

Corporation Tax – A Note on the Context and Concentration of Payments

October 2014

Statistics & Economic Research Branch

Revenue 
Cáin agus Custaim na hÉireann
Irish Tax and Customs

Corporation Tax – A Note on the Context and Concentration of Payments

The authors, Victor Pigott (vpigott0@revenue.ie) and Keith Walsh (keithw@revenue.ie), are economists in the Statistics and Economic Research Branch of the Office of the Revenue Commissioners and are members of the Irish Government Economic and Evaluation Service (“IGEES”). This report was prepared as part of the Department of Finance Economic Impact Assessment of Ireland’s Corporation Tax Policy (October 2014). Any opinions expressed in this paper are the views of the authors and do not reflect the views of the Office of the Revenue Commissioners. The authors alone are responsible for the conclusions.

Table of Contents

Table of Contents	iii
List of Tables	iii
List of Figures	iii
Executive Summary	iv
1 Introduction.....	1
2 An Overview of Corporation Tax Receipts in Context	2
3 Analysis of Corporation Tax Payments	4
3.1 Introduction	4
3.2 Payments by Sector	4
3.3 Payments by Revenue Region / District and Size	6
3.4 Links to Other Taxes and Employment	8
3.5 Concentration Levels	9
3.6 Correlation of CT Payments from Year to Year	13
4 Conclusion.....	14

List of Tables

Table 1: Corporation Tax Rates and Receipts across the EU.....	3
Table 2: Corporation Tax Payments by Sector	5
Table 3: Corporation Tax Payments by Revenue District and Region	7
Table 4: Corporation Tax Payments per Employee by Sector	9
Table 5: Top 10, 20 and 50 Companies	10
Table 6: Top 10, 20 and 50 Corporate Groups.....	11
Table 7: HHI and Top Fifty Companies	13
Table 8: HHI Concentration for Selected Sectors.....	13

List of Figures

Figure 1: Corporate Profits and Corporation Tax Receipts.....	2
Figure 2: Composition of Total Tax Receipts.....	2
Figure 3: Top 10, 20 and 50 Companies – Corporation Tax Payments	10
Figure 4: Top 10, 20 and 50 Corporate Groups – Corporation Tax Payments.....	12

Executive Summary

Corporation Tax (CT) is the fourth largest tax in Ireland in terms of receipts, with over €4.2 billion collected annually in the last two full tax years from total tax revenues of around €38 billion in both 2012 and 2013. CT receipts have increased in recent years from a low of €3.5 billion in 2011.

The statutory CT rates in Ireland are low when compared to the average rates across the European Union (EU). However, CT receipts in Ireland as shares of both total tax revenue and GDP are reasonably close on the EU average – CT as a percentage of total tax in Ireland is 8.5 per cent, 1.2 percentage points above the EU average.

Financial & insurance activities, the manufacture of pharmaceuticals and information & communications technology services are the largest contributing sectors to CT in Ireland over the period 2008 to 2012. The top five sectors account for over 68 per cent of total CT paid in the period.

A relatively small number of large multinational companies account for a significant proportion of total CT receipts. The top ten companies pay for 23 per cent of CT from 2008 to 2012, the top twenty companies for 32 per cent and the top fifty for 46 per cent. The top ten corporate groups account for 34 per cent of total CT, the top twenty corporate groups for 43 per cent and the top fifty for 57 per cent.

Foreign owned multinational companies account for three quarters of CT paid between 2008 and 2012. In 2012 alone, foreign multinationals pay over 79 per cent of CT.

The analysis in this report also illustrates the importance of the corporate sector to payments of other taxes. Companies pay around €5 billion in VAT and €2.3 billion in Excise per annum over the period 2008 to 2012. A significant contribution from companies is through employment and payroll taxes. In total, companies have nearly 900,000 employees (annual average through 2008 to 2012). PAYE taxes from these employees amount to over €3.7 billion per annum.

Overall, the analysis confirms that CT payments are heavily concentrated among large companies, mainly multinationals. This concentration has increased over recent years, reflecting that the multinational and export-focused sector continues to perform better than the domestic sector and SMEs generally.

1 Introduction

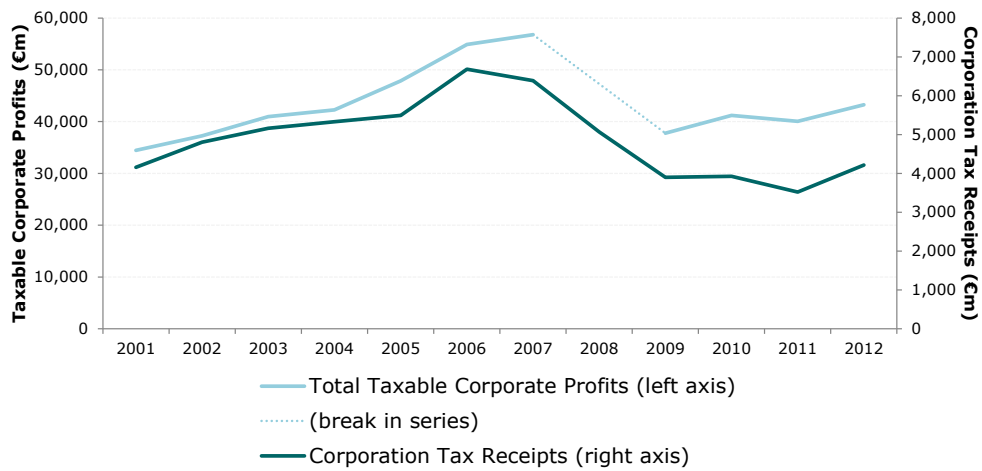
Corporation Tax (CT) is the fourth largest tax in Ireland in terms of receipts (after Income Tax, VAT and Excise), accounting for 11.5 per cent of total tax revenues in 2012 and 11.3 per cent in 2013 (around €4.2 billion in each year). CT receipts have increased in recent years from a low of €3.5 billion in 2011.

This report presents a profile of CT payments to give an overview of the taxhead. The next section reviews overall trends in recent years and places CT payments in Ireland in an international context. Section 3 provides deeper analysis of CT payments by sector, location and examines the concentration of payments. Section 4 concludes.

2 An Overview of Corporation Tax Receipts in Context

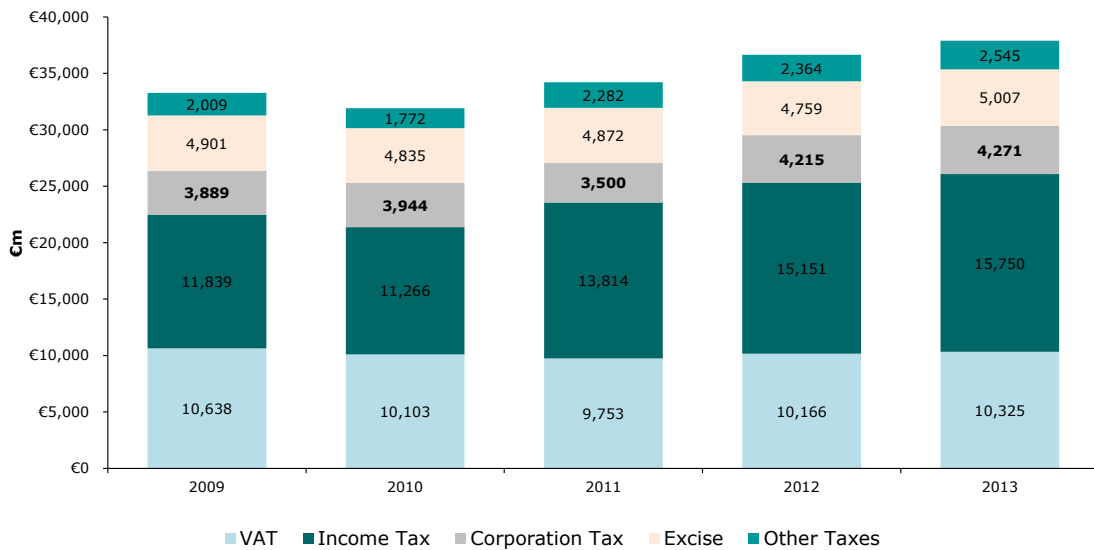
Figure 1 shows total Irish taxable corporate profits and CT receipts between 2001 and 2012. Figure 2 shows the contribution of CT to total tax receipts since 2009. The correlation between total taxable corporate profits and CT receipts is strongly positive (with a correlation coefficient of 0.83). The split of profits in each year chargeable at the two rates of CT varies, resulting in different effective rates charged on the total taxable corporate profits, and may account for divergences in the trends in Figure 1.

Figure 1: Corporate Profits and Corporation Tax Receipts



Source: Authors' analysis of Revenue data and Department of Finance databank.

Figure 2: Composition of Total Tax Receipts



Source: Authors' analysis of Revenue data.

There are two rates of CT in Ireland – the standard 12.5 per cent rate for trading income and a rate of 25 per cent that applies to non-trading income.¹ The effective rate of CT, based on a simple calculation of actual receipts as a proportion of taxable profits, is 9.8 per cent in 2012.²

As shown in Table 1, the main Irish statutory CT rate of 12.5 per cent is low compared to the (unweighted) average for European Union (EU) but CT receipts as percentages of total tax receipts and of GDP in Ireland are above or close to the EU average.

Table 1: Corporation Tax Rates and Receipts across the EU

Country	Statutory CT Rate	CT % of Total Tax Revenue	CT % of GDP
EU 28 Average	22.9	7.3	2.6
Belgium	34	6.8	3.1
Bulgaria	10	6.8	1.9
Czech Republic	19	9.5	3.3
Denmark	25	6.3	3.0
Germany	29.8	6.9	2.7
Estonia	21	4.5	1.4
Ireland	12.5	8.5	2.4
Greece	20	3.3	1.1
Spain	30	6.6	2.2
France	36.1	5.0	2.3
Croatia	20	5.6	2.0
Italy	31.4	5.1	2.3
Cyprus	10	17.8	6.3
Latvia	15	5.7	1.6
Lithuania	15	4.8	1.3
Luxembourg	28.8	13.4	5.3
Hungary	20.6	3.3	1.3
Malta	35	18.7	6.3
Netherlands	25	5.4	2.1
Austria	25	5.5	2.4
Poland	19	6.6	2.1
Portugal	31.5	8.7	2.8
Romania	16	7.6	2.2
Slovenia	18	3.4	1.3
Slovakia	19	8.5	2.4
Finland	24.5	5.0	2.2
Sweden	26.3	6.5	2.9
United Kingdom	24	8.1	2.9

Source: Authors' analysis of Eurostat Data for 2012.

¹ The 12.5 per cent rate for trading income applies unless the income is from an excepted trade in which case the rate is 25 per cent. Excepted trades include certain land dealing activities, income from working minerals and petroleum activities. The 10 per cent rates that applied variously to manufacturing, the IFSC and the Shannon free zone are all now ended, most recently manufacturing relief in 2010.

² The Department of Finance has recently published a technical paper that reviews in detail the different options to measure effective rates. See 'Effective Rates of Corporation Tax in Ireland' by S. Coffey and K. Levey, April 2014.

3 Analysis of Corporation Tax Payments

3.1 Introduction

The analysis that follows shows CT paid by sector, location and concentration levels (by companies and corporate groups). This illustrates which industries and locations are responsible for CT payments.

Most of the analysis in the Sections below focuses on the period 2008 through 2012, as 2012 is the most recent tax year for which full tax returns information is available.

It is important to note the analysis in this report is based on incorporated businesses which are the businesses liable to CT. In many sectors, in the domestic market and the small and medium sized Enterprise (SME) segment in particular, there are significant numbers of non-incorporated businesses.³

3.2 Payments by Sector

Table 2 shows CT paid by sector in descending order over the period 2008 to 2012. Financial & insurance activities, the manufacture of pharmaceuticals, information & communications technology (ICT) services and wholesale trade sectors are the largest contributors to CT in Ireland in the period.

It should be noted that the sectoral distribution (based on NACE code) may be open to misinterpretation. For example, within a corporate group there may be an affiliate that provides financial services or other financial intermediation services for the group. Such affiliates are classified as financial intermediation companies under the NACE system whereas their parent company and other companies within the group are classified as pharmaceutical, electrical equipment, or other as appropriate. Reviewing the larger cases in this sector confirms significant payments from such treasury operations.⁴

Likewise, the prominence of the wholesale trade sector is linked to other sectors. Many multinationals have an affiliate engaged in the wholesale of their product and the sector code for that company will reflect wholesale, rather than overall activity of the group.

³ Such businesses pay tax on their profits through the Income Tax system rather than corporate taxation.

⁴ The top thirty financial services companies pay around €2.5 billion over 2008 to 2012, it appears at least €500 million of this is from what are likely to be treasury operations.

There are also other links between sectors, for example manufacturing of chemicals is often an associated production chain activity for the manufacture of pharmaceuticals.

The top five sectors, in terms of total CT paid in the period 2008 to 2012, account for over 68 per cent of total payments in the period. The top ten sectors account for over 87 per cent of total CT in the period.

Table 2: Corporation Tax Payments by Sector

NACE Codes	Sector	2008 – 2012 Number of Companies (Annual Average)	2008 - 2012 Total Payments (€m)	2008 - 2012 Total Payments (% of Total)
64 - 66	Financial & insurance activities	12,393	€5,445.42	26.62%
21	Manuf of pharmaceuticals	208	€3,515.46	17.18%
58 - 63	Information & communication	8,419	€2,285.29	11.17%
46	Wholesale trade	9,208	€1,655.98	8.09%
16 - 18	Manuf of wood, paper products & printing	1,325	€1,065.31	5.21%
47	Retail trade	11,361	€987.19	4.83%
26	Manuf of computer, electronic & optical products	333	€895.10	4.38%
10 - 12	Manuf of food, beverages & tobacco products	1,203	€721.77	3.53%
69 - 75	Professional, scientific & technical activities	15,492	€720.31	3.52%
31 - 33	Other manuf	1,276	€560.39	2.74%
41 - 43	Construction	20,513	€395.33	1.93%
77 - 82	Administrative & support service activities	6,555	€379.17	1.85%
49 - 53	Transportation & storage	3,916	€260.32	1.27%
68	Real estate activities	9,110	€206.53	1.01%
28	Manuf of machinery & equipment n.e.c.	473	€184.48	0.90%
05 - 09	Mining & quarrying	326	€181.66	0.89%
20	Manuf of chemicals	298	€169.80	0.83%
55 - 56	Accommodation & food service activities	6,342	€148.04	0.72%
22 - 23	Manuf of non-metal products	1,086	€91.32	0.45%
90 - 93	Arts, entertainment & recreation	2,053	€89.52	0.44%
35	Electricity, gas, steam & air-conditioning supply	471	€73.53	0.36%
45	Repair of motor vehicles & motorcycles	2,738	€63.22	0.31%
24 - 25	Manuf of metal products	1,525	€62.16	0.30%
01 - 03	Agriculture, forestry & fishing	2,202	€56.50	0.28%
86 - 88	Human health & social work activities	2,734	€52.86	0.26%
94 - 96	Other services	2,569	€43.89	0.21%
27	Manuf of electrical equipment	293	€41.49	0.20%
36 - 39	Water & waste management	684	€35.47	0.17%
29 - 30	Manuf of transport equipment	152	€27.14	0.13%
85	Education	1,323	€17.96	0.09%
13 - 15	Manuf of textiles, apparel & related products	429	€14.87	0.07%
Total		127,581	€20,457	100%

Source: Authors' analysis of Revenue data. Note: Sectors with small amounts of payments or numbers of cases not included to protect taxpayer confidentiality.

3.3 Payments by Revenue Region / District and Size

Table 3 shows CT paid by Revenue Region / District over the period 2008 to 2012. Using Revenue's General Claims District classification, companies are assigned to a District based on their location. Districts are distributed across four Regions: Dublin, Border Midlands West, East South East and South West. Large companies are allocated to Revenue's Large Cases Division (LCD) rather than their Region / District of location.⁵

As can be seen in Table 3, LCD companies account for the vast majority of CT paid, over 80 per cent of the total between 2008 and 2012. This finding is to be expected given that, while there are considerable numbers of small companies in Ireland (as evidenced by the distribution of the numbers of companies also shown in Table 3) their scale of operations (and so their taxable profits) are much smaller those of the large multinationals in LCD.

Using a new Revenue marker for foreign owned multinational companies, which is still under development, it is estimated that these multinationals in total account for almost three quarters of CT paid between 2008 and 2012 (over €15 billion of the €20.5 billion).⁶ In 2012, multinational companies account for over 79 per cent of total CT paid (€3.4 billion of the total €4.3 billion). These companies match fairly closely with the LCD case base but also include some companies not in LCD.

⁵ Revenue's LCD handles the tax affairs of companies over a size threshold. These companies are a mix of Irish and foreign owned, usually multinational in nature.

⁶ The foreign multinational marker is a work-in-progress but is created by a manual review of Revenue records to identify foreign owned multinationals in Ireland (new cases should be identified upon registration in the future). It is important to note that this differs from the Central Statistics Office definition sometimes used for foreign owned sectors, which labels a sector as foreign dominated when more than 85 per cent of its turnover is generated from foreign multinational enterprises.

Table 3: Corporation Tax Payments by Revenue District and Region

Region / District	2008 – 2012 Number of Companies (Annual Average)	2008 - 2012 Total Payments (€m)	2008 - 2012 Total Payments (% of Total)
Border, Midlands & West	25,941	€601.26	2.94%
Cavan/Monaghan	3,154	€71.84	0.35%
Donegal	3,178	€68.04	0.33%
Galway County	3,980	€83.55	0.41%
Galway Roscommon	3,867	€106.70	0.52%
Louth	3,069	€72.50	0.35%
Mayo	2,493	€60.45	0.30%
Sligo	2,738	€56.92	0.28%
Westmeath/Offaly	3,461	€81.26	0.40%
Dublin	43,327	€2,057.27	10.06%
City Centre	9,996	€721.23	3.53%
Dun Laoghaire/Rathdown	7,654	€278.30	1.36%
Fingal	6,161	€260.35	1.27%
North City	5,395	€178.16	0.87%
South City	7,638	€345.74	1.69%
South Dublin	6,482	€273.49	1.34%
East South East	25,358	€531.30	2.60%
Kildare	4,976	€90.45	0.44%
Kilkenny	3,970	€79.49	0.39%
Meath	4,180	€76.90	0.38%
Tipperary	2,140	€74.29	0.36%
Waterford	3,299	€80.00	0.39%
Wexford	3,211	€66.97	0.33%
Wicklow	3,582	€63.20	0.31%
Large Cases Division	9,006	€16,484.17	80.58%
Construction, Property, Mining, Energy	1,493	€335.11	1.64%
Drink, Tobacco, Multiples	668	€1,428.10	6.98%
Financial Services (Banking)	3,517	€3,089.46	15.10%
Financial Services (Insurance)	1,009	€2,142.32	10.47%
Healthcare & General Manufacturing	473	€5,125.69	25.06%
ICT	354	€3,845.43	18.80%
Oil Industry & Motor Distribution	448	€150.87	0.74%
South West	23,949	€783.22	3.83%
Clare	2,514	€198.88	0.97%
Cork East	4,583	€132.79	0.65%
Cork North West	3,959	€106.72	0.52%
Cork South West	4,909	€114.25	0.56%
Kerry	3,439	€60.20	0.29%
Limerick	4,475	€91.16	0.45%
Total	127,581	20,457	100%

Source: Authors' analysis of Revenue data.

3.4 Links to Other Taxes and Employment

The corporate component of the tax base in Ireland does not only pay CT as outlined in the Sections above. These companies also make important contributions to other taxheads.⁷ For example, companies pay around €5 billion in VAT internal (excluding VAT on imports) and €2.3 billion in Excise per annum over the period 2008 to 2012.

Perhaps the most significant contribution from companies is through employment and resulting PAYE (payroll) taxes. In total, companies paying CT have nearly 900,000 employees (annual average through 2008 to 2012) and this does not include contractors or similar. PAYE taxes from these employees amount to over €3.7 billion per annum.

The importance of LCD companies, as per Section 3.3 above, extends beyond CT receipts. Of the receipts under other taxheads paid by companies, LCD cases account for 56 per cent of PAYE, 92 per cent of Excise and 52 per cent of VAT.

Gross Value Added (GVA) is a commonly used economic measure of the value of goods or services produced after intermediate inputs have been accounted for. GVA per capita or per company can be used to compare across countries or sectors. While GVA information is not captured directly in tax returns filed by companies with Revenue, research is ongoing to estimate an equivalent measure from the data available.

As an alternative, it is useful to consider as a comparator the average CT per employee.⁸ Table 4 shows the average number of employees per sector and the average CT per employee over the period 2008 to 2012.

There is an overall average of €4,598 CT per employee per year, with highest contribution per employee in the manufacture of pharmaceuticals sector at €40,901 per employee per year. There is considerable variation but in general the manufacturing industries show higher payments per head and lower values are seen in service sectors.

In broad terms, this analysis appears to confirm research showing high GVA per employee figures in certain segments of the Irish economy.⁹

⁷ Earlier Revenue analysis focusing on the US owned multinational segment confirms the scale of linkages between payments of large companies across other taxheads. See K. Walsh (2010), 'The Economic and Fiscal Contribution of US Investment in Ireland', *Journal of the Statistical & Social Inquiry Society of Ireland*, Vol. XL.

⁸ Only employees in CT paying companies are included, for comparability to CT payments amounts.

⁹ See 'Economic Impact Assessment of Corporation Tax and Foreign Owned Sector in Ireland', a report by the Economics Division of the Department of Finance, October 2014.

Table 4: Corporation Tax Payments per Employee by Sector

NACE Codes	Sector	2008 - 2012 Number of Employees (Annual Average)	2008 - 2012 Average CT per Employee per Year
21	Manuf of pharmaceuticals	17,190	€40,901
16 - 18	Manuf of wood, paper products & printing	10,526	€20,242
64 - 66	Financial & insurance activities	82,588	€13,187
05 - 09	Mining & quarrying	3,624	€10,025
58 - 63	Information & communication	50,931	€8,974
26	Manuf of computer, electronic & optical products	20,054	€8,927
68	Real estate activities	5,923	€6,974
31 - 33	Other manuf	17,925	€6,252
20	Manuf of chemicals	5,674	€5,985
10 - 12	Manuf of food, beverages & tobacco products	27,108	€5,325
46	Wholesale trade	72,940	€4,541
28	Manuf of machinery & equipment n.e.c.	8,442	€4,370
69 - 75	Professional, scientific & technical activities	44,251	€3,256
27	Manuf of electrical equipment	2,965	€2,799
35	Electricity, gas, steam & air-conditioning supply	6,216	€2,366
22 - 23	Manuf of non-metal products	11,143	€1,639
41 - 43	Construction	49,247	€1,606
90 - 93	Arts, entertainment & recreation	12,357	€1,449
47	Retail trade	140,485	€1,405
36 - 39	Water &, waste management	5,093	€1,393
13 - 15	Manuf of textiles, apparel & related products	2,385	€1,247
24 - 25	Manuf of metal products	10,300	€1,207
49 - 53	Transportation & storage	45,695	€1,139
01 - 03	Agriculture, forestry & fishing	10,071	€1,122
45	Repair of motor vehicles & motorcycles	12,205	€1,036
29 - 30	Manuf of transport equipment	5,509	€985
77 - 82	Administrative & support service activities	99,561	€762
94 - 96	Other services	13,286	€661
86 - 88	Human health & social work activities	19,919	€531
55 - 56	Accommodation & food service activities	64,548	€459
85	Education	10,733	€335
Total		889,798	€4,598

Source: Authors' analysis of Revenue data. Note: Sectors with small amounts of payments or numbers of cases not included to protect taxpayer confidentiality; *Number of Employees* reflects employment by CT paying companies only, companies not making CT payments and non-incorporated employers are not included, and measures average number of employments rather than employees.

3.5 Concentration Levels

The analysis above shows CT payments are significantly concentrated among multinationals and companies in Revenue's LCD. Even within these large companies, relatively small numbers of companies pay significant shares of CT receipts. This Section explores the level of concentration in more detail.

3.5.1 Concentration by Individual Companies

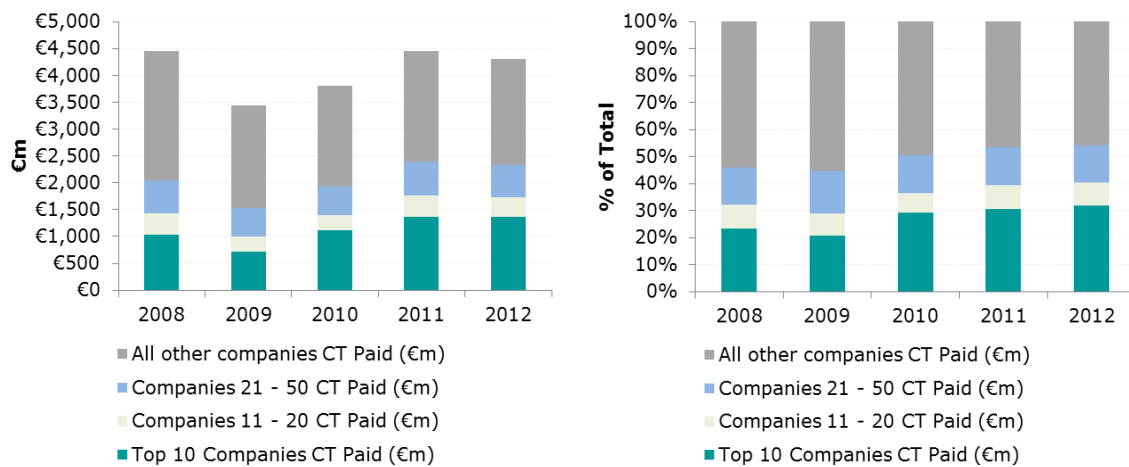
A relatively small number of companies pay a large share of total CT each year. Table 5 shows the share of CT payments and employee numbers for the top ten, twenty and fifty companies (ranked based on their CT payments). The top ten companies account for almost 24 per cent of CT payments over the period 2008 to 2012. The top fifty companies account for over 46 per cent of CT over the period. Figure 3 shows the same information in chart format.

Table 5: Top 10, 20 and 50 Companies

	2008 – 2012
<i>Total CT (€m)</i>	€20,457
<i>Total Number of Employments</i>	4,448,990
Top 10 Companies CT Paid (€m)	€4,875
Top 10 Companies % Total CT	23.83%
Top 10 Companies Number of Employments	38,632
Top 10 Companies % Total Employments	0.87%
Top 20 Companies CT Paid (€m)	€6,623
Top 20 Companies % Total CT	32.37%
Top 20 Companies Number of Employments	69,374
Top 20 Companies % Total Employments	1.56%
Top 50 Companies CT Paid (€m)	€9,457
Top 50 Companies % Total CT	46.23%
Top 50 Companies Number of Employments	307,619
Top 50 Companies % Total Employments	6.91%

Source: Authors' analysis of Revenue data. Note: *Number of Employments* reflects employments by CT paying companies only, companies not making CT payments and non-incorporated employers are not included, and measures employments rather than employees.

Figure 3: Top 10, 20 and 50 Companies – Corporation Tax Payments



Source: Authors' analysis of Revenue data.

The top one per cent of CT paying companies account for over 81 per cent of total CT in the period 2008 to 2012.¹⁰ It is useful to place this in an international context: A 2013 study of CT in the UK between 2001 and 2008 found that, based on HMRC data, one per cent of companies also account for 81 per cent of CT in the UK.¹¹

The analysis in Table 5 also shows that the CT per employee over the period 2008 to 2012 is €126,200 in the top ten companies and €30,700 in the top fifty companies. This is in comparison to only €4,600 per employee across all companies over the period 2008 to 2012 (in total over the five years in Table 5 or on an annual average basis in Table 4).

3.5.2 Concentration by Corporate Group

The analysis above is based on individual companies. In many cases, companies will be part of wider corporate groups. Therefore, the analysis is extended to examine the concentration of CT payments among the largest corporate groups.

Table 6 shows the contribution of the top ten, twenty and fifty corporate groups to CT receipts and employment over the period 2008 to 2012. The ten largest groups account for over one third of total CT in the period. The fifty largest corporate groups account for over 57 per cent. Figure 4 shows the same information in chart format.

Table 6: Top 10, 20 and 50 Corporate Groups

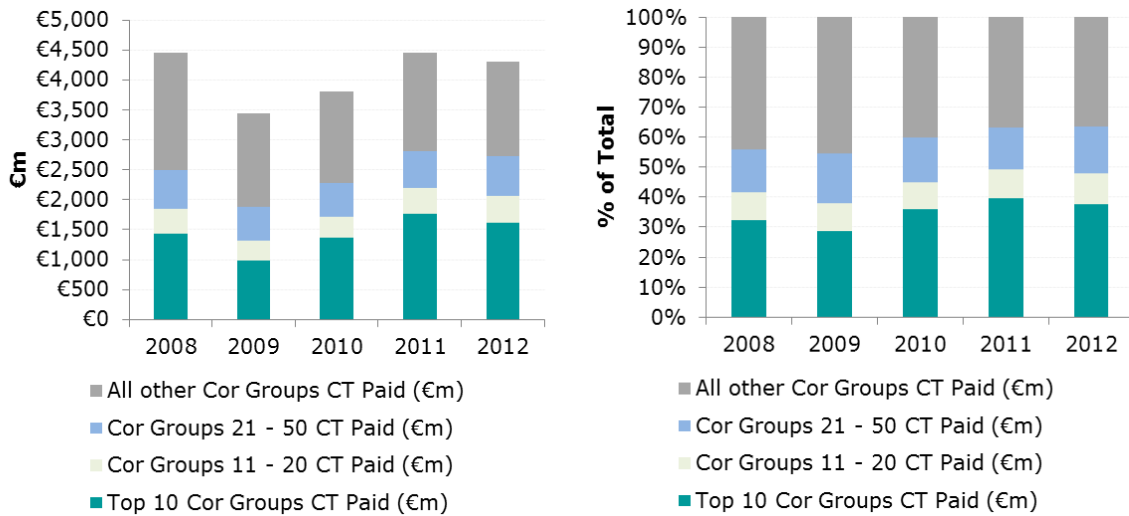
	2008 - 2012
<i>Total CT (€m)</i>	€20,457
<i>Total Number of Employments</i>	4,448,990
Top 10 Corporate Groups CT Paid (€m)	€6,868
Top 10 Corporate Groups % Total CT	33.57%
Top 10 Corporate Groups Number of Employments	71,903
Top 10 Corporate Groups % Total Employments	1.62%
Top 20 Corporate Groups CT Paid (€m)	€8,802
Top 20 Corporate Groups % Total CT	43.03%
Top 20 Corporate Groups Number of Employments	138,157
Top 20 Corporate Groups % Total Employments	3.11%
Top 50 Corporate Groups CT Paid (€m)	€11,676
Top 50 Corporate Groups % Total CT	57.08%
Top 50 Corporate Groups Number of Employments	436,885
Top 50 Corporate Groups % Total Employments	9.82%

Source: Authors' analysis of Revenue data. Note: *Number of Employments* reflects employments by CT paying companies only, companies not making CT payments and non-incorporated employers are not included, and measures employments rather than employees.

¹⁰ 1 per cent represents around 300 companies, when those not making payments are excluded.

¹¹ Devereux, M., Liu, L. and Loretz, S. (2014), 'The Elasticity of Corporate Taxable Income: New Evidence from UK Tax Records', *American Economic Journal: Economic Policy*, Vol. 6(2).

Figure 4: Top 10, 20 and 50 Corporate Groups – Corporation Tax Payments



Source: Authors' analysis of Revenue data.

3.5.3 Concentration Index

Building on the above, a formalised measure of concentration, the Herfindahl Hirschman Index (HHI), is used to compare against the concentration as measured by the top fifty CT paying companies each year.

The HHI is a measure of concentration usually used to determine the level of competition in a market, based on the market share of each company.

The HHI is defined as the sum of the squares of the market share of each firm:

$$HHI = S_1^2 + S_2^2 + S_3^2 + S_4^2 + \dots S_n^2$$

Where S_1 represents the market share of the first firm.... S_n is the market share of the nth firm. A HHI below 1000 is an indication of an unconcentrated market. The HHI is limited to the top fifty companies in this analysis (the value does not change much when extended out to all companies as the top fifty make up a large share of the CT paid).

As can be seen in Table 7, although the HHI values indicate that CT is very unconcentrated (compared to the benchmark levels that would apply if examining market shares), the HHI has been increasing since 2009. This indicates that the top contributing companies are becoming more important in terms of their contribution to total CT. This is also borne out by the proportion of total CT paid by the top fifty companies. In 2009 the top fifty contributing companies account for 44.8 per cent of CT paid, in 2012 this figure is 54.2 per cent.

Table 7: HHI and Top Fifty Companies

Measure	2008	2009	2010	2011	2012	2008 - 2012
Proportion of Total CT accounted for by 50 top contributing companies	46%	44.8%	50.6%	53.6%	54.2%	46.2%
HHI for 50 top contributing companies	106.1	68.2	165.9	220.3	250.1	91.5

Source: Authors' analysis of Revenue data.

The HHI is usually used as a measure of market share. The HHI results would be considered as indicative of low concentration of market power. However, in the context of this analysis, the HHI is simply used as a general guide to the level of concentration of CT payments and is not necessarily to be interpreted in the way it would be in a market power or competition analysis.

Table 8 shows that for the sectors containing the largest contributing companies, the level of concentration is much greater (especially in the ICT sector). These levels are very much the exception rather than the norm as these sectors contain the multinational companies, often foreign owned, that pay large proportions of overall CT.

Table 8: HHI Concentration for Selected Sectors

Sector (Top 50 Companies)	2008	2009	2010	2011	2012	2008 - 2012
Financial & insurance activities	663	128	144	144	151	133
Manuf of pharmaceuticals	989	964	1,204	2,616	1,645	1,000
Information & communication	1,175	1,867	4,055	2,854	711	1,977

Source: Authors' analysis of Revenue data.

3.6 Correlation of CT Payments from Year to Year

To test the relationship of CT payments from one year to the next, the correlation between the payment of a company with its payment the previous year is assessed. In general, these correlations are found to be quite weak.

Only 2 of the top twelve companies exhibit strong positive correlations of payments (>0.70). Of the top fifty contributing companies over the period 2008 to 2012, 13 exhibit strong positive correlations of payments. The mean correlation of payments is only 0.27 (the median is 0.33) indicating a fair degree of change in payments over time.

4 Conclusion

This report presents a profile of CT payments. This includes a review of CT trends in recent years and places Irish receipts in an international context, as well as deeper analysis of CT payments by sector, location and concentration.

Overall, the analysis demonstrates that CT payments are heavily concentrated. Based on the HHI and other concentration measures, CT payments are becoming more concentrated over recent years, reflecting that the multinational and export-focused sector continues to perform better than the domestic sector and SMEs generally.

A relatively small number of large multinational companies account for a significant proportion of total CT receipts. This is confirmed by the analysis of the sectoral distribution of CT receipts. Many of the largest sectors, such as the manufacture of pharmaceuticals and ICT services, are those with a sizeable multinational presence.

The analysis also illustrates the importance of the corporate sector to other taxes. Companies annually pay around €5 billion in VAT and €2.3 billion in Excise over the period 2008 to 2012, as well as averaging nearly 900,000 employments per annum. PAYE taxes from these employees amount to over €3.7 billion per annum. The magnitude of these payments should be considered in the context of the average CT payments of €4 billion a year over the same period.