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The Composition of Employment in Small and Large Firms

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Irish Government Economic and Evaluation Service

Executive Summary

Context

- This paper examines the profile and characteristics of employment in firms of different sizes in the business economy and the changes in this profile between 2002 and 2017. The paper provides insights into the degree of convergence between small and larger enterprises in terms of the sectoral, occupational, and educational profile of employment, as well as other employment characteristics.

Key Findings

- **Increasing share of employment in larger firms** - There has been a decrease in the share of employment in firms with under 50 employees, with the share decreasing from 57.6 percent of employment in 2002 to 52.6 percent in 2017. Over the same period, the share of employment in firms with over 500 employees has increased from 10.7 percent to 15.3 percent.
- **Predominance of different sectors by firm size** - The sectoral composition of employment varies by firm size category, with the retail and wholesale, accommodation and food, and construction sectors being the dominant employers amongst firms with 1 – 10 employees (57.6 percent of employment in this firm size category in 2017), while the manufacturing, ICT, and financial services sectors are predominant amongst firms with over 500 employees (62.9 percent of employment in this firm size category in 2017). Insofar as sector and educational levels are related, this will impact the composition of employment in different firm size categories.
- **Profile of occupation by firm size** – Although the occupational profile of employment in 2017 cannot be compared with 2002, given the structure of the data, managerial and professional occupations became more predominant across the enterprise base between 2007 and 2017, with the proportion of managerial, professional, and associate professional occupations increasing from 28 percent to 39 percent of employment across all firm size categories. By 2017, these occupations accounted for over 55 percent of employment in firms with over 500 employees, compared to just over 30 percent in firms employing 1 – 10 persons. The gap between the largest and smallest firms narrowed slightly between 2007 and 2017.
- **Profile of education levels by firm size** - The education levels of employees have increased in firms of all sizes between 2002 and 2017. There remained a considerable gap between the largest and smallest firms in 2017, however, with 61.7 percent of employees in firms with more than 500 employees having attained a Bachelor's degree or above versus 27.4 percent in firms with 1 – 10 employees. This gap did not narrow over time.
- **The importance of sector on the occupation and education level profile by firm size** - Importantly, smaller firms that operate in sectors dominated by MNEs (e.g. software and communications, basic pharmaceuticals and pharmaceutical preparations) have a relatively similar occupational and educational profile as the larger firms in these sectors.
- **Lifelong learning by firm size** – The evidence suggests that there are higher participation rates in lifelong learning amongst employees of larger firms and that large firms are more likely to provide training opportunities than smaller firms. Participation rates in lifelong learning are slightly higher for firms with over 500 employees (4.4 percent participate in formal and 9.2 percent in non-formal education) than firms with 1 – 10 employees (3 percent participate in formal and 7.4 percent in non-formal education). According to the CSO, the proportion of large firms that provide training courses to their employees (90 percent) is almost double that of small firms (53 percent).
- **Diversity in the workforce** – The workforce in Ireland has become more diverse over time. The proportion of employees who are female increased by 2.2 percentage points between 2002 and 2017, with the largest increases in firms with 1 – 10 employees (3.9 percentage points) and 11 – 49 employees (4.6 percentage points). Females remained under-represented, however, in firms of all sizes. The proportion of non-Irish nationals in overall employment has increased in firms of all sizes by more than three-fold between 2002 and 2017 with larger firms tending to have a higher share of non-Irish nationals in employment than smaller firms. Furthermore, foreign national employees tend to have relatively high levels of education.
- **Profile of part-time and temporary employment** – There was a higher incidence of temporary employment in firms with 1 – 10 employees (9.1 percent) than in firms with more than 500 employees (5.4 percent) in 2017. Firms with 1 – 10 employees (31.4 percent) also had much higher shares of part-time employment than firms with more than 500 employees (5.1 percent).

Introduction

This paper provides an analysis of the composition of employment in firms of various sizes operating in Ireland across a number of variables such as education levels, occupation, and sector, and compares this composition at two points in time. There are a number of reasons for examining the profile of employment by firm size. Firstly, there is evidence of an expanding productivity gap between the most and least productive firms in Ireland since the mid 2000's, where the most productive firms are in a narrow base of mainly foreign-owned sectors where firms are typically larger (Papa, Rehill, and O'Connor, 2018). It is not possible to compare the profile of employment in indigenous and foreign-owned firms with available data. This would be valuable in order to better understand the extent to which the employment in these sections of the economy differs significantly in terms of skill levels, quality of employment, and pay. Labour Force Survey data can be used, however, to profile employment in firms of different sizes. Over 70 percent of employment in foreign-owned firms is in large enterprises and over 80 percent of employment in indigenous firms is in small and medium enterprises. Therefore, by examining employment by firm size, this analysis aims to capture, however imperfectly, the differences in the profile of employment in the indigenous and foreign-owned sectors of the economy. Secondly, the OECD have suggested that skills shortages, poor internal management practices, and low levels of workforce training hinder the performance of SMEs in the economy, relative to larger firms.¹ Survey results also suggest that small enterprises in Ireland struggle to compete against larger multinationals to attract talent.² In this context, this paper examines whether the profile of employment differs between small and larger firms in Ireland in terms of skills composition and participation in training. Finally, the paper aims to provide some evidence on the nature and quality of employment in small and larger firms, building on the work of O'Callaghan, Kane, and Phulphagar (2019) on understanding the quality of employment in Ireland.³

This paper is structured as follows:

- Rationale for the analysis and policy context.
- Overview of the data and methodology used in this analysis.
- Analysis of the composition of employment at two points in time: 2002 and 2017.
- Analysis of other characteristics and indicators of the quality of employment in 2002 and 2017 and of participation rates in lifelong learning.

¹ OECD (2017). [Enhancing the Contributions of SMEs in a Global and Digitalised Economy](#).

² OECD (2019). [SME and Entrepreneurship Policy in Ireland](#). Page 103.

³ O'Callaghan, Kane and Phulphagar (2019). [Quality of Employment: Indicators and Trends](#).

Rationale of Analysis and Policy Context

In recent decades, Ireland has been successful in attracting foreign direct investment and growing employment in sectors associated with these firms. Employment in foreign-owned Agency-assisted companies in Ireland has increased from 144,815 in 2010 to 235,245 in 2019.⁴ Alongside this growth in employment in foreign-owned firms, there is evidence of a growing productivity gap between indigenous SMEs and multinational enterprises. In response, a renewed focus of Government policy is to develop and increase the productivity of SMEs. For example, one of the five pillars of *Future Jobs Ireland 2019* is to improve the productivity of SMEs.⁵

Given the Government objective of improving the productivity of SMEs, research into the composition of employment in indigenous firms and foreign-owned firms would be valuable to better understand the sectoral and skill composition of employment in indigenous and foreign-owned firms. This is not possible with the available survey data, however. Instead, this paper analyses the profile of employment across firms of different sizes. CSO data show that the majority of employment in foreign-owned firms (71.1%) is in large enterprises, whereas the majority of employment in Irish-owned firms (81%) is in SMEs.⁶ In this sense, firm size is used as an imperfect, crude proxy to capture some of the differences in employment in indigenous and foreign-owned sections of the economy. Firm size is a useful lens in its own right through which to examine employment, however, as the OECD (2017) suggest that skills shortages, poor internal management practices, and low levels of workforce training hinder the performance of SMEs in the economy, relative to larger firms.

This paper builds upon the Enterprise, Employment, and Income Framework, which outlines the interdependencies between the structure of the enterprise base, the nature and type of employment, and the level and distribution of income from employment.⁷ Important characteristics of the structure of the enterprise base include sector and firm size, and in Ireland's case country of ownership. This paper aims to contribute evidence to the framework by examining how the nature and type of employment in Ireland differs across firms of different sizes. The Government spends around €1bn annually on enterprise supports, and intervenes further to reduce the comparatively high levels of market income inequality in the economy. Therefore, it is important to examine the economic structures that are being partially supported by public expenditure and the outcomes they are generating, and how these have changed over time.

⁴ Department of Business, Enterprise, and Innovation (2020). [Annual Employment Survey 2019](#), page 5. Agency-assisted means firms being assisted by any DBEI agency, such as IDA Ireland.

⁵ Government of Ireland (2019). [Future Jobs Ireland 2019](#).

⁶ The data are from the CSO's Structural Business Statistics.

⁷ Kane and O'Callaghan (2019). [Enterprise, Employment and Income Framework: Overview of IGEES Analysis](#).

Data and Methodology

The main data source used in this analysis is Labour Force Survey (LFS) microdata from the Central Statistics Office (CSO). The CSO does not take any responsibility for the views expressed or the outputs generated from this research using strictly controlled Research Microdata Files in the LFS. The paper also uses publicly available data from the CSO's Continuous Vocational Training Survey.

In order to examine how the profile of employment in firms of various sizes has changed over time, the analysis focuses primarily on Q2 2002 and Q2 2017. The *size firm* variable in the LFS is used to capture the size of the firm. Q2 2017 was the most recent quarter for which the firm size variable was in a format that was directly comparable with previous years. Q2 2002 was the earliest available quarter which we could use as a comparison. By examining the profile of employment at two points in time, rather than examining trends over time (i.e. changes year to year), the paper does not provide insights into the dynamics of any change over time. There may year-to-year variation that is omitted in this analysis. Q2 2017 is compared with Q2 2007 for the occupational profile of employment, because the data were not comparable pre-2007 and post-2007 due to changes in the coding of occupational categories.

There are caveats to note with the *size firm* variable in the LFS. This variable refers to the size of the local unit of work, rather than the size of the overall employer. In some cases, the size of the local unit may not be reflective of the size of the employer. Nevertheless, as no better data exist to conduct this analysis, this variable is used as a proxy for the real size of the company. It is possible that a fraction of the firms that appear comparatively small in this analysis are local units of bigger companies. Thus care is required when interpreting the results, particularly for the smaller firm size categories.

One limitation of the analysis is that firms cannot be classified as micro, small, medium, and large enterprises, which are the usual firm size classifications used in the policy literature. While firms can be classified in this way using LFS data for 2017, these classifications cannot be made with the 2002 data. As a result, the firm size categories used in this analysis are different to the common classifications. Nonetheless, the analysis points at a persisting difference in the employment profiles between small and larger enterprises, in terms of the sectoral, occupational, and educational composition of employment, the concentrations of part-time and temporary employment, and the proportion of the workforce who are non-Irish.

The analysis focuses on NACE sectors B – N in order to identify the private business economy, following the CSO's methodology in its Business Demography publication.⁸ Unlike the Business Demography

⁸ For a list of the sectors included in NACE B – N, see this CSO [website](#).

publication, and due to the structure of the data, this analysis does not exclude holding companies in sector K (64.2).

This paper also uses data from the CSO's Continuing Vocational Training Survey, which covers the years 2005 and 2015. 2015 is the most recent year for which data are available. Of course, there may have been changes since 2015, which will not be reflected in this paper. The survey refers to education or training which have as primary objectives the acquisition of new competences or the development of existing ones, and which are financed in total or at least partly by the enterprise, directly or indirectly.⁹

⁹ See Eurostat https://ec.europa.eu/eurostat/cache/metadata/en/trng_cvt_esms.htm

Composition of Employment and Skills

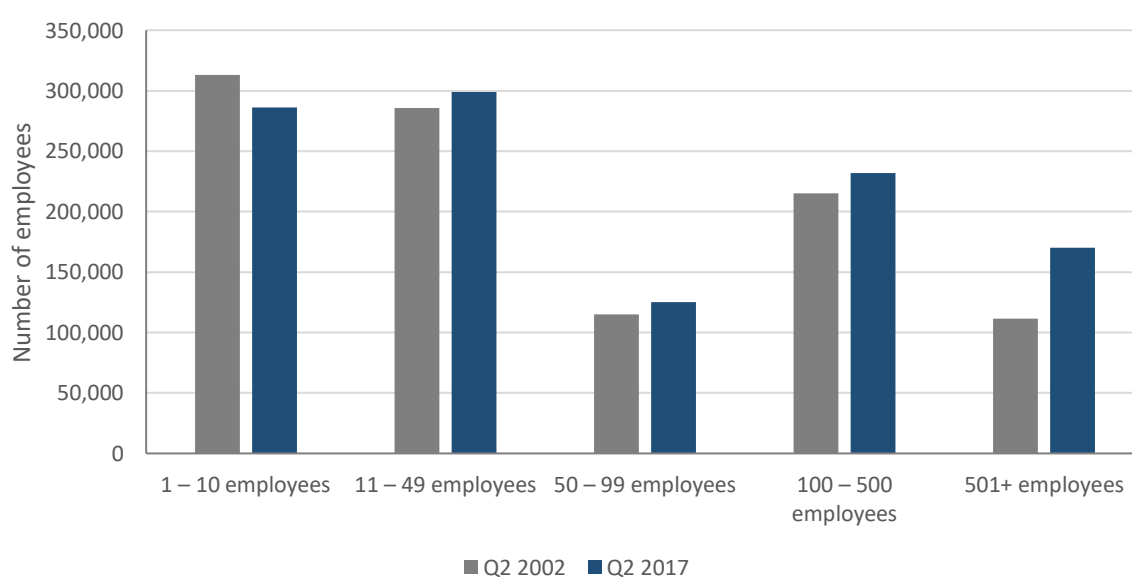
This section provides a descriptive analysis of the composition of employment in Ireland in Q2 2002 (where the data are available) and Q2 2017 by firm size, using microdata from the LFS, for the business economy (NACE sectors B – N).

Profile of Employment by Firm Size

Figure 1 illustrates the distribution of employment across firms of various sizes in the business economy in Q2 2002 and Q2 2017. In Q2 2017, total employment in the private enterprise economy (sectors B – N), was 1.1 million.¹⁰ 52.6 percent of employment was in firms with 1 – 49 employees; 11.3 percent of employment was in firms with 50 – 99 employees; 20.8 percent of employment was in firms with 100 – 500 employees; and 15.3 percent of employment was in firms with 501+ employees.

In total, employment has increased by 7 percent (72,600) between Q2 2002 and Q2 2017. The number of employees in each firm size category has increased between Q2 2002 and Q2 2017, except in firms with 1 – 10 employees. The largest increase in employment was in firms with over 500 employees, where employment increased by 58,900, or 52.9 percent. There were smaller increases in employment in firms with 11 – 49 employees (13,100), 50 – 99 employees (10,400), and 100 – 500 employees (16,800), and there was a decrease in employment in firms with 1 – 10 employees of 26,600 (-8.5%).

Figure 1: Employment by firm size in sectors B – N, Q2 2002 and Q2 2017



Source: LFS. Excludes missing values and self-employed without employees

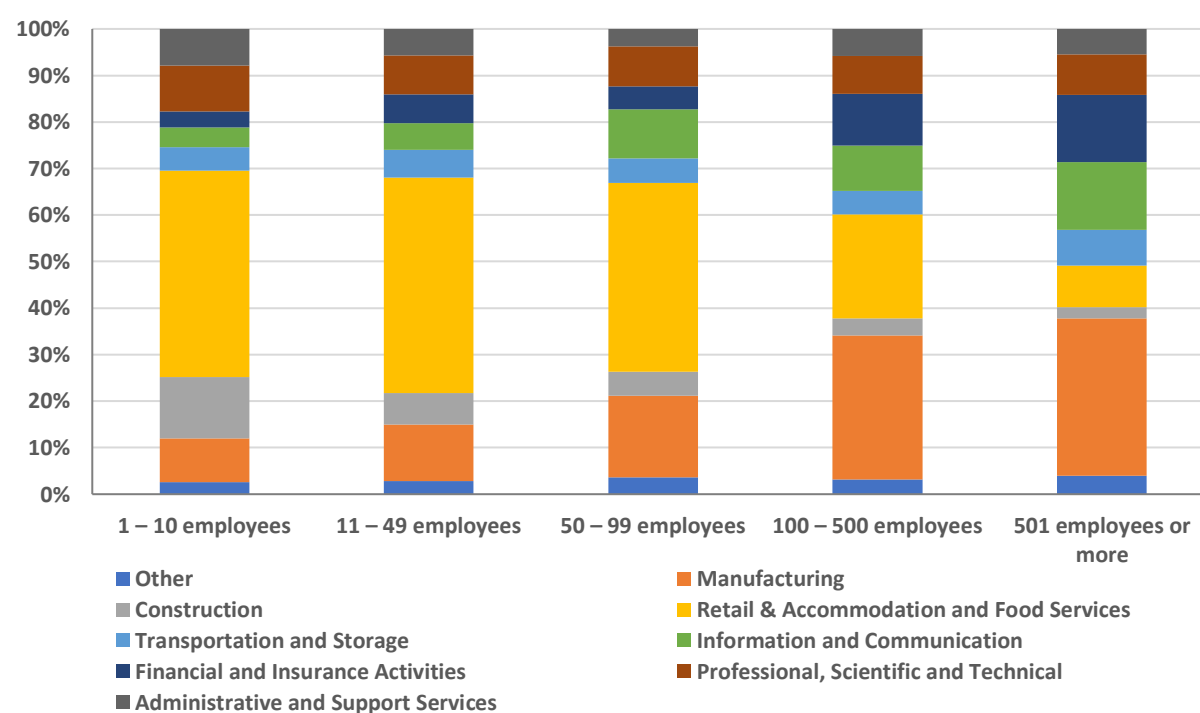
¹⁰ This excludes missing values and self-employed without employees, which are excluded in the rest of the analysis. The total employed in the business economy, if these are included, is 1.41 million.

The increase of 58,900 employees in firms with over 500 employees was dominated by particular sectors. Employment in firms with over 500 employees increased by: 13,100 in financial and insurance activities; 11,700 in the manufacturing sector; 9,900 in professional, scientific and technical activities; and 9,800 in Information and Communications Technologies (ICT).

Profile of Employment by Firm Size and Sector

Figure 2 illustrates the proportion of employment in each firm size category in the business economy by sector in Q2 2017. This shows that some sectors, such as manufacturing, ICT, and financial and insurance activities were more concentrated in the larger firm size categories; while other sectors, such as retail, wholesale, accommodation and food services were more concentrated in the smaller firm size categories. 33.9 percent of employment in firms with over 500 employees was in the manufacturing sector; 14.6 percent was in ICT; and 14.4 percent was in financial and insurance activities. On the other hand, 44.4 percent of employment in firms with 1 – 10 employees was in the retail, wholesale, accommodation and food services sectors; and 13.2 percent was in construction. The composition of employment by firm size and sector was relatively similar in Q2 2002.

Figure 2: The proportion of employment across small and large firms in sectors B - N, by sector, in Q2 2017



Source: LFS, excludes missing values and self-employed without employees. The following information should be interpreted with caution, due to low sample sizes: the proportion of employment in firms with 501+ employees or more in construction; the proportion of employment in firms with 50 – 99 employees in administrative and support services; and the proportion of employment in firms with 50 – 99 employees in other sectors.

The manufacturing sector can be disaggregated into high-technology, medium-technology, and low-technology groups.¹¹ Table 1 shows that, in Q2 2017, 46.8 percent of employment in manufacturing firms with 501+ employees was in high-technology manufacturing, whereas 16.6 percent of employment in manufacturing firms with 1 – 10 employees was in high-technology manufacturing.

Table 1: Percentage of employment in manufacturing firms that are high-tech manufacturing, Q2 2017

Firm size	% of Employment in High-Tech Manufacturing
1 – 10 employees	16.6%*
11 – 49 employees	14.0%*
50 – 99 employees	20.5%*
100 – 500 employees	33.0%
501+ employees	46.8%

Source: LFS. Excludes missing values and self-employed without employees. * indicates wider margin of error due to low sample size.

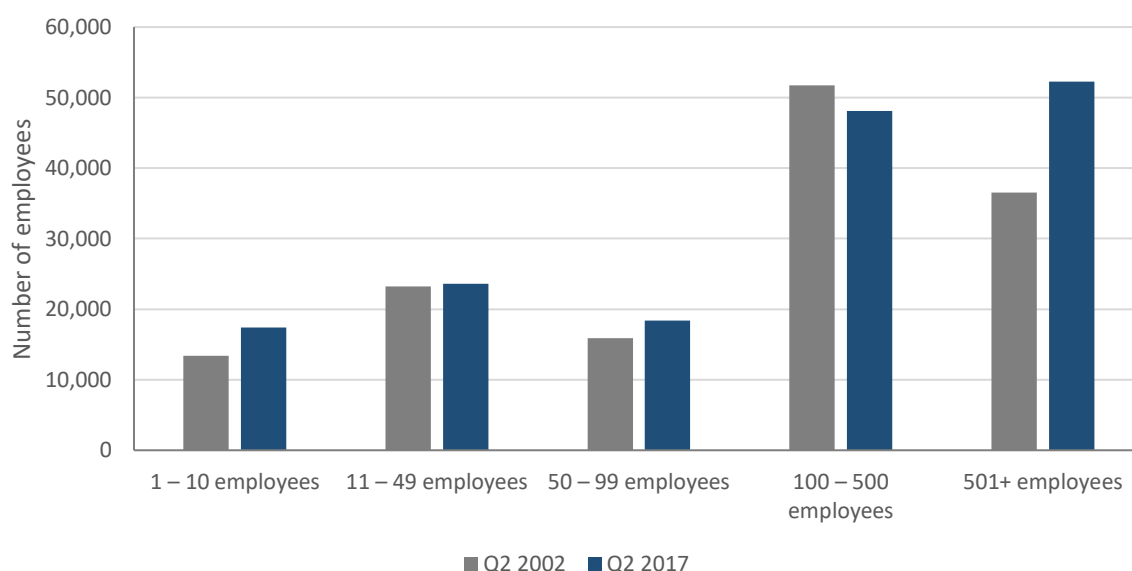
Profile of Employment by Firm Size in Foreign-Owned MNE-Dominated Sectors

In order to examine whether the comparative profile of employment of small and larger firms differs by sector, the analysis hones in on sectors defined by the CSO as foreign-owned, MNE-dominated. These sectors include reproduction of recorded media; chemicals and chemical products; software and communications; basic pharmaceutical and pharmaceutical preparations; computer, electronic, and optical products; electrical equipment; and medical and dental instruments and supplies. Figure 3 illustrates the distribution of employment across firms of different sizes in foreign-owned, MNE-dominated sectors.¹² In these sectors, larger firms are predominant, whereas in the private business economy overall, small firms are predominant. In foreign-owned MNE-dominated sectors in Q2 2017, 62.8 percent of employment was in firms with 100 or more employees. The majority of employment growth between 2002 and 2017 in these sectors was in firms with over 500 employees (+15,800).

¹¹ See Eurostat – [High-tech aggregation by NACE Rev 2](#).

¹² The CSO defines Foreign-Owned MNE-dominated sectors as sectors where MNE turnover on average exceeds 85 percent of the sector total. See <https://www.cso.ie/en/releasesandpublications/er/gvafm/grossvalueaddedforforeign-ownedmultinationalenterprisesandothersectorsannualresultsfor2018/>

Figure 3: Employment by Firm Size in Multinational Dominated Sectors, Q2 2002 and Q2 2017



Source: LFS. Excludes missing values and self-employed without employees. Also excludes sectors 18.2 and 32.5, because LFS sector data is coded at 2 digit level.

Occupational Profile of Employment by Firm Size

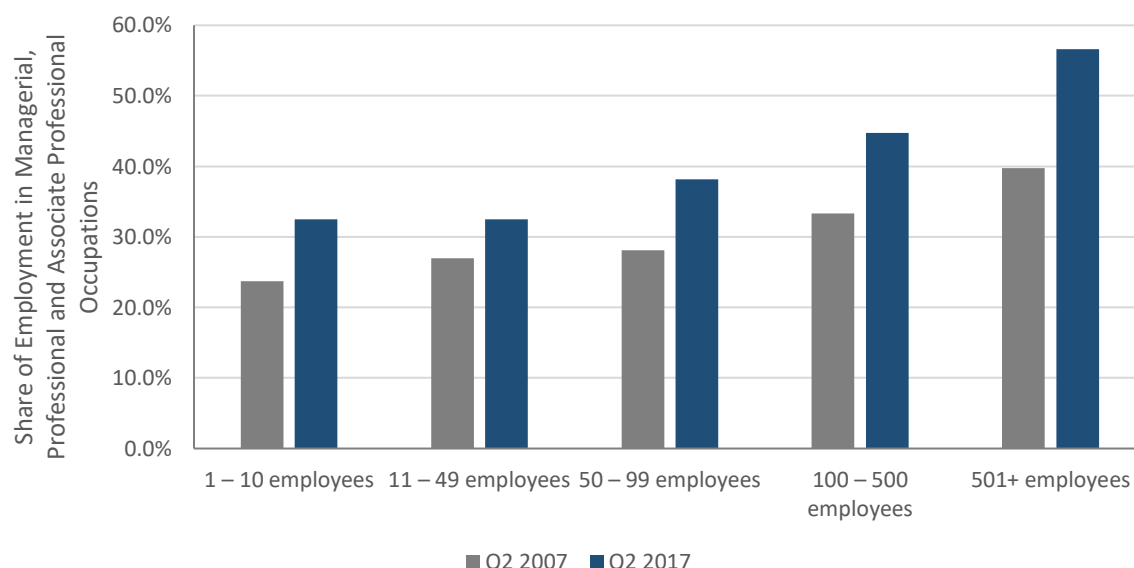
Figure 5 illustrates the proportion of employment in managerial, professional, and associate professional occupations in firms of various sizes in the business economy in Q2 2017 and Q2 2007. Occupation is one of the indicators used by O’Callaghan, Kane, and Phulphagar (2019) to understand the nature and quality of employment. Managerial and professional occupations have the highest mean income of all occupational groups in Ireland. Figure 5 shows that larger firms tend to have higher proportions of employees in these occupational groups than smaller firms. In Q2 2017, 56.6 percent of employees working in firms with over 500 employees were in managerial, professional, and associate professional occupations, whereas 32.5 percent of employees working in firms with 1 – 10 employees were in these occupations. This may be due, in part, to the sectoral mix of employment across smaller and larger firms.

Figure 5 also illustrates the occupational profile of employment by firm size in Q2 2007¹³, when the same relationship was apparent though it was less pronounced. In Q2 2007, 39.8 percent of employees in firms with over 500 employees were in managerial, professional, and associate professional occupations; whereas 23.8 percent of employees in firms with 1 – 10 employees were in these occupations. Between Q2 2007 and Q2 2017, the largest change in the occupational composition of employment was in firms with over 500 employees, where the proportion of managers,

¹³ The LFS data do not allow for comparison of occupational employment before and after Q1 2007 due to a break in the series and change in SOC coding.

professionals, and associate professionals in overall employment increased by 16.8 percentage points. Given rising tertiary education levels in Ireland over the last decade¹⁴, it may not be surprising that there was relatively more employment in these occupations in 2017 compared with 2007. Further work should explore whether this gap can be explained by demand or supply factors, and the extent to which it may impact the comparative performance of small and large firms.

Figure 5: Employment by Firm Size and Occupation in sectors B - N, Q2 2007 and Q2 2017



Source: LFS. Excludes missing values and self-employed without employees

Further analysis shows that professional and associate professional occupations in particular are concentrated in certain sectors. In Q2 2017, 86.7 percent of employees in professional and associate professional occupations were in the manufacturing; ICT; wholesale and retail; financial and insurance; and professional, scientific and technical sectors.

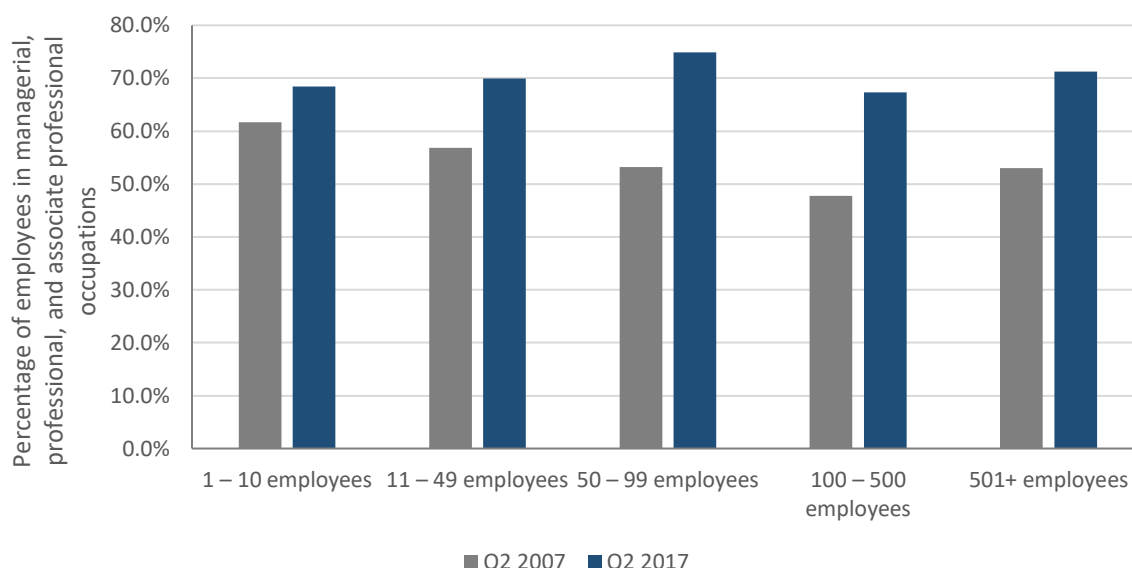
Occupational Profile of Employment in Foreign-Owned MNE-Dominated Sectors

Figure 6 shows the percentage of employees in managerial, professional, and associate professional occupations in foreign-owned MNE-dominated sectors. There was little difference between small and large firms in these sectors in terms of the proportion of managerial, professional, and associate professional occupations in overall employment in Q2 2017. Managerial, professional, and associate professional occupations accounted for 71.3 percent of employment in firms with 501+ employees and 68.4 percent of employment in firms with 1 – 10 employees. Firms with 1 – 10 employees in these sectors have more than double the proportion of employees in these occupations than firms of the

¹⁴ Keogh and Brassill (2018). [Small Advanced Open Economies – A comparative analysis](#). P.20

same size in the broader business economy (Figure 5). The proportion of employment in these occupational categories increased across all firm size categories between Q2 2007 and Q2 2017. Interestingly, in Q2 2007, smaller firms in these sectors had higher proportions of employees in these occupational groups than larger firms.

Figure 6: Proportion of Managers, Professionals, and Associate Professionals in overall employment in Multinational Dominated Sectors, Q2 2007 and Q2 2017



Source: LFS. Excludes missing values and self-employed without employees. Also excludes sectors 18.2 and 32.5 because sector data in the LFS is coded at the 2 digit level.

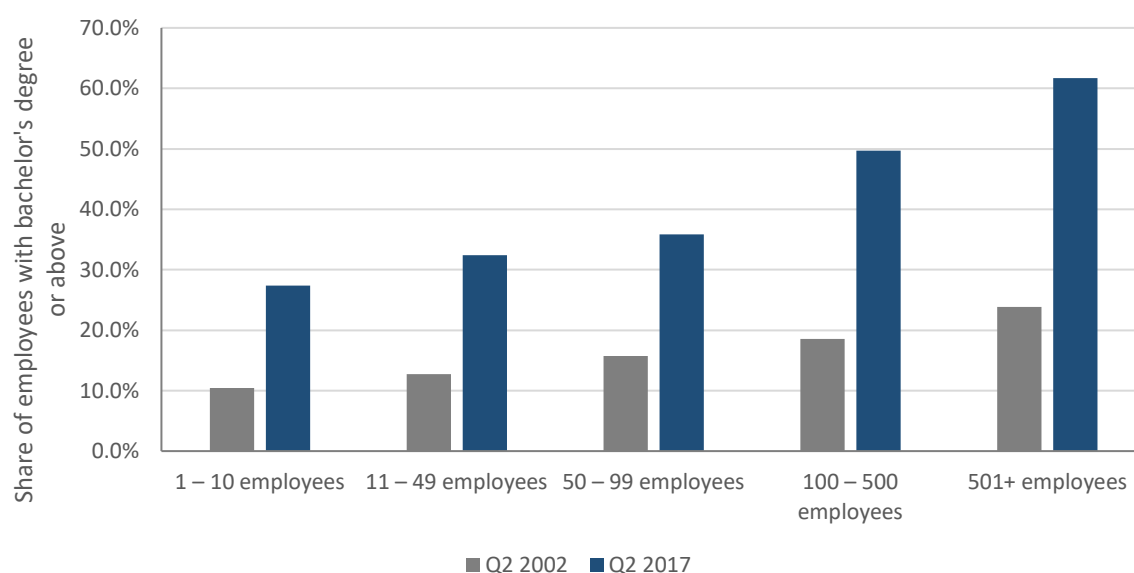
Profile of Employment by Firm Size and Educational Attainment

Figure 7 illustrates the composition of employment in the business economy by level of educational attainment and firm size in Q2 2002 and Q2 2017. The graph clearly shows that larger firms tend to have higher proportions of employees with a Bachelor's Degree or above. In Q2 2017, 27.4 percent of employees in firms with 1 – 10 employees had a Bachelor's degree or above; whereas 61.7 percent of employees in firms with over 500 employees had this level of education. In absolute terms, firms with over 100 employees had a similar number of employees (214,700 employees) with a Bachelor's degree or above as firms with 1 – 99 employees (214,500).

This pattern also existed in Q2 2002, but at a lower level. In Q2 2002, 10.4 percent of individuals employed in firms with 1 – 10 employees had attained a Bachelor's degree or above and 23.9 percent of individuals employed in firms with over 500 employees had attained a Bachelor's degree or above. The figures for these two years may not be directly comparable due to a break in the data series. As a result, the comparison should be considered indicative rather than definitive. Nevertheless, in Q2

2017, there remained a considerable gap between smaller and larger firms in terms of the educational attainment of their employees.

Figure 7: Proportion of Employed Persons with Bachelor's Degree or Above by Firm Size in sectors B - N, Q2 2002 and Q2 2017



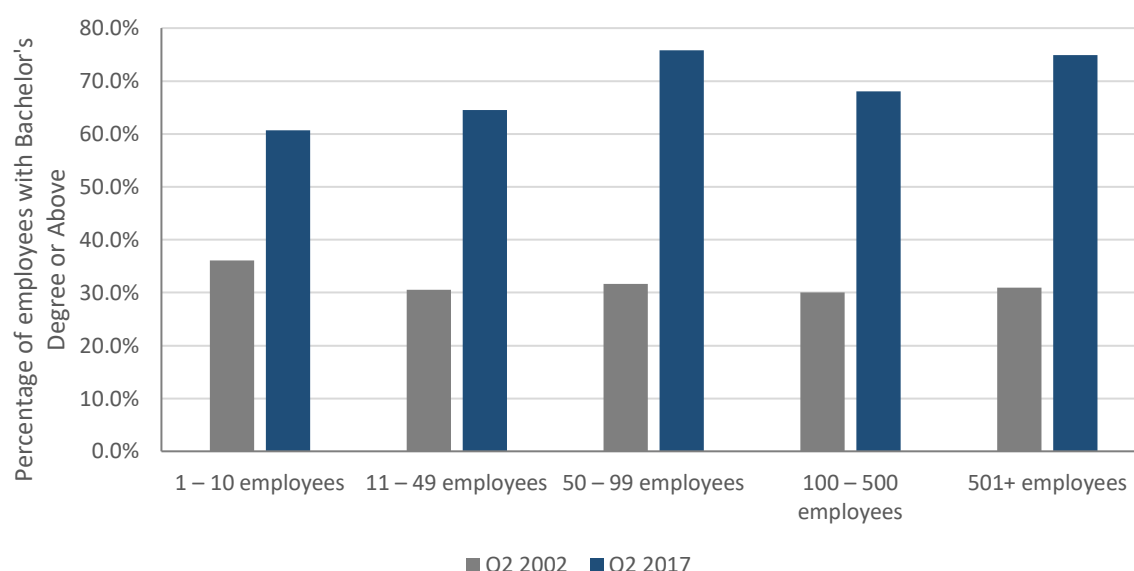
Source: LFS. Excludes missing values and self-employed without employees

The sectors with the highest number of employees with a Bachelor's Degree or above in 2017 were ICT and Finance (126,100); manufacturing (84,400); and Professional, Scientific and Technical activities (72,000). Together these sectors account for 65.8 percent of employees in the business economy with a Bachelor's Degree or above.

Educational Attainment of Employees in Foreign-Owned MNE-Dominated Sectors

Figure 8 below illustrates the percentage of employees in firms of different sizes in foreign-owned, MNE-dominated sectors that have attained a Bachelor's Degree or above. Generally, in Q2 2017, larger firms had higher proportions of employees with a Bachelor's Degree or above, although the difference between small and larger firms was less than the difference between these firms in the private business economy as a whole (see Figure 7). The education levels of employees have increased significantly across all firm size categories between 2002 and 2017.

Figure 8: Proportion of employees with Bachelor's Degree or above in Multinational Dominated sectors, Q2 2002 and Q2 2017



Source: LFS. Excludes missing values and self-employed without employees. Also excludes sectors 18.2 and 32.5 because sector data in the LFS is coded at the 2 digit level.

Other Characteristics of Employment and Indicators of Quality of Employment

This section of the paper provides an analysis of some broader characteristics of employment, such as gender and tenure, as well as participation in lifelong learning.

Female Employment

Table 2 illustrates the proportion of females in overall employment across firms of different sizes. In Q2 2017, smaller firms generally had higher proportions of female employees than larger firms. Firms with 11 – 49 employees had the highest proportion of female employment, at 42.9 percent, and firms with 100 – 500 employees had the lowest proportion, at 37.4 percent. Females were under-represented in firms of all sizes in Q2 2017. While 40.3 percent of employees in the private business economy were female in Q2 2017, CSO data show that females accounted for 46.1 percent of all individuals in employment in all sectors of the economy.

Between Q2 2002 and Q2 2017, the share of females in overall employment has increased in firms with 1 – 10 employees, 11 – 49 employees, and 501+ employees, while it has decreased marginally in firms with 50 – 99 employees and 100 – 500 employees.

Table 2: Percentage of females in employment in sectors B - N, by firm size

Firm size	Q2 2002	Q2 2017
1 – 10 employees	37.6%	41.5%
11 – 49 employees	38.3%	42.9%
50 – 99 employees	37.6%	37.5%
100 – 500 employees	38.9%	37.4%
501+ employees	37.5%	40.0%
All firms	38.1%	40.3%

Source: LFS. Excludes missing values and self-employed without employees

Nationality

Table 3 illustrates the proportion of non-Irish nationals in employment in Q2 2017 in firms of different sizes. The proportion of non-Irish nationals in employment in Q2 2017 ranged from 14.3 percent in firms with 1 – 10 employees to 22.9 percent in firms with 100 – 500 employees. In general, larger firms had higher proportions of non-Irish employees.

The proportion of non-Irish nationals in overall employment has increased markedly between Q2 2002 and Q2 2017 in firms of all sizes. In Q2 2002, the proportion of non-Irish nationals in overall employment ranged from 4.3 percent in firms with 1 – 10 employees to 6.7 percent in firms with over 500 employees.

Table 3: Percentage of non-Irish nationals in overall employment in sectors B – N, by firm size

Firm size	Q2 2002	Q2 2017
1 – 10 employees	4.3%	14.3%
11 – 49 employees	5.8%	18.3%
50 – 99 employees	6.4%	19.8%
100 – 500 employees	6.0%	22.9%
501+ employees	6.7%	20.1%
All firms	5.6%	18.7%

Source: LFS. Excludes missing values and self-employed without employees

Additional analysis shows that 78.8 percent of all non-Irish nationals working in firms with over 500 employees in Q2 2017 had attained a bachelor's degree or above, while 41.5 percent of non-Irish nationals employed in firms with 1 – 10 employees had a bachelor's degree or above. Therefore, non-Irish nationals employed in Ireland are relatively highly educated, compared to the overall workforce (see Figure 7). The proportion of non-Irish national employees with a Bachelor's degree or above has

increased in firms of all sizes, but the largest increase was in firms with 501+ employees (+23.6 percentage points).

Full Time / Part Time

Table 4 illustrates the proportion of part-time workers in the business economy in firms of various sizes in Q2 2002 and Q2 2017. In both Q2 2002 and Q2 2017, smaller firms had larger proportions of individuals working part-time than larger firms. In Q2 2017, the proportion of part-time employees ranged from 5.1 percent in firms with over 500 employees to 31.4 percent in firms with 1 – 10 employees. In Q2 2002, the proportion of part-time employees ranged from 6.5 percent in firms with over 500 employees to 18.8 percent in firms with 1 – 10 employees. Part-time work became considerably more predominant in small firms between 2002 and 2017, while it became less prevalent in larger firms. The analysis does not address how much of this part-time work is involuntary, but this is an important question for further analysis.

Table 4: Proportion of employees working part-time in sectors B – N, by firm size

Firm size	Q2 2002	Q2 2017
1 – 10 employees	18.8%	31.4%
11 – 49 employees	15.7%	23.1%
50 – 99 employees	11.2%	15.3%
100 – 500 employees	10.0%	9.0%
501+ employees	6.5%	5.1%
All firms	14.0%	18.6%

Source: LFS. Excludes missing values and self-employed without employees

Tenure

Table 5 illustrates the percentage of employees who had temporary contracts in firms of various sizes in Q2 2002 and Q2 2017. In Q2 2017, 9.1 percent of employees in firms with 1 – 10 employees were on temporary contracts whereas 5.4 percent of employees in firms with over 500 employees were on temporary contracts. Small firms also had higher proportions of employees on temporary contracts than larger firms in Q2 2002. The percentage of employees on temporary contracts has increased in firms of all sizes, except for firms with 100 – 500 employees. The largest increase was in firms with 1 – 10 employees (1.6 percentage points).

Table 5: Percentage of employees on temporary contracts in sectors B - N, by firm size

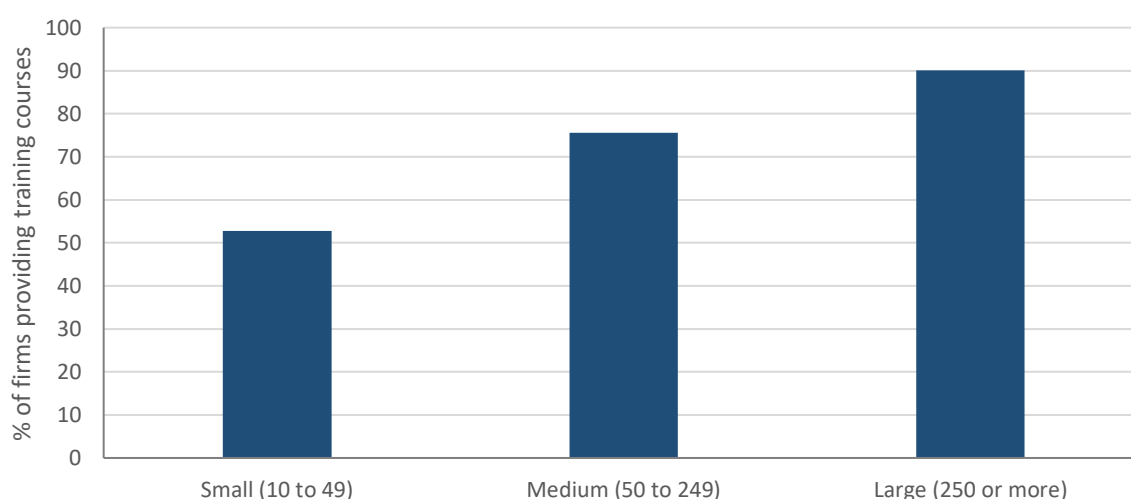
Firm size	Q2 2002	Q2 2017
1 – 10 employees	7.5%	9.1%
11 – 49 employees	6.7%	7.7%
50 – 99 employees	5.2%	5.6%
100 – 500 employees	5.5%	5.0%
501+ employees	4.6%	5.4%
All firms	6.2%	6.8%

Source: LFS. Excludes missing values and self-employed without employees.

Training Provision and Lifelong Learning

This section provides an analysis of training provision and participation rates in formal and non-formal education (lifelong learning) in firms of different sizes. According to the CSO's Continual Vocational Training Survey, the proportion of large firms that provided training courses for their employees was nearly double that of smaller firms in 2015. 52.8 percent of small firms (10 to 49 employees) provided training courses for their employees, while 75.6 percent of medium-sized firms (50 to 249 employees) and 90.1 percent of large firms (250+ employees) provided training courses.¹⁵ It is not possible to assess whether this disparity is driven by demand (the relative needs of small, medium, and large firms for training) or supply (the relative ability of small, medium, and large firms to provide training).

Figure 9: Percentage of Firms who provided Training Courses for Employees in 2015



Source: CSO, Continuing Vocational Training Survey

¹⁵ This includes all sectors, whereas the previous section only includes B – N.

The National Skills Strategy aims to increase the share of persons aged 25 – 64 engaged in lifelong learning to 15 percent by 2025.¹⁶ Using LFS data, this analysis calculates the participation rates of employees in formal and non-formal education across firms of various sizes in Q4 2018. The question in the LFS asks about education done in the previous four weeks, which of course poses limitations insofar as the answers will not capture any education done prior to that. The age range was limited to 25 – 64 year olds. The difference in the lifelong learning rates between firms of various sizes is relatively small, compared with the results of the Continuing Vocational Training survey. The proportion of employees participating in formal and non-formal education in firms with over 500 employees was 4.4 percent and 9.2 percent respectively. On the other hand, in firms with 1 – 10 employees, 3 percent of employees participated in formal education and 7.4 percent participated in non-formal education. It is not clear how much of this formal and non-formal education is related to work. It would be valuable to explore, if the data would allow, how work-related lifelong learning differs across firms of different sizes, and to what extent this training is provided or paid for by employers.

Table 6: Percentage of employees (aged 25 – 64) in sectors B - N engaging in Formal and Non-Formal Education in last 4 weeks, Q4 2018

Firm size	Formal education	Non-formal education
1 – 10 employees	3.0%	7.4%
11 – 99 employees	3.6%	7.8%
100 – 500 employees	4.2%	7.7%
501+ employees	4.4%	9.2%
All firms	3.7%	7.9%

Source: LFS. Excludes missing values, self-employed without employees, and response 'don't know but more than 10 employees'.

¹⁶ SOLAS. [Lifelong Learning in Ireland Quarter 4 2018](#)

Key Findings and Conclusion

The table below summarises the key findings of the analysis of employment for each firm size category.

Cohort Summaries and Key Findings:

Table 7 outlines the summary of the profile of employment by firm size in Q2 2017.

Summary table: Key Findings, Q2 2017, by Firm Size

	1 – 10	11 - 49	50 - 99	100 – 500	501+
Number of employees	286,300	298,800	125,200	231,800	170,200
Proportion of managerial, professional, and associate professional occupations	32.5%	32.5%	38.1%	44.7%	56.6%
Proportion of employees with Bachelor's degree or above	27.4%	32.4%	35.9%	49.7%	61.7%
Proportion of female employees	41.5%	42.9%	37.5%	37.4%	40.0%
Proportion of non-Irish nationals	14.3%	18.3%	19.8%	22.9%	20.1%
Proportion of temporary contracts	9.1%	7.7%	5.6%	5.0%	5.4%
Proportion working part-time	31.4%	23.1%	15.3%	9.0%	5.1%
Proportion participating in formal education	3.0% †	3.6%* †	3.6%* †	4.2% †	4.4% †
Proportion participating in non-formal education	7.4% †	7.8%* †	7.8%* †	7.7% †	9.2% †

* Firms with 11 – 49 employees and 50 – 99 employees aggregated for this variable. † means Q4 2018.

- The total number employed in the private business economy increased by 72,600 between Q2 2002 and Q2 2017, and this was dominated by employment in larger firms. Employment in firms with over 500 employees increased by 52.9 percent (58,900) during this time period. Most of this employment growth in the largest firms was in financial and insurance activities; manufacturing; professional, scientific, and technical activities; and ICT.
- The sectoral mix of employment varies across firm size categories. For example, 62.9 percent of employment in firms with over 500 employees in Q2 2017 was in the manufacturing, financial and insurance, and ICT sectors. On the other hand, 57.6 percent of employment in firms with 1 – 10 employees was in the accommodation and food services sector, the retail and wholesale sector, and the construction sector.
- Managerial and professional occupations account for a much larger share of employment in the largest firm size categories than the smallest firm size categories. In Q2 2017, managerial, professional, and associate professional occupations accounted for 56.6 percent of employees in firms with over 500 employees and 32.5 percent in firms with 1 – 10 employees. Professional and associate professional employment is concentrated in certain sectors, including manufacturing, ICT, and financial and insurance activities. In foreign-owned, MNE-dominated sectors, there is a smaller difference in the occupational profile of employment between small and larger firms.

- In Q2 2017, the proportion of employees with a Bachelor's Degree or above was 61.7 percent in firms with over 500 employees and 27.4 percent in firms with 1 – 10 employees. There was a smaller gap, however, between the largest and smallest firms in sectors dominated by foreign-owned MNEs, where the proportion of employees with a Bachelor's degree or above was 14.2 percentage points higher in firms with over 500 employees than in firms with 1 – 10 employees in Q2 2017.
- The proportion of non-Irish nationals in overall employment has increased in firms of all sizes from 5.6 percent to 18.7 percent between Q2 2002 and Q2 2017. In Q2 2017, 14.3 percent of employees in firms with 1 – 10 employees were non-Irish nationals, whereas non-Irish nationals accounted for 20.1 percent of employees in firms with over 500 employees.
- The proportion of employees working part-time was 6 times higher in the largest than the smallest firms in Q2 2017. Overall, the proportion of employees working part-time increased by 4.6 percentage points between Q2 2002 and Q2 2017. In firms with 1 – 10 employees, however, the increase was 12.6 percentage points. The proportion of employees on temporary contracts was 3.7 percentage points higher in firms with 1 – 10 employees than in firms with over 500 employees in Q2 2017. Overall, the proportion of employees on temporary contracts was 0.6 percentage points higher in Q2 2017 than in Q2 2002, and the largest increase was in firms with 1 – 10 employees (+1.6 points).
- While CSO survey data of employers suggest that almost all large firms offer training courses to their employees, while half of small firms offer training courses, a different picture is apparent in LFS data. The participation rate in formal and non-formal education was 4.4 percent and 9.2 percent respectively in firms with over 500 employees in Q4 2018, whereas in firms with 1 – 10 employees, the participation rate was 3 percent and 7.4 percent respectively.

Discussion and Next Steps

The analysis shows that there are considerable structural differences in the employment base of small and larger firms in the Irish business economy. The largest firms have much higher proportions of managerial, professional and associate professional occupations; employees with a Bachelor's degree or above; and are more concentrated in sectors such as manufacturing, ICT, and financial and insurance activities than smaller firms. These structural differences in the composition of employment between small and large firms in Ireland have not narrowed between 2002 and 2017.

Importantly, however, the employment profile differs by a much smaller degree across firm size categories when the analysis hones in on employment in sectors dominated by foreign-owned multinational firms (e.g. software and communications, pharmaceuticals, medical devices). Smaller

firms that operate in these sectors tend to have a relatively similar occupational and educational profile of employment compared to larger firms.

The comparatively large growth in employment in firms with over 500 employees, and the predominance of sectors such as finance and insurance, manufacturing, professional, scientific and technical activities, and ICT in this employment growth, may illustrate Ireland's progressive transition towards a knowledge economy over the last two decades.

While the findings of this paper are of relevance to Ireland's enterprise policy, there are a number of limitations to the data and the analysis. Much of the debate about the Irish enterprise base centres on the differing performance (in terms of contribution to the GVA, productivity, wage levels etc.) between the indigenous and foreign-owned sectors. As LFS data does not allow for the breakdown of firms by ownership, it is not possible to compare the profile of employment in the indigenous and MNE sectors. Nonetheless, the analysis clearly indicates comparative differences in the employment profiles of small and large firms and little relative change over time, despite improvements across many dimensions of employment across the board. Despite the absence of data on firm ownership, the analysis indicates that smaller firms in sectors dominated by MNEs (e.g. software and communications, pharmaceuticals, and medical devices), have a relatively similar employment profile as larger firms, suggesting that the dichotomy between small and large firms in terms of the type of employment they provide does not hold within certain sectors. In these sectors, it does not appear that small firms struggle to compete with the larger firms to attract a highly educated workforce.

It would be valuable to assess the degree to which there have been positive spillover effects, in terms of employment and other economic variables, between high-tech MNEs operating in Ireland and indigenous companies. Data to explore these questions is not currently readily available, although developments in linking together administrative datasets at the CSO may provide possibilities to explore these questions in future.

It would also be valuable to understand whether the divergences in the educational profile of employment across firm size categories are the result of supply or demand factors. For example, given the higher proportions of employees with a Bachelor's degree or above in larger firms, a question that arises is whether small firms have less demand for these skills, or if small firms are struggling to compete for these skills against larger companies. The analysis indicates that smaller enterprises operating in certain sectors of the economy have highly educated workforces, suggesting that in these sectors there is both demand for these skills and capacity of smaller firms to attract these workers. It is not clear, however, how difficult it is for smaller firms to source skilled labour and or what costs this

imposes on smaller companies. More detailed sectoral analysis would be useful in addressing this question.

This paper does not provide an analysis of income by firm size category because these data are not available. As better data on income become available, it would be useful to extend this analysis to the profile of income across firms of various sizes. This would contribute evidence to understanding how the quality of employment, in terms of pay, differs across these firms. A CSO dataset exists which links Revenue data with the LFS which may facilitate extending this analysis to include income in the future.¹⁷ Nonetheless, stark differences in the occupational and educational profile of employment in different firm size categories suggest that similar differences may exist in the average market income and outcomes for those employed in smaller and larger enterprises.

Finally, the analysis points at potentially different realities in terms of learning and skill development between small and larger firms. Further work should also investigate the reasons for the lower participation in training for smaller firms, including their capacity to provide opportunities for lifelong learning for their employees, and whether employees in small firms are availing of other avenues of learning, beyond employer-provided training, to upskill themselves and continue their learning.

Quality Assurance process

To ensure accuracy and methodological rigour, the author engaged in the following quality assurance process.

- ☐ Internal/Departmental
 - ☐ Line management
 - ☐ Spending Review Steering Group
- ☐ External
 - ☐ Other Steering group

¹⁷ See CSO Earnings Analysis using Administrative Data Sources.



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