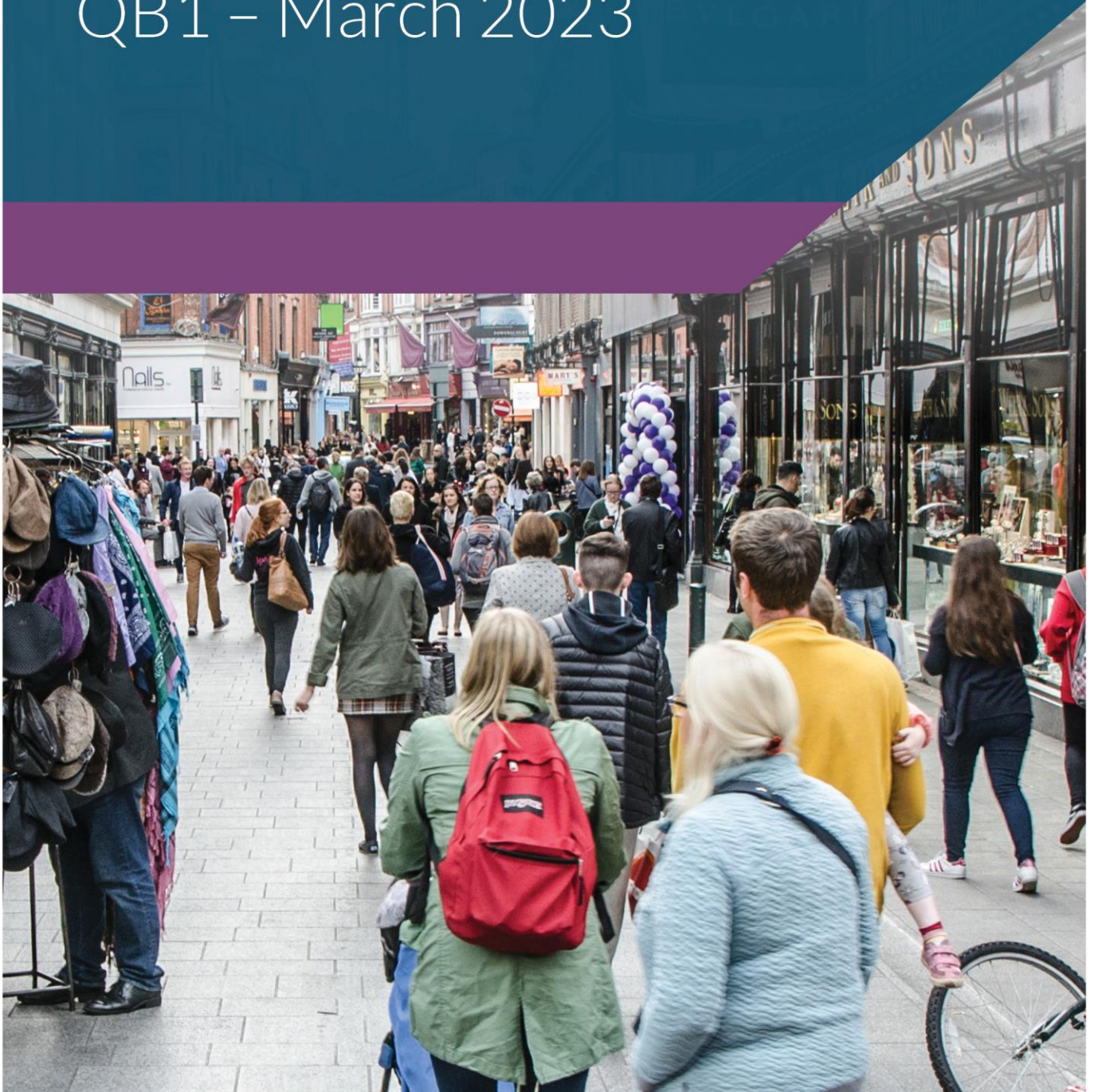




Banc Ceannais na hÉirean
Central Bank of Ireland
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The Role of the ICT Services Sector in the Irish Economy

Thomas Conefrey, Enda Keenan, Michael O’Grady and David Staunton¹

Abstract

The ICT services sector has expanded rapidly in Ireland with employment almost doubling since 2010. From mid-2022, the sector globally has experienced a correction with announcements of significant job losses, raising concerns over the impact on Ireland. Against this background, this *Article* describes the contribution of the ICT sector to economic activity, employment and tax revenue in Ireland. The sector’s footprint is significant – accounting for 6.4 per cent of employment and one fifth of corporation tax revenue in 2021 – the latter a 10-fold increase in revenue on 2012. To date, the scale of the downturn affects a small proportion of overall ICT employment in Ireland. Nevertheless, the dependency of the sector on a small number of large firms illustrates the wider structural vulnerability of the Irish economy to firm or sector-specific downturns.

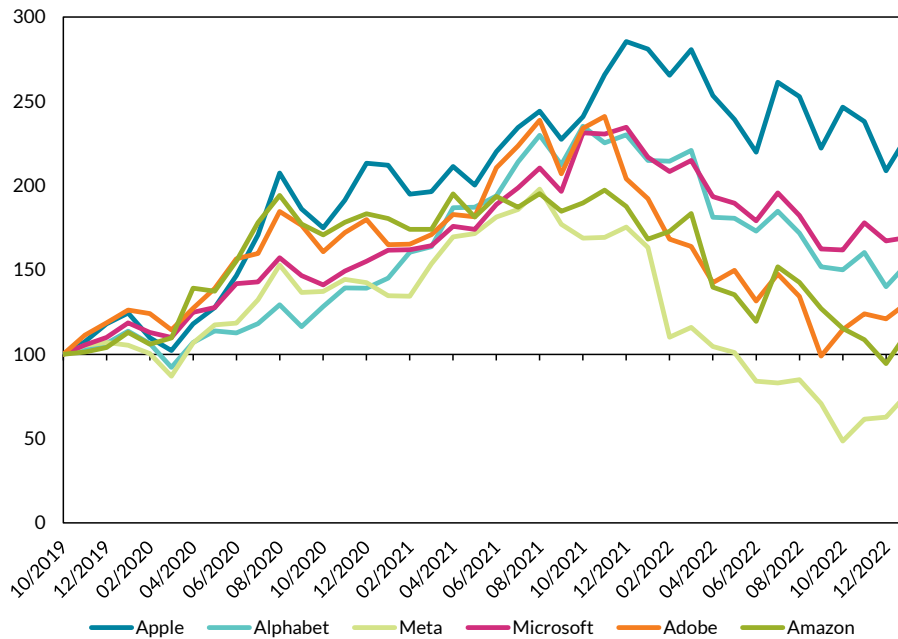
1. Introduction

Several large multi-national firms in the Information and Communication Technology (ICT) services sector have announced reductions to their global workforces during 2022 and early 2023. The majority of these global firms have a significant presence in Ireland, and in some instances their European headquarters are located here. The announcements of redundancies follow significant declines in the share prices and valuations of many of these firms

¹We would like to thank the following for comments: David Cronin, Robert Kelly, Vasileios Madouros, Martin O’Brien, seminar participants at the CBI, colleagues from the Central Statistics Office and David Purdue (NTMA). The views expressed in this Article are those of the authors and do not necessarily reflect those of the Central Bank of Ireland or the European System of Central Banks.

during the first three quarters of 2022, with the worst affected firms losing as much as half of their market value over a 12-month period (Figure 1). These losses come after a period of rapid growth during the pandemic. From end-2019 to end-2021, the stock prices of the largest tech firms more than doubled.²

Figure 1: Stock Prices of key ICT firms, Index Q4 2019= 100



Source: Refinitiv

Note: Alphabet is the name of the parent company of Google.

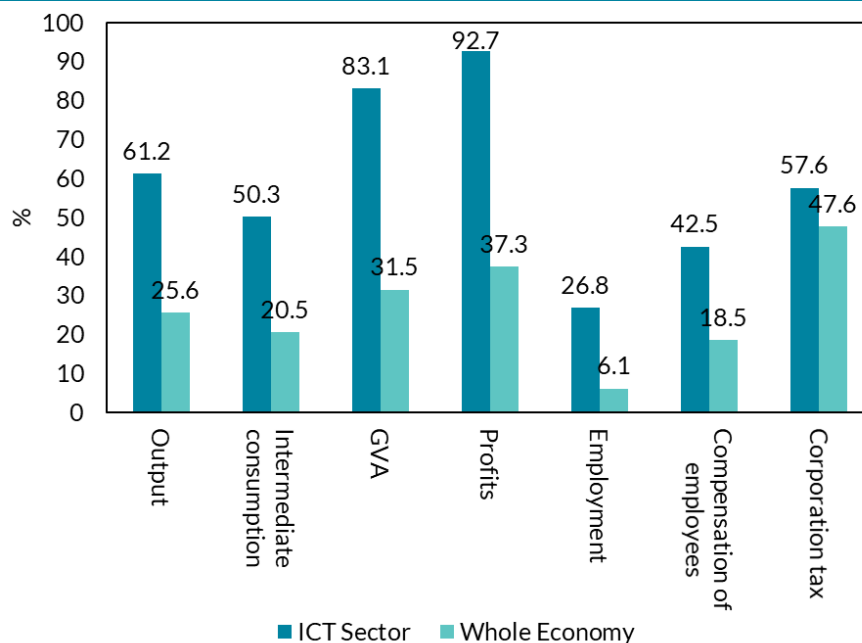
There are several factors behind the slowdown in the global ICT sector during 2022. These include weaker demand due to high inflation and the resulting squeeze on households' consumer spending, an element of normalisation of demand following unusually strong growth for digital and online services during the pandemic, and relatedly, a correction in the sector following an overestimation of future growth potential. In recent months, share prices have recovered somewhat and, despite the declines in 2022, remain close to levels recorded in 2020. Nevertheless, there is uncertainty over the future growth prospects for the sector and there remains a risk that the downturn that emerged in 2022 could become more severe. This could arise in the event of a prolonged period of weakness in global consumer spending or business expenditure on ICT services.

This *Article* describes the role of the ICT services sector in the Irish economy, focussing on its contribution to output, employment and earnings, and tax revenue. The key findings of this analysis are as follows:

² Based on the NYSE FANG+ index.

- The importance of the ICT sector to the Irish economy has increased steadily over time and today it accounts for just under one-fifth of Gross Value Added (GVA), 9.6 per cent of the economy-wide wage bill, 6.4 per cent of employment and just under one-quarter of corporation tax revenue. Across a range of performance measures, the pace of growth in the ICT sector between 2018 and 2021 was between two and three times higher than for the economy as a whole (Figure 2). Foreign-owned multi-national enterprises (MNEs) account for the majority of the overall contribution of the ICT sector to the economy. The increase in sectoral employment between 2018 and 2021 was much smaller than the rise in GVA. The latter was driven by a large increase in MNE profits, the majority of which accrues abroad. Some of this increase in profits is likely to have resulted in higher corporation tax receipts for the Exchequer.

Figure 2: Measure of Performance of the ICT Sector, % change 2018-2021



Source: CSO

- In addition, the ICT services sector contributes to activity in other parts of the economy. The sector's main linkages with the rest of the economy are with the Administrative and Support Service sector, the Manufacturing sector and the Wholesale and Retail Trade sector. These sectors in turn account for around 30 per cent of overall employment. Backward linkages (i.e. purchases of inputs by the ICT sector from other sectors) are more important than forward linkages (use of ICT output in other sector's production), with

approximately 15 per cent of turnover in Wholesale and Retail trade, and approximately 40 per cent of turnover in Admin and Support services, coming from sales to the ICT sector.

- Employment in the ICT sector increased to 164,600 in Q4 2022, a rise of 29.2 per cent compared to Q4 2019. This was the fastest pace of employment growth across all sectors over this period. Detailed CSO data show that much of this increase in employment has been in the high-skilled computer programming sub sector, with growth in occupations such as software developers and system analysts. On average, ICT employees are younger and have higher levels of educational attainment compared to the typical worker. One-third of employees in the ICT sector are non-Irish nationals, the highest such proportion across all sectors.
- Based on public announcements, there has been an estimated 2,307 layoffs in the ICT sector in Ireland in the year to February 2023. For firms who have announced cuts to their global workforces but have not publically stated the impact on their Irish operations, this figure assumes the number of layoffs in Ireland is proportionate to the share of the firms' overall worldwide employment that is based in Ireland. The estimated job losses to date amount to 1.4 per cent of overall ICT employment, or just 6.2 per cent of the increase in employment since Q4 2019. The vacancy rate in the ICT sector dropped below the economy-wide average in Q4 2022, having been consistently higher than the overall average back to 2008.
- Although ICT makes up 6.4 per cent of employment, it accounts for almost 12 per cent of all income tax revenue and 21.3 per cent of corporation tax. Overall profits earned in the sector appear to be highly concentrated, with a small number of firms accounting for a large share of the sectoral total. This implies that corporation tax revenue is sensitive to developments affecting specific firms, or a small number of firms, in the sector.

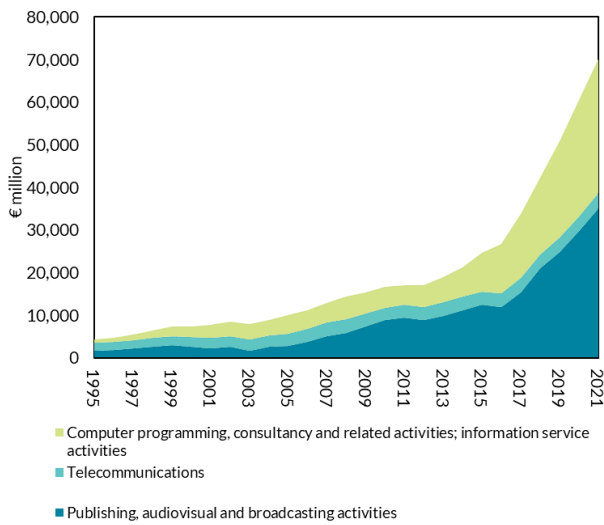
The remainder of this *Article* is structured as follows. Section 2 describes the contribution of the ICT sector to economic activity and exports, including the sector's linkages with the rest of the economy. Section 3 examines employment and earnings in the ICT sector in detail. Section 4 considers the fiscal impact of the sector and Section 5 concludes.

2. The contribution of the ICT services sector to output and exports

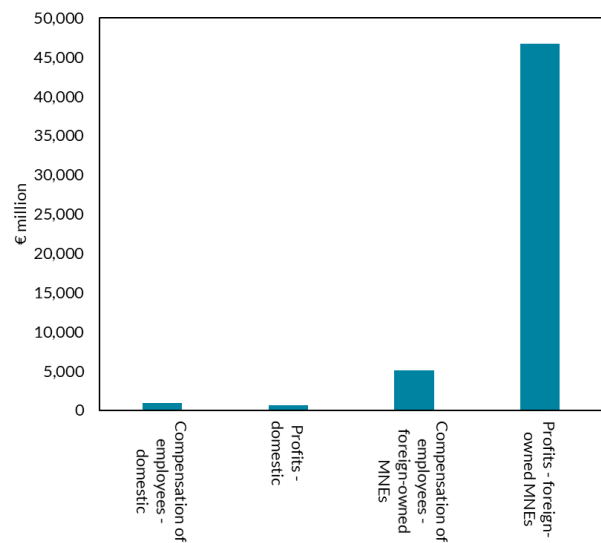
The ICT services sector in Ireland has grown significantly in size and importance over time.³ The sector accounted for just under 18 per cent of total gross value added (GVA) in 2021, up from 9 per cent in 2010.⁴ The ICT sector’s share of GVA in Ireland is around three times that of the euro area.

Figure 3 shows the level of real GVA in the ICT sector since 1995, broken down into three main sub-sectors. Two sub-sectors (publishing, audio-visual and broadcasting activities; computer programming, consultancy and information services activities) account for 95 per cent of output in 2021. While the sector increased gradually in size from the early 2000s up to 2014, the past decade has seen exceptional growth driven by increased activity in these two subsectors.

Figure 3: ICT Gross Value Added by Sub Sector **Figure 4: Decomposition of change in ICT Sector GVA by Foreign and Domestic Firms, 2014-2021**



Source: CSO



Source: CSO

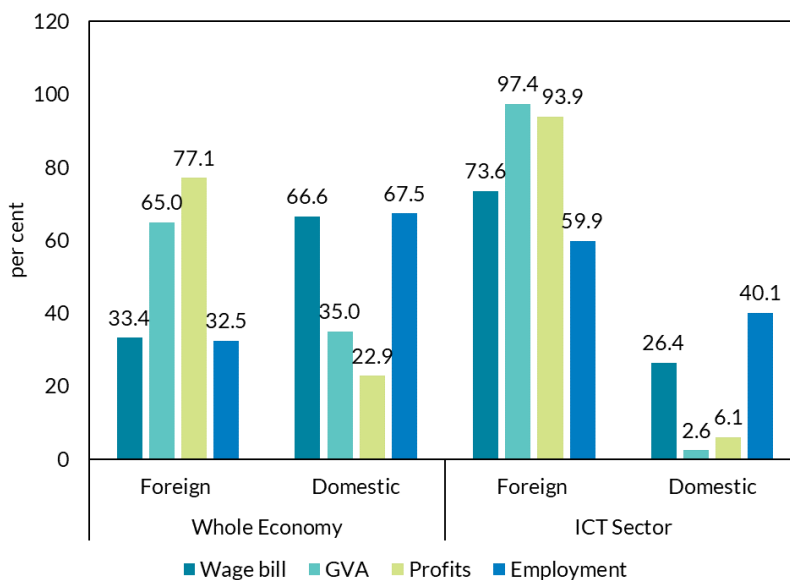
Between 2014 and 2021, overall ICT GVA increased by €55.6 billion consisting of a €47.4 billion rise in profits and a €6 billion increase in

³ A CSO Frontier Series published in May 2022 provides a description of some of the key characteristics of the ICT sector based on data up to 2019. See [Information and Communications Technology: a Value Chain Analysis](#).

⁴ Gross value added is the sum of the value of goods and services produced in an economy before depreciation. It can be calculated by subtracting intermediate consumption from gross output or alternatively as the sum of gross operating surplus plus compensation of employees.

compensation of employees. Figure 4 shows a breakdown of this change in GVA into compensation of employees (wages) and gross operating surplus (profits) attributable to both domestic and foreign-owned firms. The chart illustrates that the increase in overall GVA has been driven predominantly by an increase in profits from foreign-owned MNEs. The majority of these profits ultimately accrue to the owners of the MNEs abroad. The Exchequer in Ireland benefits by the amount of any additional corporation tax linked to the rise in ICT profits, as discussed further in Section 4. In contrast to the foreign-owned part of the sector, Figure 5 shows the much more modest growth in the domestically oriented ICT sector: the increase in GVA from domestic firms from 2014 to 2018 was just €1.6 billion, 3 per cent of the overall rise for the aggregate sector.

Figure 5: Proportion of the wage bill, profits, overall GVA and employment accounted for by foreign and domestic firms, ICT sector and whole economy, 2021



Source: CSO and Revenue

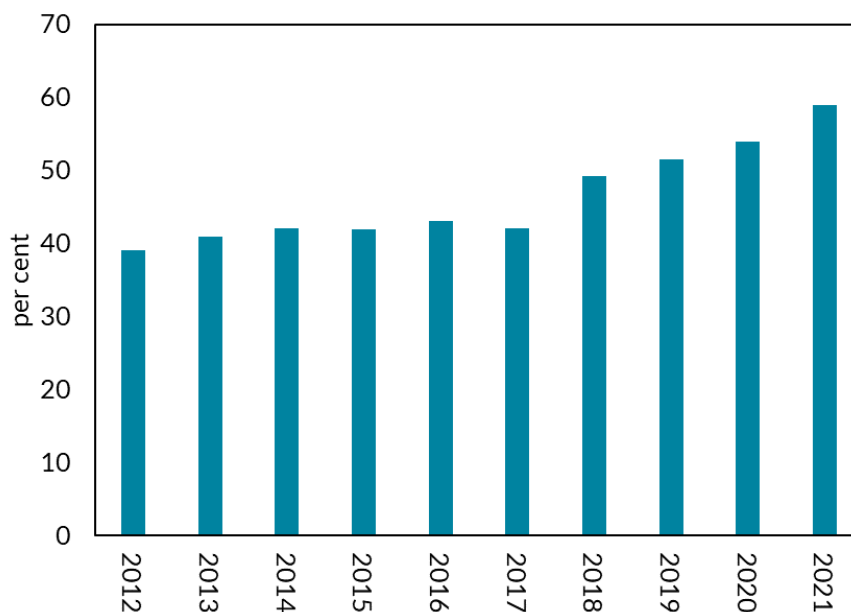
Note: Data for wage bill, profits and GVA are for 2021 from the CSO Institutional Sector Accounts. Employment breakdown based on Revenue analysis for 2020 available [here](#)

The Irish economy is unusual internationally in having a very high proportion of overall GVA accounted for by foreign-owned MNEs, but the dominance of foreign firms in the ICT sector is particularly striking. Figure 5 shows the proportion of the overall wage bill, profits, GVA and employment accounted for by foreign and domestic firms, for both the ICT sector and for the aggregate economy, in 2021. Economy wide, foreign firms make up around 33 per cent of the overall wage bill, 65 per cent of profits and around 26 per cent of employment. The equivalent figures for the ICT sector are 74 per cent, 97 per cent and 60 per cent, respectively. This highlights the dominant role played by foreign-owned firms in the ICT

sector and the much smaller contribution of domestic firms to the overall GVA of the sector. It also highlights the exposure of the sector in Ireland to developments globally, given the vast majority of the sector's activity arises from foreign-owned firms and the majority of these firms' revenue is generated internationally.

As of 2021, ICT services accounted for just under 60 per cent of all services exports (Figure 6) and around 30 per cent of total (goods and services) exports. Of the output generated by the sector, 89.5 per cent was exported abroad.⁵ The foreign-owned MNEs that dominate the sector are globally active, using Ireland as a centralised location for overseeing multiple elements of their value chain, including import and export activities. Estimates indicate that foreign firms account for 94.2 per cent of all ICT-related imports and 97.8 per cent of all ICT-related exports.⁶

Figure 6: Computer services exports as a proportion of overall services exports



Source: CSO

Geographically, Irish ICT services trade is relatively concentrated among a small number of countries. For exports, Europe is the primary destination, accounting for more than half (51.7 per cent) of all exports in 2021. Within Europe, the UK (10.2 per cent) and Germany (8.5 per cent) have the largest share of total Irish ICT services exports. Asia has the next largest share of

⁵ Based on latest available data from CSO Supply and Use Tables 2019.

⁶ These figures are consistent with data from the CSO's release "[Information and Communications Technology: A Value Chain Analysis 2019.](#)"

exports (27.5 per cent), with North America accounting for 6.7 per cent of total ICT exports.

Irish ICT services imports are similarly concentrated: North America (principally the US) is now the primary market, with a 56.7 per cent share of total ICT services imports. Europe accounts for just over 20 per cent of sectoral imports, with less than 6 per cent of ICT services imports coming from Asia. The remaining regions of the world constitute the residual 17 per cent of ICT services imports to Ireland.

2.1 ICT Sector's linkages with the rest of the economy

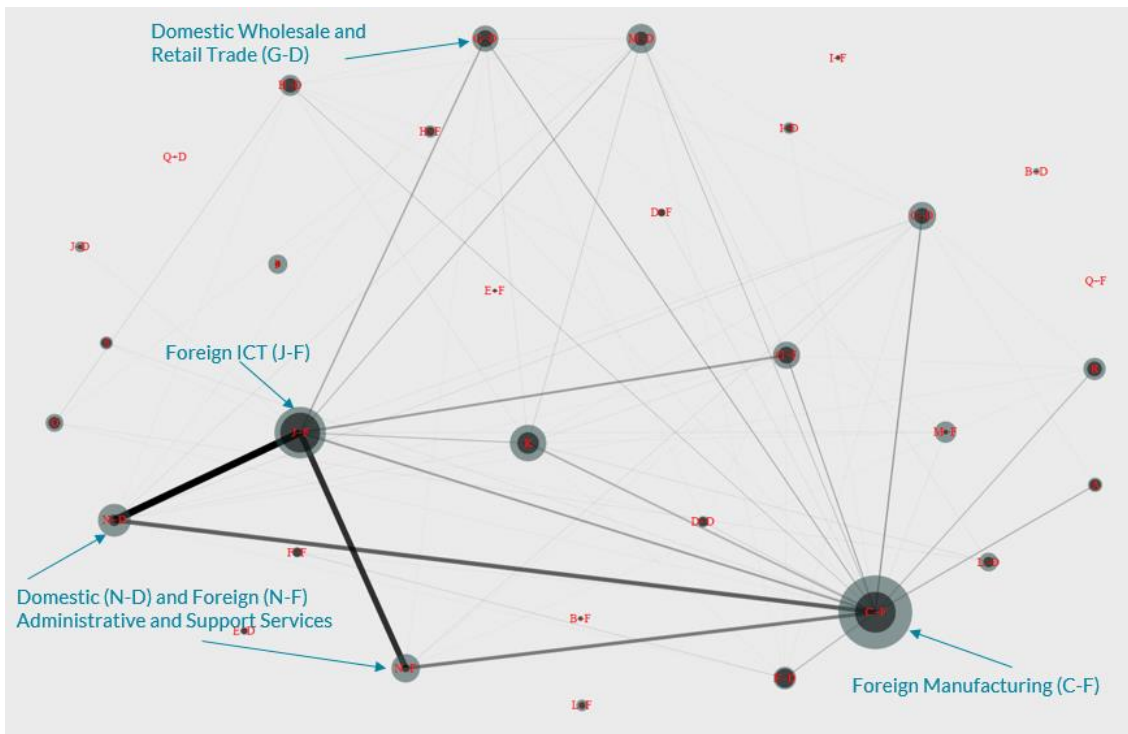
While foreign-owned MNEs dominate the ICT sector and the majority of the sector's output is exported, it still has important linkages with a number of other sectors of the Irish economy: both foreign-dominated sectors and more domestically oriented sectors. These linkages can be measured by the volume of output from other sectors used in the production of the GVA of the ICT sector (backward linkages) as well as the use of ICT services in the production processes of other sectors (forward linkages).

Backward linkages indicate the relative reliance on inputs from other sectors to the sector under analysis, acting as a measure of how other products produced in the economy have contributed in the production of sectoral output. Forward linkages show the use of goods and services from a sector in the production of other sectors' output. Overall, backward linkages account for around three-quarters of the trade between the ICT sector and the rest of the economy. In 2019, the ICT sector purchased an estimated €83 billion of intermediate products for use in the generation of ICT-related output, while it provided just €16 billion of intermediate products for use in non-ICT production. The majority of intermediate consumption consists of rental and leasing services. The combined ICT-related intermediate consumption (backward linkages, forward linkages and own-use) amounted to just over 30 per cent of economy-wide intermediate consumption.

Figure 7 presents an analysis of the sectoral network of the Irish economy, using the latest available data for 2019. The network map shows the strength of linkages between each sector and all other parts of the economy, represented by edges (lines) between the nodes, with each node corresponding to a sector. The darker, inner portion of the node represents the amount of intermediate consumption used by a sector in its production process, while the light-grey outer portion of the node represents the total output of the sector. Within the chart, sectors are disaggregated across domestic and foreign-controlled enterprises. The edges of the network measure the cumulative total of intermediate product trade between two sectors (e.g. $A \rightarrow B$ and $B \rightarrow A$), with the thickness of the lines representing

the relative magnitude of the cross-sectoral linkages. For legibility purposes, only the largest 5 per cent of sectoral linkages are shown.

Figure 7: Sectoral network map of the Irish economy, disaggregated between domestic and foreign-controlled sectors, 2019



Source: Author's calculations, using CSO and Eurostat data

Note: This network map is generated using CSO Supply and Use Tables for Ireland, Eurostat Annual Enterprise Statistics, and Enterprises Statistics. All values are based on 2019 data. Supply and Use tables are used to generate the initial map structure the aggregate sectors into domestic and foreign-controlled components.

Figure 7 shows that the foreign-controlled ICT sector (node J – F) has significant linkages primarily with the Administrative and Support Service sector (both the foreign-owned and domestic parts of that sector, N-F and N-D), the foreign manufacturing sector (C-F) and the domestic Wholesale and Retail Trade sector (G-D). The linkages between the ICT sector and these three sectors are all primarily backwards in nature, especially for Wholesale and Retail trade and Admin and Support Services.⁷ For these sectors, sales to the ICT sector account for approximately 15 and 40 per cent of turnover, respectively. Given the dependencies of these non-ICT sectors on the activity of the ICT sector, a reduction in output of the ICT sector would have negative spillovers primarily for these other sectors of the economy.

⁷ A number of these sectors appear to be heavily dependent on the ICT services sectors. Over 50 per cent of intermediate consumption purchased from the Rental and Leasing sector is used by the ICT services industry. Similarly, almost 30 per cent of intermediate consumption from the Security, Office and Business Support sector is used as inputs in the production of ICT services output.

In turn, Table 1 below shows the proportion of overall GVA and employment accounted for by these three sectors with the most significant linkages to the ICT sector. Together the sectors represent just under 50 per cent of economy-wide GVA and around 30 per cent of employment. These linkages demonstrate the potential for weaker activity in the ICT sector to spill over to other parts of the economy and conversely for growth in ICT to increase output in other sectors.

Table 1: GVA and Employment Shares of top 3 Sectors linked to ICT Sector

	% of GVA	% of Employment
Manufacturing	36.8	12.9
Admin and support services	5.3	4.3
Wholesale and retail	6.6	12.3
Total	48.7	29.6

Source: CSO, own calculations.

3. Employment and earnings in detail

3.1 ICT employment growth and demographics

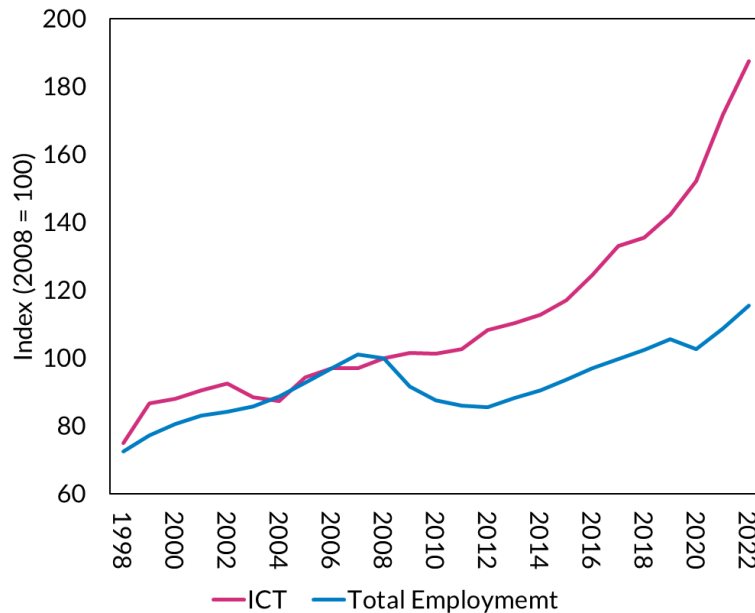
The ICT share of total employment has increased from 4.1 per cent (65,000) in 1998 to 6.4 per cent (163,000) in 2022.⁸ Despite the impact of the pandemic, there has been continuous growth in sectoral employment over recent years (Figure 8). Employment grew by 29.2 per cent between Q4 2019 and Q4 2022, relative to a 9.2 per cent increase in overall employment levels over the same period. Employment in the sector was less negatively impacted by pandemic-related health restrictions, given the feasibility of remote working arrangements, meaning a relatively lower take-up of income support schemes compared to more consumer-facing sectors.

Using the CSO monthly estimate of payroll employees for the ICT sector, employment levels in December 2022 reached a new peak of 124,700 persons (on a seasonally-adjusted basis) and marked 25 months of consecutive growth. There is a concentration of ICT workers in the greater Dublin area, given the clustering of MNE firms in the city, including Facebook/Meta, Google/Alphabet and Twitter. The sector accounts for

⁸ Employment in the ICT sector in Ireland increased by 85 per cent between 2008 and 2022, compared to 42 per cent in the euro area. The ICT share of total euro area employment was 3.8 per cent in Q3 2022.

11.8 per cent of total employment in Dublin, compared with 6.5 per cent nationally.

Figure 8: ICT employment growth



Source: CSO

In recent years, there has been a notable increase in the proportion of non-Irish workers in the sector (Figure 9). Non-Irish nationals comprised 33 per cent of ICT employment in 2022, compared to 18 per cent of employment across all sectors. The increasing flow of net inward migration to the sector is also evident from the rise in employment permits granted for ICT workers. Between 2020 and 2022, ICT accounted for 28 per cent of total (72,650) employment permits issued across all sectors.⁹ Combined, Apple, Google/Alphabet and Facebook/Meta made up 6 per cent (4,240) of total employment permits issued.¹⁰

In terms of demographic breakdown, 70 per cent of the 164,000 ICT workers in Q3 2022 are male, compared with 53 per cent in the wider economy. On average, ICT workers are younger with 32 per cent aged between 25-34 years, compared with 20 per cent in this age group in the wider economy. Workers in the ICT sector typically have higher levels of educational attainment: 83 per cent of workers in the ICT sector have third-level qualifications or above, in contrast to 53 per cent of those employed across all sectors (Figure 10). Those with higher levels of education are typically more likely to be attached to the labour force and

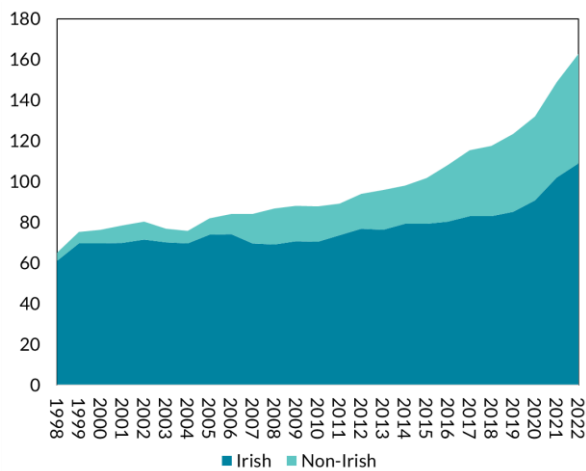
⁹ See [Quarterly Bulletin QB4 October 2022](#)

¹⁰ [Dept. of Business, Trade and Employment Permit Statistics](#)

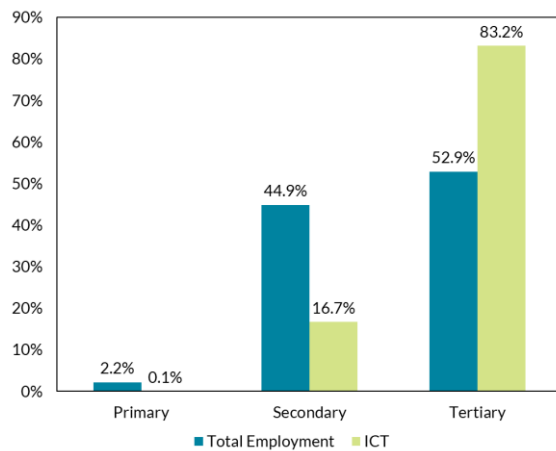
less likely to spend extended periods in unemployment or outside of the labour force.¹¹

The ICT sector is markedly different from the aggregate labour market in terms of the share of overall employment in MNEs. Foreign-owned MNEs account for 60 per cent of employment in the ICT sector, compared with 33 per cent of aggregate employment.¹² Given the predominance of MNEs in the Irish ICT sector, employment dynamics are far more exposed to international business and investment decisions than in other sectors.

Figure 9: ICT employment by nationality **Figure 10: Employment by level of educational attainment (Q3 2022)**



Source: CSO



Source: CSO

3.2 ICT employment by firm characteristic and occupation

EU membership, a skilled labour force and the corporation tax regime are important determinants of the decision of ICT MNEs to locate in Ireland. Figure 11 provides a breakdown of ICT employment by NACE 2-digit subsector. The data show that the increase in overall ICT employment since 2010 has been driven by a steep rise in the computer programming area. This is also reflected in the occupational breakdown using the international standard classification of occupations at 2-digit level (Figure 12).¹³ Data for Q3 2022 show that Technology Professionals account for 40 per cent of employment in the sector, with this group containing software and applications developers and analysts. Technology Operations and User Support Technicians are the next largest standalone group at 10 per cent.

¹¹ See Boyd et al (2022) "[Labour Market Recovery after a Pandemic](#)" Central Bank of Ireland Quarterly Bulletin Signed Article QB3 2022. There is some evidence for the US that those with higher levels of educational attainment are also more likely to migrate. See Wozniak (2010). "[Are College Graduates More Responsive to Distant Labor Market Opportunities?](#)" Journal of Human Resources.

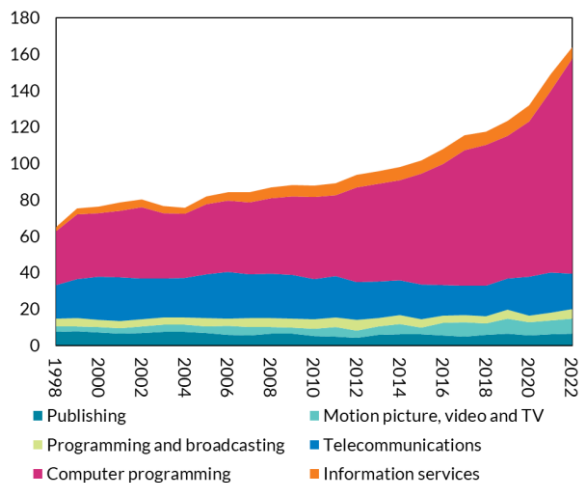
¹² Revenue (2022) [Corporation Tax - 2021 Payments and 2020 Returns](#)

¹³ See [International Standard Classification of Occupations 2008 \(ISCO-08\): Structure, group definitions and correspondence tables](#)

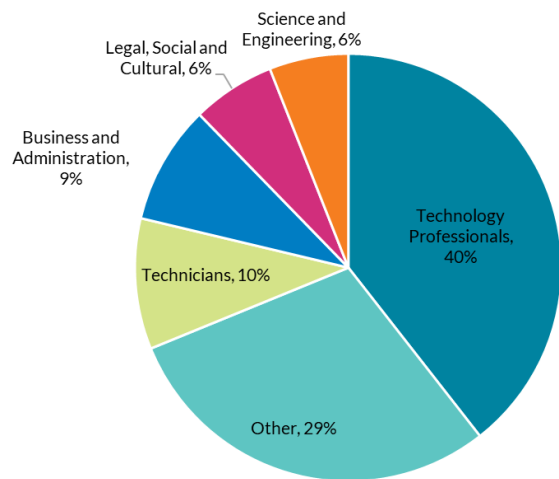
There is an extensive range of occupations across the sector that includes legal and accounting activities among several others reflecting the diverse nature of business activities.

Since Q4 2015, employment in the the ICT sector has expanded by over 55,000, with software developer and systems analyst jobs accounting for approximately 72 per cent of the overall gain in employment. The pandemic period saw an expansion in employment by many ICT firms, partly due to increased demand for ICT services. Focussing on the change in employment between 2019 and 2021, while there was an increase in employment in the sector in roles such as customer service and business and administration, the overall composition of employment growth remained similar to previous years with software developers and systems analysts accounting for the majority of the additional employment gain over the pandemic years.

Figure 11: ICT Employment by NACE 2-digit sector **Figure 12: ICT Occupational Breakdown (Q3 2022)¹⁴**



Source: CSO



Source: CSO

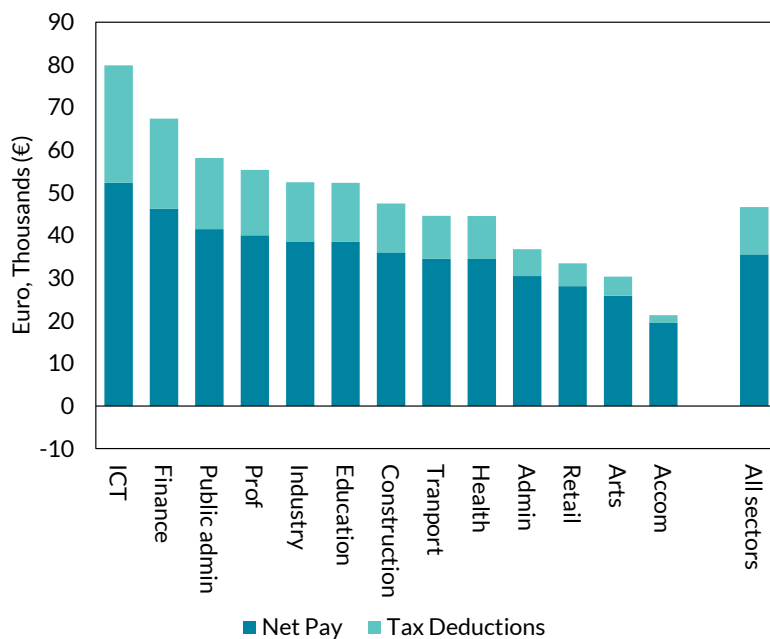
3.3 Average earnings in ICT

In terms of remuneration, average weekly gross earnings in the ICT services sector are the highest across all sectors (€1,536 in Q4 2022, compared to an aggregate average of €897). When scaled to annual earnings, the average employee in the ICT sector has a gross income of

¹⁴ Under [ISCO-08 two-digit occupational codes](#), Technology Professionals are grouped under Information and Communications Technology Professionals (25). The remaining categories are Technicians (35), Business and Administration (24), Legal, Social and Cultural (26), Science and Engineering (31).

€79,800 (€52,300 of which is net income, with €27,500 going to the Exchequer in the form of income tax) (Figure 13).¹⁵ Reflecting the progressivity of the income tax system, employment in the ICT sector generates the largest amount of income tax revenue per average employee. This equates to around 2.5 times the income tax of an average employee across all sectors. The relatively resilient performance of overall income tax throughout the pandemic is due in part to strong employment growth in ICT that offset reductions in tax receipts from consumer-facing sectors.

Figure 13: Net earnings and income tax contributions by sector (Q4 2022)



Source: CSO (EHECS) and author's calculations

ICT had one of the lowest take-up levels of government income-support schemes during the pandemic, with earnings developments less affected by compositional workforce changes as a result.¹⁶ Over the course of 2022, hourly earnings growth in the ICT sector increased by an average of 9.4 per cent in nominal terms (1.4 per cent in real terms) – the only NACE sector to experience positive real earnings growth over this period. The strong wage growth is likely to reflect the high level of labour demand in ICT over recent years as evidenced by the vacancy rate in the sector which has typically exceeded the economy-wide average up to late 2022. In Q4 2022, the position changed as the ICT vacancy rate fell to 1.1 per cent – the first time

¹⁵ This figure is estimated using average EHECS weekly earnings values, based on a single person with no dependents, paying no pension contributions. Figures are calculated using a 40 per cent taxation rate on earnings of €36,800, as earnings data are for Q3 2022, prior to Budget 2023 tax changes introduction in January 2023.

¹⁶ For further information see Box B: Data Challenges to Understanding Wage Developments in [Boyd et al \(2022\)](#)

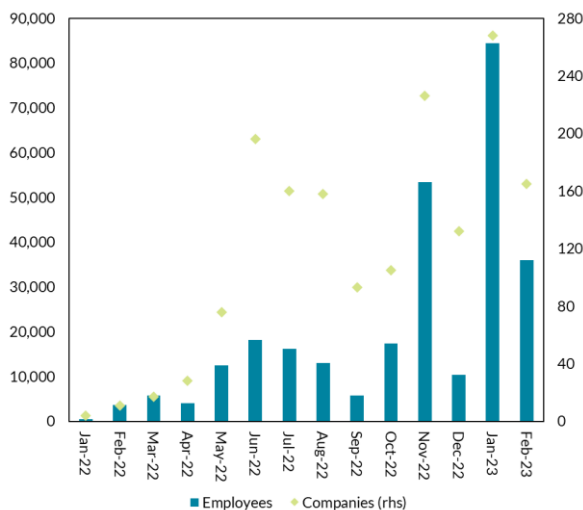
it has dropped below the economy average (1.3 per cent) in the recorded data (beginning in Q1 2008). This could reflect reduced labour demand in occupational areas linked to recent layoff announcements. There remains over 1,200 vacancies in the sector, which is broadly consistent with the long-term average number of ICT job vacancies.

3.4 Redundancies and labour demand in the ICT sector

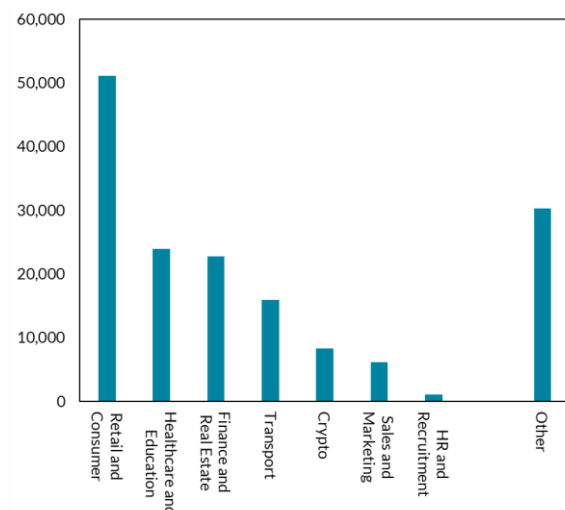
Throughout 2022 and into 2023, there has been a substantial increase in the number of job cuts announced in the global ICT sector. Estimated global redundancies compiled by the layoffs.fyi website are 160,847 in 2022 and 120,342 in the first two months of 2023 (Figure 14). While the majority of announced redundancies to date have occurred in the US, many other countries are either directly affected, or will likely experience reduced economic activity indirectly.

Using the data on global redundancies, it is possible to identify the broad areas within the ICT sector where job cuts have occurred. To date, layoff announcements appear to be in ICT retail and consumer activities (Figure 15). Firms operating in this area include Amazon, Meta (Facebook) and Twitter, for whom the sale of consumer goods and advertising revenue is an important element of their activities. Within these firms, there is some evidence that the areas most affected are business and recruitment teams.¹⁷

Figure 14: Global layoffs announced in ICT sector **Figure 15: Global redundancies in ICT by broad sector of activity (2022)**



Source: layoffs.fyi



Source: layoffs.fyi

¹⁷ [FT: Meta cuts 11,000 staff in largest cull in company's history](#)

The largest number of announced global layoffs has been in Amazon (18,000) Alphabet/Google (12,000), Meta (11,000) and Microsoft (10,000), all of which have business operations in Ireland. Table 2 lists the number of job cuts publicly announced by firms in the ICT sector that operate in Ireland over recent months. To date, the number of confirmed layoffs in Ireland is relatively small at 1,474, representing just over 0.9 per cent of the current ICT services workforce. This figure is almost certain to represent an underestimate of total job losses, for several reasons. It counts only publicly announced layoffs that have been reported in the media, and therefore job cuts by firms that have not been made public are omitted. Secondly, it does not include firms that announced reductions in their global workforces, but did not confirm the number of redundancies in Ireland. To adjust for this, estimates are made by assuming the number of layoffs in the Irish firm is proportional to their share of the firm's overall global workforce. This would bring total estimated layoffs to 2,307 (1.4 per cent of ICT employment), or 6.2 per cent of the increase in employment in the sector since Q4 2019.

Table 2: Publicly announced layoffs by ICT firms with bases in Ireland (February 2022 – February 2023)

Company Name	Global Redundancies	% of Global Staff	Irish Redundancies
Amazon	18,000	1.2%	0
Alphabet/Google	12,000	6%	240
Meta/Facebook	11,000	13%	350
Microsoft	10,000	5%	120
Salesforce	7,900	10%	200
Dell	6,500	5%	250*
Hewlett Packard	6,000	12%	480*
IBM	4,000	1.5%	45*
Twitter	3,500	50%	140
SAP	3,000	2.5%	58*
PayPal	2,000	7%	62
Yahoo	1,600	20%	60
Stripe	1,000	14%	90
Hubspot	500	7%	80
Wayflyer	200	40%	70
Intercom	130	13%	62
Total***	87,330		2,307***

*** Figures are estimated by assuming the proportional share of global firm layoffs to the Irish firm.

Source: Company announcements and author's calculations.

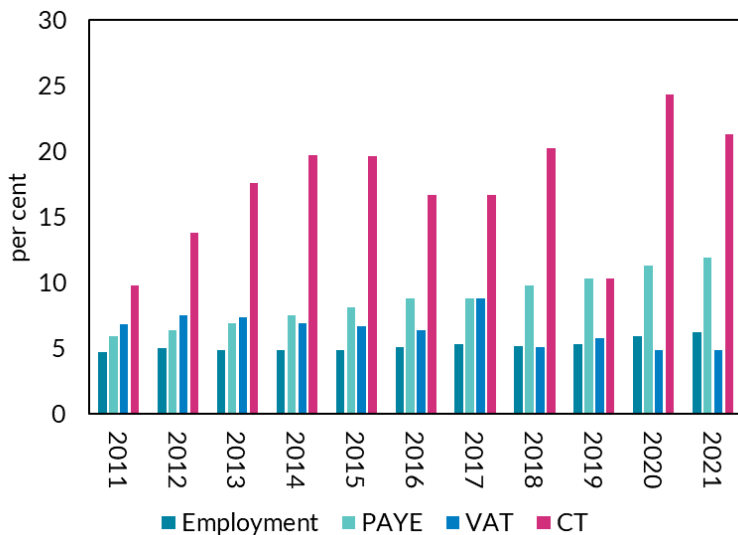
A number of factors could potentially mitigate the impact of the global ICT downturn on the labour market in Ireland. The combination of low overall unemployment and elevated labour demand across all sectors implies the

existence of alternative employment opportunities for ICT workers who may be affected by the recent redundancies. Given the large proportion of the ICT workforce who are highly educated (third-level or above), previous evidence suggests that the transition rate back to employment even in the event of becoming unemployed should be high. The large proportion of workers in ICT who are non-Irish nationals may also indicate a higher degree of labour mobility in the sector, relative to other parts of the labour force.

4. Fiscal impact of the ICT sector

Figure 16 shows the contribution of the ICT sector to the main tax headings, using detailed data from Revenue. While ICT accounted for 6.2 per cent of total employment in 2021, the sector has consistently made a proportionately greater contribution to tax revenue across all the main headings. Reflecting the high rate of average pay in the sector, ICT services accounted for 12 per cent of all PAYE tax revenue (including USC). Firms in the ICT sector paid €3.3 billion (or 21.3 per cent) of all corporation tax in 2021.

Figure 16: Share of MNE Employment, ICT and aggregate non-ICT sectors



Source: Revenue, CSO

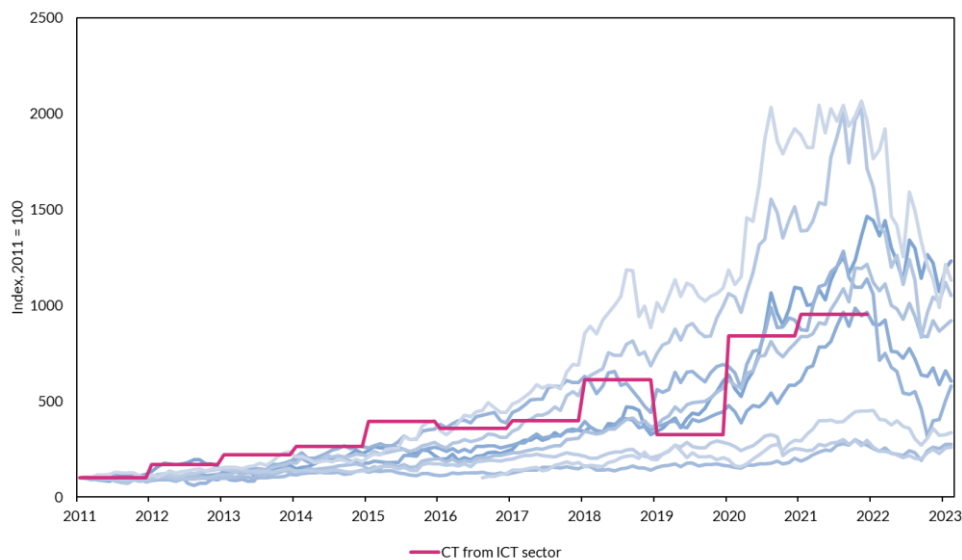
Across corporation tax, VAT, and PAYE/USC receipts, €6.6bn was generated by the ICT services sector in 2021. This amounts to 13 per cent of total net receipts across these tax categories.¹⁸ If profitability were to

¹⁸ Revenue’s sectoral breakdown of tax data excludes some of the smaller tax heads, so when summed together the total will not match the actual tax received in that year.

decline in large ICT firms, it is possible that tax revenue would be negatively affected through a reduction in corporation tax, while PAYE and USC would be lower if weaker ICT performance passes through to staffing levels and salaries. In addition, the overall fiscal impact of the ICT sector is likely to be larger than this tax data implies, given its connection to other sectors of the economy as set out in Section 2.

Over the last decade, Ireland has experienced rapid growth in corporation tax receipts, particularly from ICT firms. Figure 17 shows that this increased revenue coincided with sustained increases in the stock prices of the largest ICT firms, indicative of their rapidly growing turnover and profits over the period.

Figure 17: Stock Prices of key ICT firms and overall CT paid by ICT sector



Source: Refinitiv, Revenue

Note: ICT firms are Apple, Google, Meta, Oracle, Microsoft, Adobe, SAP, Dell, Amazon. Latest data on CT revenue from the ICT sector (pink line) are available up to 2021.

Overall corporation tax revenue is concentrated in a small number of firms, with 10 firms paying 53 per cent of the total in 2021. It is likely that there is also significant concentration within corporation tax paid by ICT firms. Data from the Irish Times Top 1000 lists profits earned by the top ICT firms in Ireland according to company filings, and shows substantial concentration in the largest firms including Apple, Microsoft, Alphabet, Adobe and Meta.¹⁹ The share of corporation tax paid by ICT firms has doubled over the last decade (Figure 16), with receipts increasing from €300m in 2011 to €3.3bn in 2021. Given the likely concentration of profits,

¹⁹ See [Irish Times Top 1000](#).

it is plausible that a small number of extremely profitable ICT firms have driven this growth, implying firm-specific risks to the Irish public finances.²⁰

As an alternative approach to estimating sectoral profitability, CSO Institutional Sector Accounts data can be used to compare aggregate ICT services gross operating surplus to corporation tax in each year. From 2017 to 2021, ICT services' gross operating surplus rose by 150 per cent while CT payments from the sector rose by 140 per cent. From year to year, there is a reasonably close relationship between growth in the two series but, as with firm level profits, changes in gross operating surplus do not fully account for changes in corporation tax paid in Ireland. At the same time, given the risk of potentially weaker profitability in the ICT sector over the coming years, a reduction in gross operating surplus could negatively affect corporation tax revenues if this translates into a reduction in profit taxable in Ireland.

5. Conclusion

The ICT sector makes a significant contribution to output, employment and tax revenue in Ireland. Given the size of the sector, any prolonged slowdown would have a negative effect on the economy and labour market. To date, the number of job losses is small, relative to the existing workforce.

Despite this, characteristics of the ICT services sector in Ireland indicate important risks to growth, employment and tax revenues if a more severe or prolonged downturn were to materialise. The sector is dominated by a small number of foreign-owned MNEs that account for the majority of output, employment and tax revenue. In contrast, the domestic part of the sector has expanded more slowly and accounts for less than 10 per cent of overall ICT output. This suggests that the capacity for the domestic part of the sector to absorb any loss of activity from foreign-owned firms may be reduced, should a more serious contraction in MNE-based ICT activity occur.

More generally, the developments over recent months provide a clear example of the overall structural vulnerability of the Irish economy, labour market and public finances to negative, sector-specific shocks. This vulnerability arises due to the large proportion of overall output and tax revenue that is concentrated in a small number of foreign-dominated sectors. This implies that a downturn affecting a specific sector, or a handful

²⁰ Firm profits do not directly translate to corporation tax receipts for a number of reasons, including the effect of capital allowances, under which certain expenditures can be set against taxable profits. Revenue data shows more than half of CT comes from firms using capital allowances for intangible assets, and that the CT payment from these firms has more than doubled since 2018. See for example, [2021 Corporation Tax Payments](#). An alternative measure of profits in the sector, is gross operating surplus from the CSO Institutional Sector Accounts. There is a reasonably close relationship between the CT paid by ICT and GOS in the sector, but changes in gross operating surplus do not fully account for changes in corporation tax paid.

of large firms in a sector, has the potential to adversely affect overall economic activity, employment and, in particular, corporation tax revenue. Policies that contribute to improving the resilience of the economy, such as increasing investment and productivity in indigenous firms and saving unexpected corporation tax revenues in the National Reserve Fund, would lessen the negative effects of any future sectoral downturn.

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