# Analysis of Low Income Taxpayers and Employer Profitability: Evidence from Tax Records

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## Executive Summary

This paper examines the incomes and mobility of taxpayers and the profitability of employers in Ireland using Revenue's tax record data.

The analysis has a special focus on low income taxpayers to support the work of the Low Pay Commission. The purpose of the research is to make the best use of Revenue's data and to improve the evidence-base for policy making.

The distributional and mobility analysis of low income taxpayers is based on a longitudinal dataset, which follows approximately 100,000 taxpayers for 4 years from 2011 to 2014. These taxpayers are stratified random sample drawn from the entire population of 2.1 million tax units on Revenue records. While analysis of incomes in Ireland and internationally is often based on a snapshot at a moment in time, the longitudinal nature of this dataset allows measurement of income mobility over time.

Some of the key findings are as follows:

- One in three taxpayers are low paid, defined as those earning below two-thirds of median income.
- The highest proportions of low paid taxpayers are in the wholesale & retail trade (23 per cent) and accommodation & food (19 per cent) sectors.
- Five low pay sectors are identified, having median incomes that are substantially below the median income for all sectors. They include accommodation & food service activities, wholesale & retail trade and administrative & support service activities.
- Slightly over one third of employments are in low pay sectors.
- Low pay sectors have the highest proportions of the youngest taxpayers. Two in five taxpayers are aged 24 and under in the accommodation & food sector.
- In the low pay sectors, males earn slightly more than females while in the other sectors females earn more. The sectors with the highest ratio of males to females are construction, transport and agriculture (7.5, 2.9 and 2.8 times respectively).
- In Dublin, median incomes in low pay sectors incomes are 7 per cent higher than those outside Dublin (compared to 9 per cent higher in the other sectors).

Based on an analysis of income mobility, lower paid taxpayers working in low paid sectors have a higher chance of increasing their incomes in future years relative to others within the same sector. For example, in the accommodation & food sector almost half moved upwards from the bottom quintile between 2013 and 2014.

# 1 Data

The analysis in this paper is based on Revenue's Income and Corporation Tax records. Revenue's administrative Income Tax records cover the entire population of 2.1 million tax units.[1,2] A unique panel dataset is drawn from these data using a stratified random sample. The data follow over 100,000 taxpayers over the 4-year period from 2011 to 2014. The dataset is compiled using PAYE tax return information filed by employers on behalf of employees (Form P35).[3]

The profile of low pay taxpayers and the distributional analysis in Sections 2 and 3 restricts the sample to taxpayers of working age (15 to 64) leaving approximately 77,000 taxpayers each year. The mobility analysis in Section 5 restricts the sample to taxpayers aged 25 to 64 leaving approximately 63,000 taxpayers each year. This follows common practice in the mobility literature which removes changes in income that are attributable to the transition from school to work.

The unit of analysis are tax units rather than taxpayers. The difference arises in the case of married couples who elect for joint assessment. These cases represent two taxpayers and either one or two incomes but only one tax unit. Tax units are categorised under six personal statuses as follows: single male, single female, married two-earners, married one-earners, widower and widow. For simplicity, the word taxpayer is used to refer to tax unit hereafter.

On sector of employment, the sector relates to the sector of the employer and not the activity of the specific employee. Each taxpayer is associated with one sector in each year. Taxpayers may have multiple occupations or businesses but this is not accounted for in this analysis. The region of employment relates to the region of the taxpayer's residence, not the region in which the employer is registered with Revenue.[4]

The analysis of profits in this paper is based on Revenue's corporate and self-assessed tax records in 2013 and 2014. All companies tax resident in the state are obliged to return a Corporation Tax return (Form CT1) and all self-assessed businesses (registered for Income Tax) are obliged to file their trading incomes each year (Form 11).[5]

[1] The same population data are also used to produce Revenue's income distributions statistics, http://www.cso.ie/px/pxeirestat/pssn/rv01/homepagefiles/rv01_statbank.asp.
[2] For clarity, it should be noted also that the Revenue data include those in employment but not in the tax net.
[3] In this analysis, tax units are considered a PAYE employee if their PAYE income is greater than their self-assessed income (as filed on Form 11). Thus, earnings arising from self-assessed sources may be included in a tax unit's gross income if their self-assessed income is less than their PAYE income.
[4] A small number of taxpayers with Revenue's Large Cases Division are excluded from the analysis.
[5] Including company directors who own more than 15% of an active trading company.

Gross income is defined as income before adjustments (capital allowances, interest paid, losses, allowable expenses, retirement annuities, etc.) but after deduction of superannuation contributions by employees.

From an analysis perspective, there are both advantages and disadvantages to using tax records as opposed to more widely used survey data. Three advantages are as follows. First, coverage of the full taxpayer population allows specific analysis of sub-groups while retaining sufficient sample size. Second, because it is an offense to submit a false tax return, incomes are largely free from measurement error such as misreported incomes or response bias. Third, given the statutory requirement to file tax returns problems associated with non-response and attrition are largely absent from the data. Jenkins (2011) notes that tax records are often 'used as a validation gold standard against which to assess measurement error in survey-based income data'.

There are also disadvantages. First, the data are confined to those who complete tax returns and does not cover those entirely reliant on untaxed social benefits or undeclared income. Further, the data do not distinguish between full and part-time taxpayers. Second, tax data are collected for the purposes of the calculating tax liabilities. Unlike survey data, tax record data have limited demographic information, such as educational attainment. Third, while the tax records are based on the gross incomes of tax units, survey data are typically based on an equivalisation of the disposable incomes of households.[6] Tax records also represent the taxpaying population while survey data attempts to represent the entire population.

[6] Equivalisation usually involves summing up all income in a tax-unit/household, and dividing it by some equivalence scale to take account of the total needs of the members of the unit.

## 2 Profile of Low Paid Taxpayers

This section profiles low paid taxpayers. It is worth reemphasising that the results are based on the taxpaying population rather than the total population.[7]

Low paid taxpayers are defined as those earning below €17,642, which is two thirds of the median annual gross income (PAYE) on the tax records data.[8] One in three taxpayers (34 per cent) earn below this amount.

Table 1 compares the characteristics of low paid taxpayers to all other taxpayers. A much higher proportion of low paid taxpayers are aged 15 to 24. Over 40 per cent of low paid taxpayers are aged 15 to 24, compared to 5 per cent for other taxpayers. There is a slightly higher proportion of low paid taxpayers in the Border Midlands West region and a slightly lower proportion in Dublin compared to other taxpayers.

Single male and female taxpayers are more likely to earn less than €17,642, whereas joint-assessed taxpayers are more likely to earn higher amounts. There is little difference between the proportion of single male and female taxpayers who are low paid.[9] The highest proportions of low paid taxpayers are in the wholesale & retail trade (23 per cent), accommodation & food (19 per cent) and administration (8 per cent) sectors.

[7] Throughout this paper, the term taxpayer is used to include those in employment but not paying tax or USC.
[8] The Eurostat definition of low pay is two-thirds of the median hourly earnings. This paper applies the same proportion to annual incomes. That is, €26,463*2/3 = €17,642. Median income for all sectors is presented in Table 2. The threshold for low pay used here also corresponds approximately to the annual income received from earning the €8.65 minimum wage in 2014 and working 39 hours per week for 52 weeks.
[9] Male and female taxpayers are only identified on the tax records if they are not joint-assessed. Taxpayers who are not joint-assessed are more likely to be in younger age cohorts.

## Table 1: Profile of Low Paid Taxpayers, 2014

| | % Low Paid Taxpayers | % Other Taxpayers | Number of Observations |
|---|---|---|---|
| **All Employments** | **100%** | **100%** | **79,478** |
| ***Age*** | | | |
| 15 – 24 | 42.1% | 4.8% | 13,896 |
| 25 – 34 | 29.3% | 32.2% | 24,804 |
| 35 – 44 | 13.5% | 30.0% | 19,356 |
| 45 – 54 | 8.7% | 19.2% | 12,408 |
| 55 – 64 | 6.5% | 13.8% | 9,014 |
| ***Revenue Region*** | | | |
| Dublin | 31.2% | 33.5% | 25,983 |
| Border Midlands West | 24.5% | 21.9% | 18,094 |
| East South East | 24.0% | 24.6% | 19,374 |
| South West | 20.3% | 20.0% | 16,002 |
| ***Tax Status*** | | | |
| Single Male | 44.3% | 26.8% | 26,036 |
| Single Female | 44.0% | 27.5% | 26,320 |
| Married Two Earners | 2.7% | 27.8% | 15,293 |
| Married One Earner | 8.3% | 16.7% | 10,982 |
| Widow / Widower | 0.6% | 1.3% | 834 |
| ***Sector of Employment (NACE)*** | | | |
| Accommodation & food services (I) | 18.5% | 4.6% | 7,414 |
| Other service activities (S) | 4.6% | 2.2% | 2,411 |
| Arts, entertainment & recreation (R) | 2.6% | 1.4% | 1,445 |
| Wholesale & retail trade (G) | 22.7% | 14.0% | 13,505 |
| Administrative & support services (N) | 8.2% | 5.0% | 4,853 |
| Agriculture, forestry & fishing (A) | 3.3% | 2.9% | 2,395 |
| Construction (F) | 5.0% | 4.6% | 3,749 |
| Human health & social work (Q) | 7.3% | 9.3% | 6,872 |
| Professional, scientific & technical (M) | 4.0% | 5.8% | 4,130 |
| Transportation & storage (H) | 2.3% | 4.4% | 2,913 |
| Industry (B-E) | 6.0% | 11.5% | 7,621 |
| Information & communication (J) | 3.0% | 4.7% | 3,296 |
| Education (P) | 4.5% | 6.1% | 4,416 |
| Public administration & defence (O) | 2.8% | 8.6% | 5,290 |
| Financial, insurance & real estate (K, L) | 3.8% | 11.4% | 7,018 |

Source: Revenue analysis. Note: Observations for region, tax status and sector do not sum exactly to total. Revenue's Large Cases Division cases (which is categorised as a region) is excluded. There are a small number of missing values for region. NACE sectors T and U are excluded.

# 3 Income Distributions by Sector

## 3.1 Introduction

This section examines income distributions by sector and for various PAYE taxpayer types. A special focus is given to the low pay sectors, which are highlighted in the tables throughout the section.

## 3.2 Identifying Low Pay Sectors

Low pay sectors, for the purposes of this analysis, are identified as the sectors that have median incomes substantially below the median income for all sectors. On this basis, there are five low paid sectors as follows:

1. Accommodation & food service activities (I)
2. Other service activities (S)[10]
3. Arts, entertainment & recreation (R)[11]
4. Wholesale & retail trade; repair of motor vehicles and motorcycles (G)
5. Administrative & support service activities (N)[12]

## 3.3 Sectoral Income Distribution

Table 2 presents the distribution of gross income for the working age population (aged 15 to 64) in 2014 by sector of employment.[13] Mean and median incomes, in addition to changes in the median from 2013, are shown in the first three columns. The fourth column shows the share of taxpayers in each sector who earn less than €17,642 (low paid taxpayers). To illustrate the relative size of each sector, the share of all taxpayers working in each sector is shown in the final column.

Overall, mean income is €36,126 in 2014 while median income is €26,463.[14] The difference arises because incomes on the tax records are right-skewed, that is, a relatively small number of very large incomes more heavily influence the calculation of the mean. Consequently, the median offers a better measure of central tendency or the "typical" taxpayer. For this reason, the median is used as the preferred measure for the remainder of this paper and tables are sorted by median income in each sector.

[10] Examples of activities in the other services sector are religious / business membership organizations and repair of computers / household goods.
[11] Examples of activities include creative arts, libraries, museums, betting, sports clubs and gyms.
[12] Examples of activities include leasing, recruitment, call centres, cleaning and security.
[13] Sectors T (Activities of households as employers) and U (Activities of extraterritorial organisation & bodies) are not presented as employment in these sectors are not enterprise based. However, these sectors are included in the aggregated sectoral calculations.
[14] Compared to income data from the CSO's survey of Earnings, Hours and Employment Costs (EHEC), overall trends in incomes and proportions across sectors are broadly similar. In 2014 for example, average PAYE earnings are €36,126 on the tax records compared to €36,090 in the EHEC data.

Taken together, one in three taxpayers (36 per cent) work in low pay sectors. The largest low paid sector is wholesale & retail trade (16 per cent) followed by accommodation & food (9 per cent). The wholesale & retail sector is the largest sector of employment reported on the tax records while the other services and arts, entertainment & recreation represent the smallest sectors (3 and 2 per cent respectively).

Measured in nominal terms, median incomes grew by 0.2 per cent in the low paid sectors since 2013. For all other sectors, median incomes fell 0.5 per cent. Median incomes fell by 2 per cent in the accommodation & food sector and increased by 1.4 per cent in the wholesale & retail sector.

One third (34 per cent) earn below the low income threshold used in this paper (€17,642 or two–thirds of median income). For instance, 68 per cent of taxpayers in the accommodation & food sector earn below this threshold while only 15 per cent of taxpayers in the financial, insurance & real estate sector earn below this amount.

**Table 2: Income Distribution by Sector, 2014**

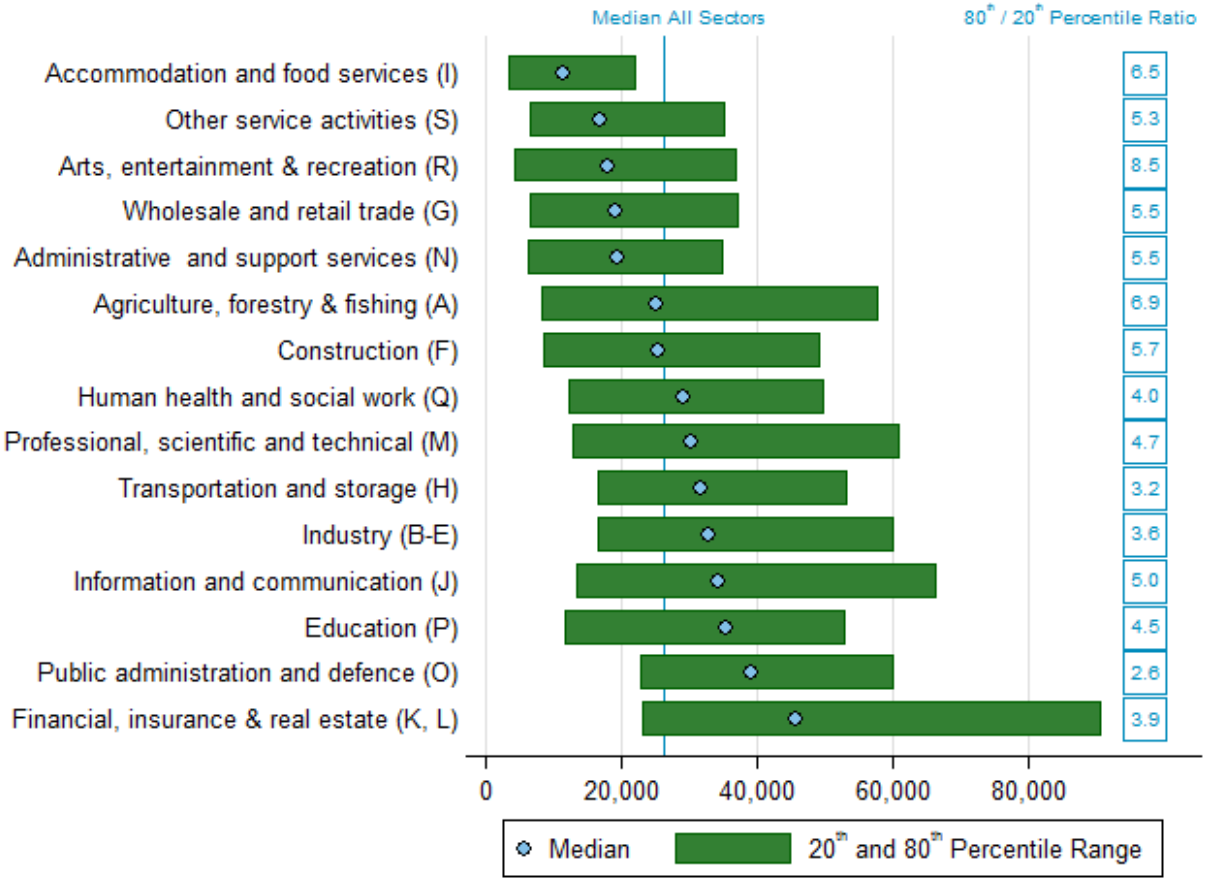
| Sector (NACE code) | € Mean Income | € Median Income | % Change on 2013 | % Earning <€17,642 | Share |
|---|---|---|---|---|---|
| **All Sectors** | **36,126** | **26,463** | **0.3%** | **34%** | **100%[1]** |
| **Low Pay Sectors** | **23,173** | **16,938** | **0.2%** | **-** | **36%** |
| **Other Sectors** | **42,390** | **33,732** | **-0.5%** | **-** | **61%** |
| Accommodation & food services (I) | 15,169 | 11,476 | -2.0% | 68% | 9% |
| Other service activities (S) | 23,340 | 16,955 | -3.7% | 52% | 3% |
| Arts, entertainment & recreation (R) | 29,629 | 18,065 | 2.4% | 49% | 2% |
| Wholesale & retail trade (G) | 25,857 | 19,231 | 1.4% | 46% | 16% |
| Administrative & support services (N) | 25,923 | 19,401 | 3.8% | 46% | 6% |
| Agriculture, forestry & fishing (A) | 35,637 | 25,328 | -3.7% | 37% | 4% |
| Construction (F) | 31,610 | 25,583 | 3.3% | 36% | 5% |
| Human health & social work (Q) | 35,713 | 29,058 | -1.4% | 29% | 8% |
| Professional, scientific & technical (M) | 42,459 | 30,324 | 4.1% | 26% | 6% |
| Transportation & storage (H) | 37,057 | 31,623 | -2.1% | 21% | 4% |
| Industry (B-E) | 40,080 | 32,880 | -0.5% | 21% | 9% |
| Information & communication (J) | 44,260 | 34,469 | 0.2% | 25% | 4% |
| Education (P) | 36,970 | 35,561 | -2.6% | 27% | 5% |
| Public administration & defence (O) | 42,809 | 39,079 | -1.6% | 15% | 6% |
| Financial, insurance & real estate (K, L) | 63,887 | 45,612 | 3.8% | 15% | 9% |

Source: Revenue analysis. Note 1: NACE sectors T and U account for a 3% share but are not presented.

Figure 1 shows median sectoral incomes together with the range of sectoral incomes at the 20$^{th}$ and 80$^{th}$ percentiles. The ratio of the 80$^{th}$ percentile to the 20$^{th}$ percentile is also shown for each sector. The range of income at the 20$^{th}$ and 80$^{th}$ percentiles is generally

larger for sectors with larger median incomes, with the exception of the education and public administration sectors. The ratio of the 80th to 20th percentile is greatest for the arts, agriculture and accommodation sectors (8.5, 6.9 and 6.5 respectively).

**Figure 1: Income Distribution by Sector, 2014**




Source: Revenue analysis.

## 3.4 Sectoral Income by Taxpayer Type

Table 3 reports the sectoral median income for different types of taxpayer. Overall, single male and female taxpayers have similar median incomes. In the low pay sectors, males earn slightly more than females (€13,916 compared to €13,469) while in the other sectors females earn more (€27,450 compared to €24,441).

Males earn more than their female counterparts in the two largest low pay sectors (namely, accommodation & food and wholesale & retail). The reverse is true for the smaller low pay sectors. In the other sectors, females earn more than males in the human health, industry and education. Males earn more than females in the agricultural and information & communication sectors.

Overall, the ratio of males to females is the same. There are more females working in the low pay sectors (0.9 males to every female). The sectors with the highest concentration of male workers are the construction, transport and agriculture sectors, which have 7.5, 2.9 and 2.8 times as many males as females. The sectors with the highest concentration of females are the human health and education sectors where only 30 per cent and 40 per cent of employees are males.

Married taxpayers with one income earn more than those unmarried. In turn, married taxpayers with two earners earn more than their single earning counterparts, reflecting dual incomes.

**Table 3: Median Sectoral Income by Taxpayer Type, 2014**

| Sector (NACE code) | € Male | € Female | Ratio of Males to Females | € Married One Earning | € Married Two Earning |
|---|---|---|---|---|---|
| **All Sectors** | **19,372** | **19,422** | **1.0** | **33,861** | **61,182** |
| **Low Pay Sectors** | **13,916** | **13,469** | **0.9** | **24,960** | **47,095** |
| **Other Sectors** | **24,441** | **27,450** | **1.1** | **38,223** | **64,719** |
| Accommodation & food services (I) | 10,369 | 9,274 | 0.9 | 18,938 | 36,988 |
| Other service activities (S) | 10,727 | 14,832 | 0.5 | 20,833 | 44,180 |
| Arts, entertainment & recreation (R) | 12,632 | 14,134 | 1.2 | 28,553 | 53,896 |
| Wholesale & retail trade (G) | 16,745 | 15,078 | 0.9 | 28,466 | 51,646 |
| Administrative & support services (N) | 15,888 | 16,523 | 1.2 | 24,028 | 44,668 |
| Agriculture, forestry & fishing (A) | 13,329 | 10,680 | 2.8 | 30,678 | 56,863 |
| Construction (F) | 17,137 | 16,614 | 7.5 | 28,195 | 51,555 |
| Human health & social work (Q) | 18,304 | 23,997 | 0.3 | 33,950 | 57,730 |
| Professional, scientific & technical (M) | 24,489 | 25,067 | 0.9 | 38,631 | 69,738 |
| Transportation & storage (H) | 23,903 | 22,838 | 2.9 | 32,039 | 52,765 |
| Industry (B-E) | 24,407 | 26,762 | 2.2 | 39,167 | 62,838 |
| Information & communication (J) | 28,742 | 26,850 | 1.4 | 50,131 | 81,803 |
| Education (P) | 22,074 | 31,564 | 0.4 | 41,026 | 70,079 |
| Public administration & defence (O) | 32,969 | 32,171 | 0.9 | 38,189 | 66,712 |
| Financial, insurance & real estate (K, L) | 33,000 | 32,941 | 0.8 | 53,481 | 82,570 |

Source: Revenue analysis.

## 3.5 Sectoral Income by Region

Table 4 shows the median sectoral income for Dublin and outside Dublin, while Table 5 shows the same for the four Revenue administrative regions: Dublin, Border Midlands West (BMW), East South East (ESE) and South West (SW).

Median incomes are higher in Dublin for most sectors compared to outside of Dublin. Overall, median incomes are 6 per cent higher in Dublin. In the low pay sectors incomes are 7 per cent higher in Dublin compared to 9 per cent higher in the other sectors. Median

income in the arts, entertainment & recreation sector is 45 per cent higher in Dublin while incomes in accommodation & food is 18 per cent higher in Dublin. A notable exception to this trend is the education sector where those in Dublin earn 12 per cent less than outside of Dublin. Incomes in the administrative sector are marginally higher outside of Dublin.

**Table 4: Median Sectoral Income Dublin and Outside Dublin, 2014**

| Sector (NACE code) | € Dublin | € Outside Dublin | % Difference |
|---|---|---|---|
| **All Sectors** | **27,476** | **25,936** | **6%** |
| **Low Pay Sectors** | **17,681** | **16,567** | **7%** |
| **Other Sectors** | **35,843** | **32,902** | **9%** |
| Accommodation & food services (I) | 12,838 | 10,900 | 18% |
| Other service activities (S) | 17,236 | 16,809 | 3% |
| Arts, entertainment & recreation (R) | 22,129 | 15,307 | 45% |
| Wholesale & retail trade (G) | 19,730 | 18,973 | 4% |
| Administrative & support services (N) | 19,353 | 19,422 | -0.4% |
| Agriculture, forestry & fishing (A) | - | 26,046 | - |
| Construction (F) | 27,052 | 25,319 | 7% |
| Human health & social work (Q) | 31,589 | 28,023 | 13% |
| Professional, scientific & technical (M) | 32,000 | 29,265 | 9% |
| Transportation & storage (H) | 33,698 | 30,494 | 11% |
| Industry (B-E) | 34,924 | 32,493 | 7% |
| Information & communication (J) | 38,095 | 31,724 | 20% |
| Education (P) | 32,284 | 36,481 | -12% |
| Public administration & defence (O) | 40,791 | 38,616 | 6% |
| Financial, insurance & real estate (K, L) | 46,838 | 44,578 | 5% |

Source: Revenue analysis. Note: Median income for the agriculture, forestry & fishing (A) sector is omitted for Dublin due to small sample size.

The BMW region has the lowest median income across nearly all sectors examined. A noticeable exception is the agriculture, forestry & fishing sector where employees in the BMW region earn more than in the other regions.[15]

[15] Note that self-assessed taxpayers are excluded from the analysis in order to focus on PAYE employees.

**Table 5: Median Sectoral Income by Region, 2014**

| Sector (NACE code) | € Dublin | € BMW | € ESE | € SW |
|---|---|---|---|---|
| **All Sectors** | **27,476** | **24,542** | **26,926** | **26,362** |
| **Low Pay Sectors** | **17,681** | **15,307** | **17,418** | **16,929** |
| **Other Sectors** | **35,843** | **31,496** | **33,257** | **34,380** |
| Accommodation & food services (I) | 12,838 | 10,293 | 11,333 | 10,906 |
| Other service activities (S) | 17,236 | 14,664 | 18,249 | 17,178 |
| Arts, entertainment & recreation (R) | 22,129 | 12,038 | 15,864 | 16,989 |
| Wholesale & retail trade (G) | 19,730 | 18,000 | 19,729 | 19,398 |
| Administrative & support services (N) | 19,353 | 18,184 | 20,182 | 19,547 |
| Agriculture, forestry & fishing (A) | - | 30,385 | 21,346 | 26,052 |
| Construction (F) | 27,052 | 24,538 | 24,746 | 27,046 |
| Human health & social work (Q) | 31,589 | 27,861 | 28,653 | 26,929 |
| Professional, scientific & technical (M) | 32,000 | 26,705 | 30,276 | 30,833 |
| Transportation & storage (H) | 33,698 | 27,911 | 32,370 | 30,582 |
| Industry (B-E) | 34,924 | 29,717 | 32,931 | 36,075 |
| Information & communication (J) | 38,095 | 31,648 | 31,525 | 32,054 |
| Education (P) | 32,284 | 35,912 | 37,368 | 36,113 |
| Public administration & defence (O) | 40,791 | 37,022 | 40,031 | 38,738 |
| Financial, insurance & real estate (K, L) | 46,838 | 41,555 | 47,311 | 43,760 |

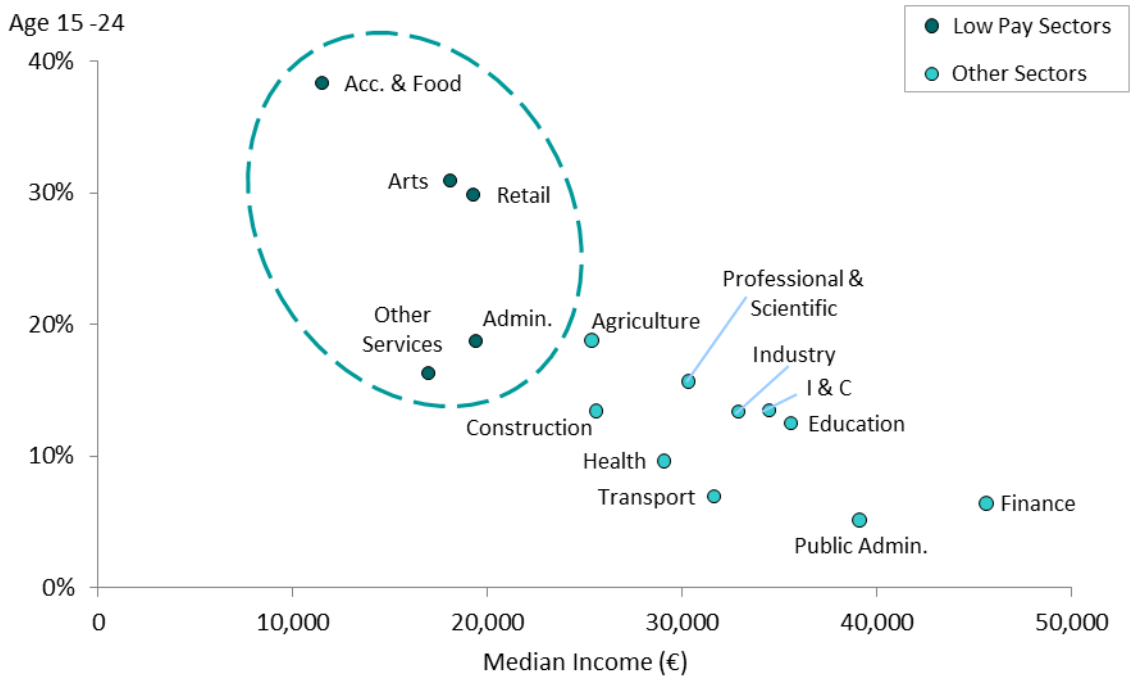
Source: Revenue analysis. Note: Median income for the agriculture, forestry & fishing (A) sector is omitted for Dublin due to small sample size.

## 3.6 Sectoral Income by Age

Low paid sectors have the highest proportions of the youngest taxpayers (aged 15 to 24). Figure 2 plots the share of taxpayers aged 15 to 24 working in each sector against the median income for that sector. Almost two in five (38 per cent) are aged 24 and under in the accommodation & food sector. The ratio is one in three in the arts and retail sectors (31 and 30 per cent respectively). By contrast, only around one in twenty are under the age of 25 in the transport, finance and public administration sectors (7, 6 and 5 percent respectfully). Overall, the findings indicate that lower paid sectors are more likely to employ the youngest workers (aged under 25).

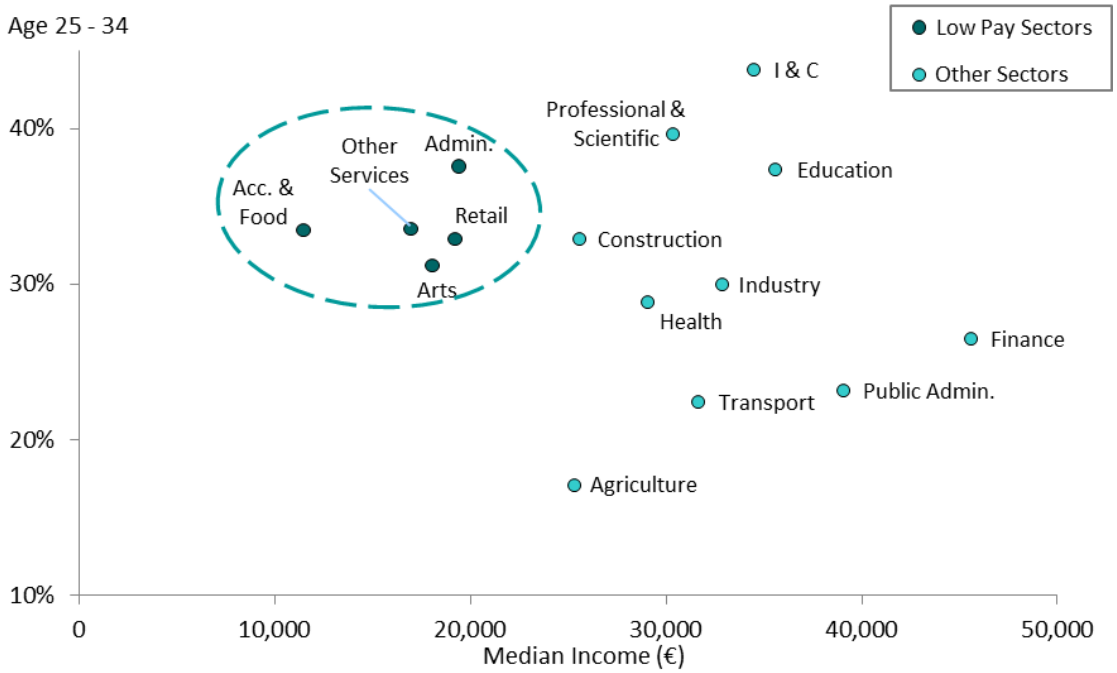
Figure 3 plots the same relationship using a slightly older group of young taxpayers (aged 25 to 34). For these cases, higher proportions of younger employees are no longer exclusive to the low paid sectors.

**Figure 2: Income and Age (15 to 24) by Sector, 2014**




Source: Revenue analysis. Note: I&C is information & communications.

**Figure 3: Income and Age (25 to 34) by Sector, 2014**




Source: Revenue analysis. Note: I&C is information & communications.

# 4 Employer Profitability

## 4.1 Introduction

This section examines profitability of employers by sector and size using Revenue's corporate and self-assessed tax records.

For the purpose of this analysis, employer size is defined as follows:

- Micro (1 – 10 employments);
- Small (11 – 50 employments); and
- Medium / Large (over 51 employments).

## 4.2 Profitability of Corporate Employers

Table 6 shows the number of profitable companies with employments and the share of employments by company size.[16] In 2014, 50,540 profitable companies returned employments associated with their company. The majority of companies with employments are micro (68 per cent) or small (24 per cent).

Low pay sectors generally have a smaller share of companies with less than 10 employees. This is especially evident for the accommodation & food and wholesale & retail sectors. For instance, only 34 per cent of companies in the accommodation & food sector have less than 10 employments.

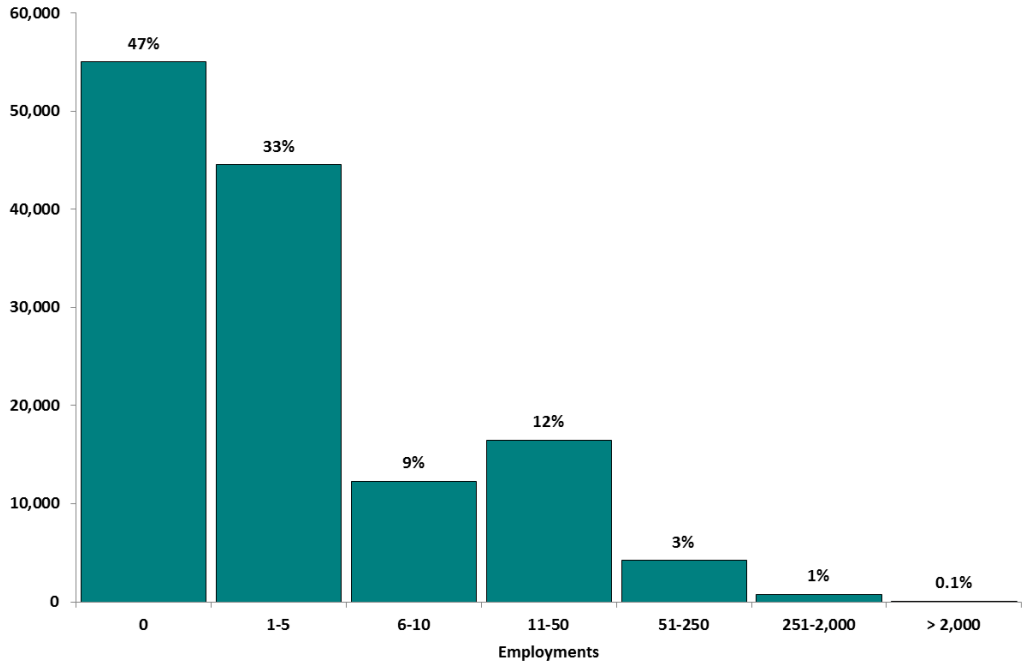
[16] Companies in a loss making position and those with no employments are excluded.

### Table 6: Employment Shares by Company Size, 2014

| Sector (NACE code) | Micro (1-10) | Small (11-50) | Medium / Large (>50) |
|---|---|---|---|
| **All Sectors** | **68%** | **24%** | **8%** |
| Accommodation & food services (I) | 34% | 45% | 21% |
| Other service activities (S) | 72% | 24% | 4% |
| Arts, entertainment & recreation (R) | 64% | 27% | 9% |
| Administrative & support services (N) | 66% | 22% | 13% |
| Wholesale & retail trade (G) | 59% | 33% | 8% |
| Construction (F) | 79% | 17% | 3% |
| Human health & social work (Q) | 65% | 19% | 16% |
| Transportation & storage (H) | 65% | 28% | 7% |
| Agriculture, forestry & fishing (A) | 84% | 13% | 3% |
| Professional, scientific & technical (M) | 86% | 11% | 3% |
| Industry (B-E) | 59% | 27% | 14% |
| Information & communication (J) | 79% | 14% | 6% |
| Education (P) | 67% | 23% | 9% |
| Financial, insurance & real estate (K, L) | 74% | 18% | 8% |

Source: Revenue analysis. Note: Note: Excludes public administration & defence (O), extra territorial bodies (U) and households as employers (T). Only companies making profits and with registered employees are included.

### Figure 4: Companies by Employment Numbers, 2014




Source: Revenue analysis. Note: All companies included.

Table 7 presents the median profits for each sector by company size. Larger companies have greater profits. The sectors with the lowest profits across all company sizes are the

other services, arts, entertainment & recreation and education. The largest profits are observed in the industry and financial & insurance sectors.

Within the low pay sectors, profits in the accommodation & food services sector are substantially below the median profits for all sectors for each company size. Companies in wholesale & retail trade have profits greater than the median for all sectors.

Table 8 shows the change in median sectoral profits by company size. For example, in the accommodation & food sector, median profits in micro companies rise by 2 per cent in 2014 but fall 12 per cent in median/large companies. Across all sectors, median profits increase by 9 per cent for micro and small companies, while falling 4 per cent for medium / large companies in 2014.

**Table 7: Median Sectoral Profits by Company Size, 2014**

| Sector (NACE code) | € Micro (1-10) | € Small (11-50) | € Medium/ Large (>50) |
|---|---|---|---|
| **All Sectors** | **18,606** | **226,089** | **2,741,373** |
| Accommodation & food services (I) | 13,324 | 130,140 | 815,555 |
| Other service activities (S) | 11,954 | 61,560 | 860,701 |
| Arts, entertainment & recreation (R) | 13,871 | 165,005 | 2,509,061 |
| Wholesale & retail trade (G) | 23,857 | 258,787 | 3,992,975 |
| Administrative & support services (N) | 20,296 | 122,794 | 399,682 |
| Agriculture, forestry & fishing (A) | 71,821 | 195,301 | 807,627 |
| Industry (B-E) | 22,122 | 347,903 | 10,932,622 |
| Construction (F) | 15,780 | 267,465 | 2,775,221 |
| Transportation & storage (H) | 22,819 | 312,976 | 3,479,860 |
| Information & communication (J) | 11,004 | 559,985 | 4,237,548 |
| Financial, insurance & real estate (K, L) | 25,874 | 891,322 | 11,381,149 |
| Professional, scientific & technical activities (M) | 13,072 | 247,882 | 926,078 |
| Education (P) | 10,831 | 102,611 | 441,660 |
| Human health & social work (Q) | 28,879 | 149,904 | 1,101,337 |

Source: Revenue analysis. Note: Excludes public administration & defence (O), extra territorial bodies (U) and households as employers (T).

**Table 8: Change in Median Sectoral Profits by Company Size, 2014**

| Sector (NACE code) | Change on 2013 | | |
|---|---|---|---|
| | Micro (1-10) | Small (11-50) | Medium/ Large (>50) |
| **All Sectors** | **9%** | **9%** | **-4%** |
| Accommodation & food services (I) | 2% | 0% | -12% |
| Other service activities (S) | 3% | 18% | 0% |
| Arts, entertainment & recreation (R) | -6% | 6% | 6% |
| Wholesale & retail trade (G) | 5% | 4% | -6% |
| Administrative & support services (N) | 8% | 24% | 2% |
| Education (P) | -8% | 4% | 11% |
| Industry (B-E) | -4% | 6% | 2% |
| Professional, scientific & technical (M) | 5% | 12% | 1% |
| Transportation & storage (H) | 1% | -7% | -1% |
| Financial, insurance & real estate (K, L) | 10% | 8% | -4% |
| Information & communication (J) | 7% | -1% | -5% |
| Agriculture, forestry & fishing (A) | 17% | 9% | -7% |
| Human health & social work (Q) | 24% | 9% | -7% |
| Construction (F) | 16% | 17% | -18% |

Source: Revenue analysis. Note: Excludes extra territorial bodies (U); households as employers (T); public administration & defence (O).

## 4.3 Loss Making Employers

The above analysis (Section 4.2) focuses on companies in a profit making position. However, significant shares of companies do not make profits in a given year (or use losses from earlier years to offset their profits). There are around 30,000 companies making losses in 2014 that are also employers.

Table 9 illustrates the median losses across company size (based as before on numbers of employments). Median losses are greatest for the medium / large sized companies. Median losses are greatest in the financial, insurance & real estate and agricultural, fishing & forestry sectors.

Within micro companies alone, median losses in the financial, insurance & real estate, wholesale & retail trade, construction and agriculture, fishing & forestry are above the median losses for micro companies across all sectoral categories.

**Table 9: Median Trading Losses by Sector, 2014**

| Sector (NACE code) | Median Losses (€) | | |
|---|---|---|---|
| | Micro (1-10) | Small (11-50) | Medium/ Large (>50) |
| **All Sectors** | **11,281** | **44,194** | **215,935** |
| Accommodation & food services (I) | 8,619 | 22,317 | 97,883 |
| Other service activities (S) | 6,709 | 16,894 | 215,090 |
| Arts, entertainment, recreation (R) | 8,860 | 54,477 | 208,007 |
| Wholesale & retail trade (G) | 14,112 | 42,616 | 287,333 |
| Administrative/support services (N) | 11,257 | 36,492 | 23,878 |
| Education (P) | 7,611 | 20,783 | 52,283 |
| Human health & social work (Q) | 5,741 | 21,699 | 77,175 |
| Construction (F) | 12,974 | 62,620 | 201,761 |
| Professional, scientific, technical (M) | 8,691 | 70,070 | 303,395 |
| Industry (B-E) | 14,001 | 82,091 | 761,500 |
| Information & communication (J) | 10,020 | 245,803 | 1,063,888 |
| Transportation & storage (H) | 9,975 | 40,965 | 1,116,809 |
| Agriculture, forestry & fishing (A) | 16,042 | 116,753 | 1,623,868 |
| Finance, insurance, real estate (K, L) | 18,304 | 140,699 | 1,857,428 |

Source: Revenue analysis. Note: Public administration & defence (O), households as employers (T) and extra territorial bodies (U) are excluded due to small number of cases.

## 4.4 Other Businesses

Thus far, profits and losses have been identified for incorporated enterprises. However, unincorporated businesses (self-assessment cases registered with Revenue for Income Tax) are also employers. All self-employed individuals are required to file a Form 11 which details their incomes and profitability.

Table 10 illustrates the share of adjusted net profit for 2014 from self-assessment cases by their number of employments.[17] This shows that approximately 28 per cent of profits are associated with micro companies and 3 per cent with small businesses. Overall, 69 per cent of the total self-assessed trading profitability is associated with non-employers (pure sole traders). Table 11 shows the median profits by sector.

[17] These profits do not include rental income.

## Table 10: Self-Assessment Profit Shares by Employment Size, 2014

| Sector (NACE code) | No Employments | Micro (1-10) | Small (11-50) | Medium/ Large (>50) |
|---|---|---|---|---|
| **All Sectors** | **69%** | **28%** | **3%** | **0.4%** |
| Accommodation & food services (I) | 41% | 43% | 13% | 3.2% |
| Other service activities (S) | 70% | 29% | 1% | 0.2% |
| Arts, entertainment & recreation (R) | 86% | 12% | 2% | 0.4% |
| Wholesale & retail trade (G) | 55% | 37% | 7% | 1.0% |
| Administrative & support services (N) | 72% | 25% | 3% | 0.3% |
| Agriculture, forestry & fishing (A) | 74% | 25% | 1% | 0.0% |
| Professional, scientific, technical (M) | 75% | 24% | 1% | 0.1% |
| Human health & social work (Q) | 48% | 47% | 4% | 0.3% |
| Construction (F) | 71% | 27% | 2% | 0.1% |
| Transportation & storage (H) | 75% | 21% | 3% | 0.1% |
| Finance, insurance & real estate(K, L) | 76% | 20% | 3% | 0.6% |
| Households as employers (T) | 82% | 16% | 2% | 0.3% |
| Industry (B-E) | 69% | 29% | 1% | 0.1% |
| Information & communication (J) | 91% | 9% | 0% | |
| Education (P) | 72% | 17% | 2% | 8.5% |

Source: Revenue analysis. Note: Sectors including extra territorial bodies (U), households as employers (T) and public administration & defence (O) are excluded due to small number of cases.

## Table 11: Median Profits Self-Assessment Cases by Sector, 2014

| Sector (NACE code) | € Micro (1-10) | € Small (11-50) |
|---|---|---|
| **All Sectors** | **25,003** | **45,183** |
| Accommodation & food services (I) | 16,057 | 31,802 |
| Other service activities (S) | 14,393 | 28,245 |
| Arts, entertainment & recreation (R) | 14,405 | 32,986 |
| Wholesale & retail trade (G) | 19,504 | 44,889 |
| Administrative & support services (N) | 22,931 | 35,561 |
| Agriculture, forestry & fishing (A) | 34,655 | 51,271 |
| Construction (F) | 23,500 | 47,587 |
| Professional, scientific, technical (M) | 44,034 | 115,772 |
| Transportation & storage (H) | 29,460 | 65,633 |
| Human health & social work (Q) | 83,892 | 122,761 |
| Households as employers (T) | 15,483 | 48,792 |
| Finance, insurance, real estate (K, L) | 21,930 | 36,110 |
| Education (P) | 14,695 | 39,519 |
| Industry (B-E) | 22,209 | 41,281 |
| Information & communication (J) | 23,748 | * |

Source: Revenue analysis. Note: * Refers to cases not reported due to data sensitivity; Medium/Large category not shown due to small numbers of cases in many sectors. Sectors including extra territorial bodies (U), households as employers (T) and public administration & defence (O) are excluded due to small number of cases.

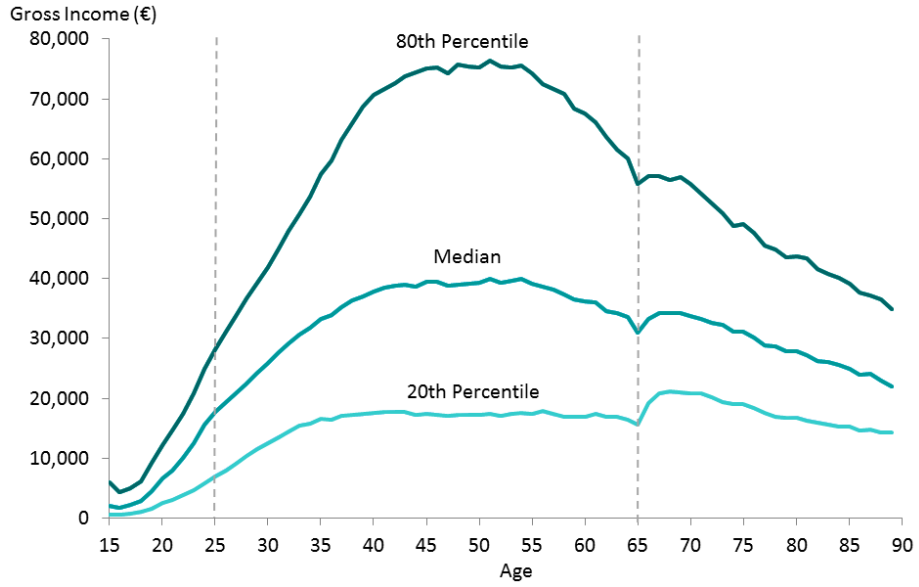
# 5 Income Mobility

## 5.1 Introduction

This section aims to shed new light on the dynamic aspect of the income distribution: who moves up and down the income distribution over time? Analysis of mobility dynamics is important for policy-makers because low incomes may be viewed differently if there is mobility over time. This paper measures income mobility by examining the positional change of individuals in the income distribution over time (Jäntti and Jenkins, 2013). Specifically, the paper considers two approaches to measure mobility. First, taxpayers who remain at the bottom of the income distribution over time are analysed in Section 5.2. Second, income mobility is examined using transition matrices that track the positional change of taxpayers between two points in time in Section 5.3.

The income distribution is shown by taxpayer age in Figure 5 in order to illustrate how incomes change over the life-cycle. Income growth is strongest among the youngest taxpayers while incomes typically peak for those between the ages of 40 and 55. Also apparent is that the rate of growth is larger for the higher percentiles.

**Figure 5: Income Distribution by Age, 2014**




Source: Revenue analysis. Note: This figure uses the population data to retain sufficient sample size and is compiled using 1.96 million tax cases.

Large increases in income experienced by the youngest taxpayers may be attributable to these taxpayers transitioning from school to work. This can generate mobility from the bottom of the distribution that may be unrepresentative of mobility in the population as a whole. In the mobility analysis that follows taxpayers under the age of 25 are excluded, as is recommended by the literature (Sawhill-Condon, 1992; Auten and Gee, 2009).

In the mobility analysis that follows, the relative rather than absolute changes in the income position of taxpayers is examined. Therefore, to give a sense of the absolute changes in incomes that occur, Table 12 shows the cut-offs for each quintile (the 20th, 40th, 60th and 80th percentiles) over the four year period considered. Those in the bottom quintile in 2014 earn less than €15,286 while those in the middle (or third) quintile earn between €26,121 and €38,431. Those in the top quintile earn above €59,003 in 2014.

**Table 12: Income Distribution for Taxpayers Aged Over 25**

| Year | 20th Percentile € | 40th Percentile € | 60th Percentile € | 80th Percentile € |
|---|---|---|---|---|
| 2011 | 16,718 | 27,079 | 39,072 | 58,374 |
| 2012 | 16,110 | 26,376 | 38,192 | 57,579 |
| 2013 | 15,328 | 26,000 | 38,233 | 58,161 |
| 2014 | 15,286 | 26,121 | 38,431 | 59,003 |

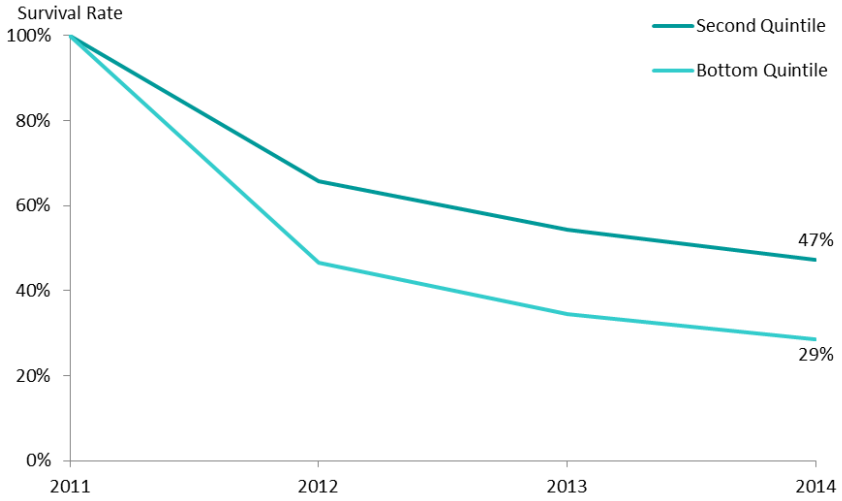
Source: Revenue analysis.

## 5.2 Taxpayers Remaining at the Bottom

Figure 6 shows the survival rate of taxpayers that remain in the bottom quintile and the second quintile over the period from 2011 to 2014. Survival is calculated as the proportion of taxpayers that remain in a quintile given that they were in that quintile in 2011.[18] The figure shows that for those in the second quintile in 2011, about half (47 per cent) remain in that quintile by 2014. For those in the bottom quintile in 2011 approximately one third (29 per cent) remain at the bottom by 2014. The share of taxpayers remaining at the bottom of the income distribution declines sharply in the first year and falls more moderately in future years. This may suggest that short-term transitory income shocks account for a larger portion of mobility over time.

[18] These taxpayers either move upwards to a higher income quintile or drop off the tax records, for instance due to periods of unemployment or migration.

**Figure 6: Percentage of Taxpayers Remaining at the Bottom**




Source: Revenue analysis.

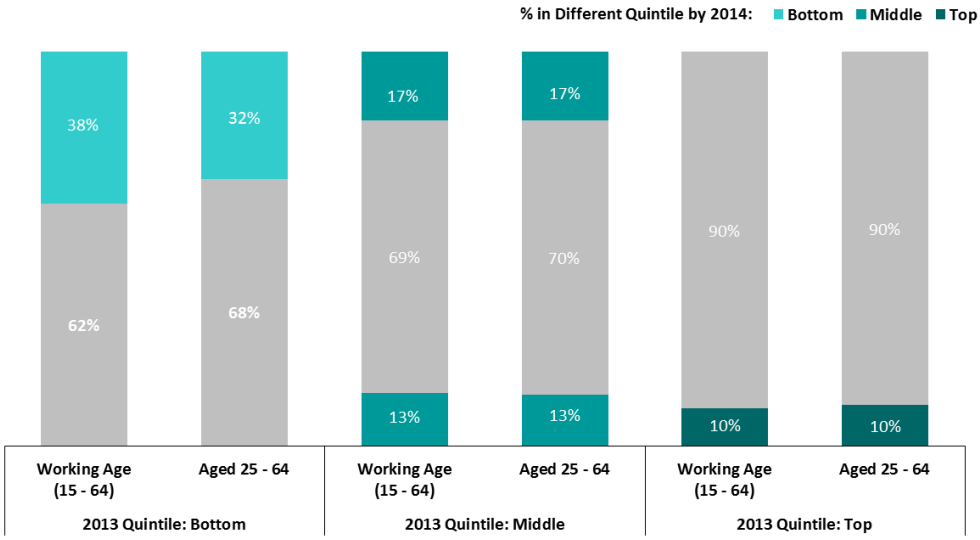
## 5.3 Income Mobility of Taxpayer Population

Figure 7 shows the transition probabilities for working age taxpayers (aged 15 to 64) and taxpayers aged 25 to 64 by the bottom, middle and top quintile between 2013 and 2014. These transition probabilities are shown side by side in order to highlight the effect of the school-to-work transition.

At the bottom of the distribution, there is greater upward mobility among working age taxpayers (aged 15 to 64) than taxpayers aged 25 to 64, which may reflect the larger jumps in income attributable to the transition from school to work. Of the working age taxpayers in the bottom quintile in 2013, 62 per cent stay in that quintile a year later while 38 per cent move upwards. For taxpayers aged 25 to 64, the proportion moving upwards from the bottom quintile is lower (32 per cent).

For both age cohorts, mobility across the rest of the income distribution is similar. In the middle quintile, there is more mobility upwards (17 per cent) than downwards (13 per cent). Of those in the top quintile in 2013, approximately 90 per cent remain in that quintile the following year.

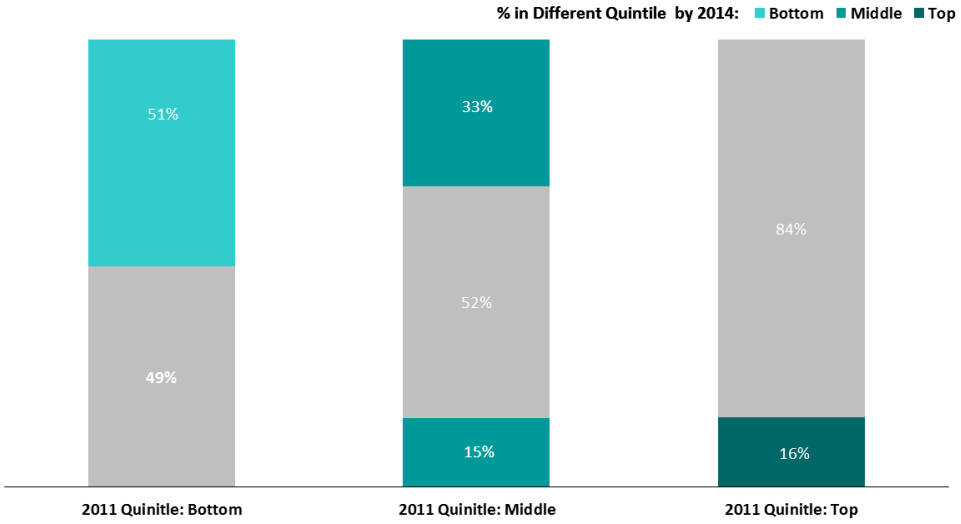
**Figure 7: Income Mobility for Taxpayers Aged 15 to 64 and 25 to 64, 2013-2014**




Source: Revenue analysis.

Figure 8 shows income mobility for taxpayers aged 25 to 64 over a four year period from 2011 to 2014. Income mobility is expected to be greater over a longer time period as taxpayers have a longer horizon over which their position in the income distribution may change. As shown, 51 per cent of taxpayers in the bottom quintile in 2011 move upwards to a higher quintile by 2014, while 84 per cent of taxpayers who were in the top quintile in 2011 remain in that quintile three years later.

**Figure 8: Income Mobility for Full Period, 2011-2014**



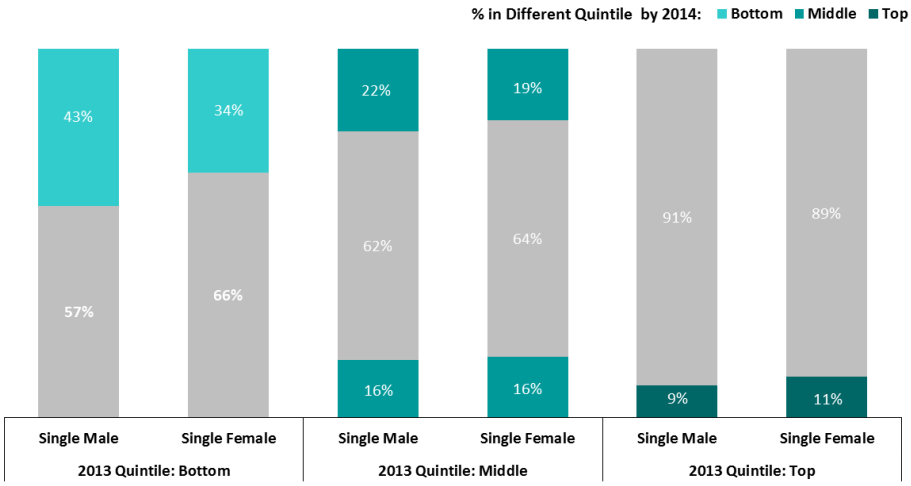

Source: Revenue analysis.

Figure 9 shows the transition probabilities for single males and females, and taxpayers from Dublin and outside Dublin. Compared to male taxpayers, females experience lower upward mobility. Of those in the bottom quintile in 2013, one in three (34 per cent) females move upwards to a higher quintile a year later. This compares to 43 per cent for males. Of those in the top quintile, 11 per cent of females move downwards compared to 9 per cent of males.

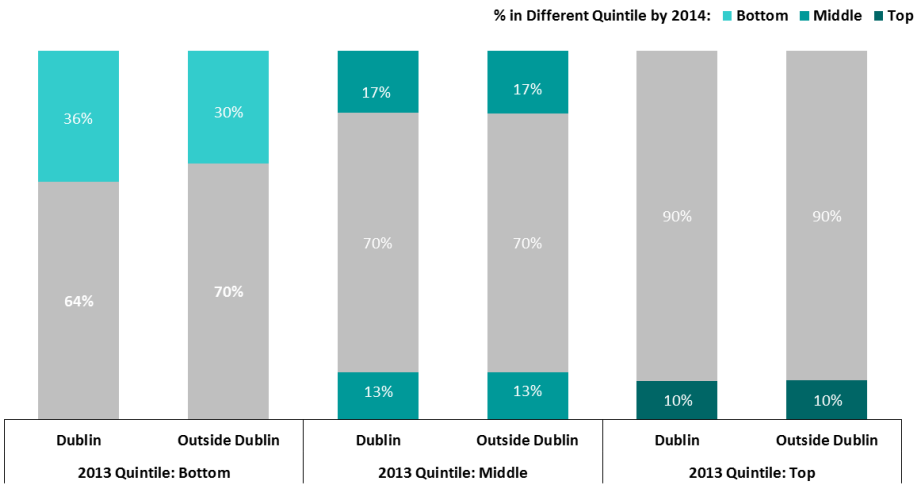
Income mobility is greater at the bottom of the distribution in Dublin than outside Dublin, 36 per cent of taxpayers in Dublin move upwards from the bottom quintile compared to 30 per cent for outside Dublin. Income mobility is similar in Dublin and outside Dublin across the rest of the distribution.

**Figure 9: Income Mobility for Selected Taxpayers Aged 25 to 64, 2013-2014**

**A: Single Males and Females**




**B: Dublin and Outside Dublin**



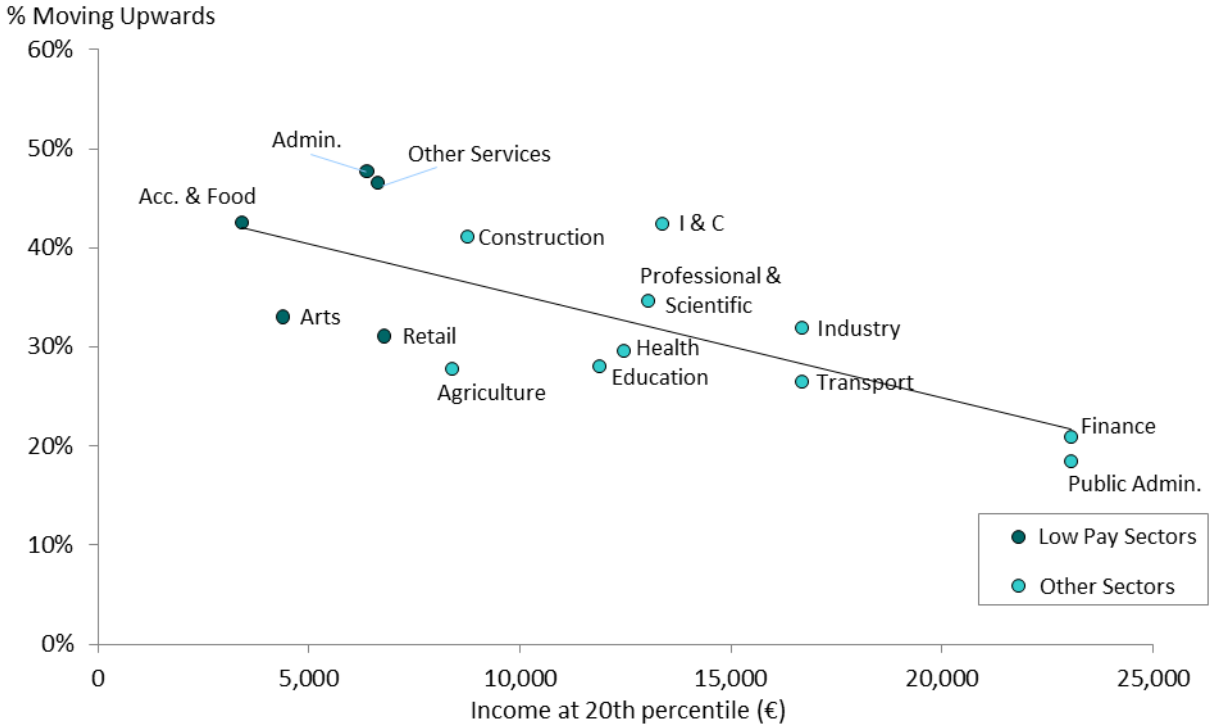

Source: Revenue analysis.

## 5.4 Sectoral Income Mobility of Taxpayer Population

This section examines income mobility within each sector for taxpayers aged 25 to 64. It is worth emphasising that this analysis only considers those taxpayers who remain employed in the same sector in both 2013 and 2014. Figure 10 plots the upward sectoral mobility of taxpayers (from the bottom quintile) against sectoral income (for the bottom quintile or the 20$^{th}$ percentile).

Overall, there is greater upward mobility from the bottom quintile within the lower paid sectors. In other words, taxpayers working in lower paid sectors have a higher chance of increasing their incomes relative to others within the same sector. For example, the accommodation & food services sector is a low paid sector but a large proportion (43 per cent) moved upwards, from the bottom 20 per cent of taxpayers, between 2013 and 2014. The lowest upward mobility is observed in the financial, insurance & real estate sector (only 21 per cent moved upwards) and public administration & defence sector (18 per cent moved upwards).

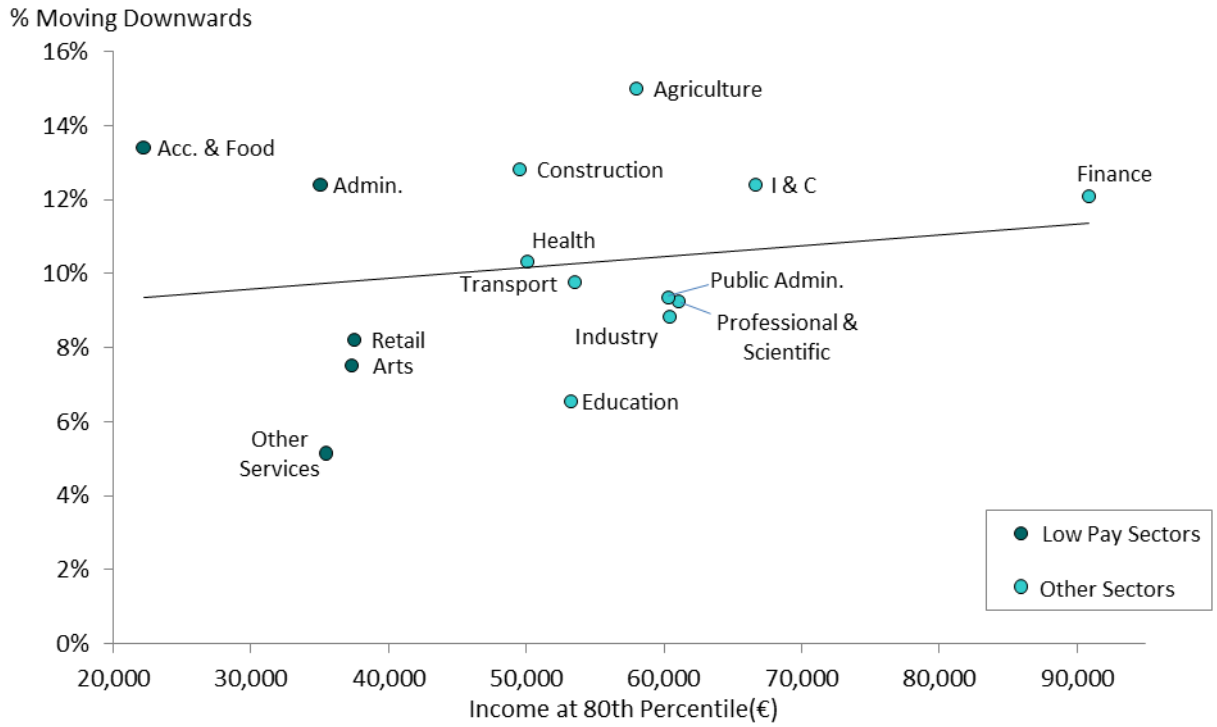
**Figure 10: Upward Sectoral Mobility from Bottom Quintile, 2013-2014**




Source: Revenue analysis. Note: The average number of observations in both years for each sector is 3,645.

Figure 11 plots the proportion of taxpayers moving downwards (from the top quintile) against sectoral income for the 80th percentile (or the top 20 per cent). Lower sectoral incomes in the top quintile are associated with less downward mobility, although the trend is somewhat weaker than that of the previous upward sectoral mobility. This means that, in the top quintile, taxpayers in sectors with lower pay are less likely to move downwards to a lower quintile. The low pay sectors with the lowest downward mobility from the top quintile are other services, arts and retail. For instance, 8 per cent of taxpayers in the retail sector moved downwards within that sector between 2013 and 2014, while 12 per cent of taxpayers in the finance sector move downwards over the period.

**Figure 11: Downward Sectoral Mobility from Top Quintile, 2013–2014**




Source: Revenue analysis. Note: The average number of observations in both years for each sector is 3,645.

# 6 Conclusion

This paper examines the incomes and mobility of taxpayers and the profitability of employers by sector in Ireland in recent years. The analysis has a special focus on low income sectors to support the work of the Low Pay Commission.

The analysis is based on a unique longitudinal dataset drawn from Revenue's administrative records, which follows over 100,000 taxpayers over a four year period. While analysis of incomes in Ireland and internationally is often based on a snapshot at a moment in time, this data allows measurement of income mobility over time. The analysis of profits in this paper is based on Revenue's corporate and self-assessed tax records in 2013 and 2014.

The analysis represents a new avenue of research for Revenue focusing on making the best use of the tax record data, strengthening public debate and improving the evidence-base for policy-making.

# Appendix

### *How is mobility measured?*

The calculation of transition matrices is as follows. 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 (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). Each taxpayer therefore has both an origin and destination position. Third, two distinct gross income quintiles are then calculated for each year. Finally, the taxpayer transition is calculated across the two years and presented graphically.

### *How to interpret transition matrices?*

To understand and interpret transition matrices, several points are worth making. First, transitions measure relative, not absolute, changes in the income position of taxpayers. Therefore, 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 frequently change their distributional position over the course of the reference period. Consequently, the analysis does not capture those who leave the workforce (for example, due to deaths, unemployment, emigration and retirement) or those who enter it (for example, through employment and immigration). Third, taxpayers observed in both years are less likely to have 'dropped-off' the tax records. They may be more representative of full-time than part-time employees. Fourth, all transition matrices calculated are stochastic, that is, the rows and columns sum to one. Finally, the number of years between the two periods selected is also important. In general, it is expected that annual transitions are more likely to have less mobility while longer horizon transitions will have greater mobility.

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