-7.45**	-5.23**	-3.27**
Observations	1,384,631	1,383,115	1,525,057	1,233,687	1,252,578	1,394,205
R-squared	0.114	0.113	0.126	0.19	0.182	0.222
F-stat	18524	17662	19211	5650	5451	6648
Root MSE	17.94	16.9	15.76	17.09	16.23	14.94

Note: ** denotes significantly different from zero at 1% level. * denotes significantly different from zero at 5% level.

65. Self-Assessed taxpayers experience a less upward mobility compared to PAYE taxpayers in all three periods. During the recession period self-assessed taxpayers' mobility is nearly three percentiles below that of PAYE workers. During the stabilisation period this increased somewhat and after the recovery this fell to two percentiles.

66. Those working in public administration, education, health, ICT, finance, science and the professional sectors tend to be more upwardly mobile than other sectors when compared to the wholesale and retail sector (which is the largest sector). This is also similar to the United States, where workers in FIRE and STEM industries are more likely to have a significant upward jump in income over a two-year period (Larrimore et al., 2015). Although the model lacks educational controls, this likely partly reflects the relatively high level of education in these sectors. Indeed Law et al. (2019) find in a similar analysis for Spain that an increase in education has a positive and significant effect on upwards income mobility.

67. Despite public expenditure control measures including hiring freezes, taxpayers in the public administration and defence sector observed the largest relative increase in their percentile position during the recession period compared to other sectors, reflecting the stability of employment and hours worked compared to the private sector. However, by the recovery period the sectors with the largest relative upward mobility are the information and communication and professional, scientific and technical sectors.

Conclusions

68. The current paper examines distributional and income mobility dynamics in Ireland using a unique longitudinal dataset drawn from the administrative tax records. Compared to static survey data, longitudinal tax data have two significant advantages. First, the tax data allows contains partial information on intra-generational mobility over time: who moves up and down the income distribution over time and why. Second, it gives a scarce insight into income dynamics at the very top-end, where the tax records are more comprehensive.

69. In 2015, the top 10% earned one-third of all income and paid two-thirds of all Income Tax and half of the Universal Social Charge. Of those in the top 10% in 2006, under half remained in the top 10% of contributors 10 years later. The regression analysis shows upwards income mobility is the highest in the bottom decile and decreases monotonically. Indeed, between 2006 and 2009, in the run-up to the crisis, a period of high incomes growth, incomes grew much faster among lower percentiles compared to higher percentiles. However, between 2012 and 2015, a period of mild recovery, the trend reversed, with the increases largest at the top of the distribution. Income thresholds vary widely across sectors and are higher in the professionals sector. Upward income mobility is also highest amongst those in finance, insurance and professional, scientific and technical sectors. This may reflect higher education levels in these sectors.

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