Journal of the Statistical and Social Inquiry Society of Ireland
Vol. L

A Review of 15 Years of Corporation Tax Returns 2004 to 2018

Donough Lawlor[1]
Jean Acheson

Office of the Revenue Commissioners and Irish Government Economic & Evaluation Service

(read before the Society, 17th June 2021)

Abstract: All companies resident in the State, with some exceptions, and all non-resident companies who trade in the State through an agency or branch are subject to corporation tax ("CT") on gross trading profits. CT receipts account for a significant portion of Irish government revenues. The tax accounted for 21 per cent of all exchequer tax receipts in 2020, up from a low point of 10 per cent in 2011 and 15 per cent in 2004. The paper makes two new contributions. The paper presents for the first time the main trends in the headline corporate tax base variables, tax liabilities and corporation taxpayer demographics over 15 years from 2004 to 2018. The paper then uses these data to broadly examine the performance of corporation taxpayers during and after the economic crash in 2008/09, particularly with respect to profits, CT dynamics and employment levels, to provide insights on the possible performance of taxpayers during and coming out of the present crisis. This paper uses a novel CT panel dataset that allows a deeper understanding than previously available of the changing distribution and composition of the CT base, sectoral composition, key cohorts such as the top 1% and changes over time. In doing so, certain characteristics of the corporate tax base are confirmed, other trends established, and a timely analysis of the financial crisis is conducted also.

Keywords: corporate tax, profits, employment dynamics
JELs: H23, H25, H27

1. INTRODUCTION

All companies resident in the State, with some exceptions, and all non-resident companies who trade in the State through an agency or branch are subject to corporation tax ("CT") on all gross trading profits that are chargeable profits. CT receipts account for a significant portion of Irish government revenues. The tax accounted for 21 per cent of all exchequer tax receipts in 2020, up from a low point of 10 per cent in 2011 and 15 per cent in 2004.

The paper makes two new contributions. The paper presents for the first time the main trends in the headline corporate tax base variables, tax liabilities and corporation taxpayer demographics over 15 years from 2004 to 2018. The paper uses these data to broadly examine the performance of corporation taxpayers during and after the financial crisis in 2008/09, particularly with respect to profits, CT dynamics and employment levels, to provide insights on the possible performance of taxpayers during and coming out of the present crisis. This paper uses a novel CT panel dataset that allows a deeper understanding than previously available of the changing distribution and composition of the CT base, sectoral composition, key cohorts such as the top 1% and changes over time. In doing so, certain characteristics of the corporate tax base are confirmed, other trends established, and a timely recession analysis is conducted also.

The research represents Revenue's continued focus on making the best use of the tax record data, encouraging openness and accountability, strengthening public debate and improving the evidence base for policy making. Section 2 describes the data used in the analysis. Section 3 examines developments in the tax base, including the dynamics of corporate losses, the use of capital allowances, group relief and trade charges all of which reduce profits subject to tax. Section 4 describes developments in CT liabilities, with a focus on dynamics and concentration. A distributional assessment of tax credits and tax reliefs, which both reduce gross tax liabilities, informs this analysis. Section 5 looks at the CT distribution and employment aspects of the financial crisis. Section 6 concludes.

[1] Corresponding author: dlawlo01@revenue.ie. Any opinions expressed in this paper are the views of the authors and do not necessarily reflect the views of IGEES or the Revenue Commissioners. We are grateful to colleagues and referees for comments received. We would also like to thank Deveshi Chawda for her research assistance. Any remaining errors are our own.

2 THE DATA

The analysis is based on a newly constructed dataset by Revenue that captures the population of companies filing CT returns over 15 years. It is comprehensive and unique in its coverage. The data are amalgamated by matching over time the annual CT1 tax returns filed by companies. The company sector (NACE code) and group information for the largest companies are obtained from Revenue's registration system and Large Corporates Division respectively.

Table 1 provides an overview of the companies in the panel dataset. The CT liability refers to the tax liability owed by the company to Revenue and reflects their economic and tax activity throughout their financial year, whereas CT receipts refer to what was actually paid to Revenue by the company during the calendar year. The receipts for any one year can include liabilities accrued from previous years as well as pre-payments for future years.[2]

Over the full period, there are 297,000 distinct companies and on average 129,800 companies file a CT return each year. The average number of filers in the last five years has been 152,500. Mirroring this, the period-average number of companies with positive CT liabilities is 47,500 but is 54,300 in the last five years of tax returns. In all years, the number of companies with no tax liability exceeds the number of companies with a positive tax liability, reflecting the low-profit position of a large cohort of active companies, as well as the role of losses, capital allowances, trade charges and group relief in the tax system.

Table 1: Panel Overview

	2004	2005	2006	2007	2008	2009	2010	2011
Live CT Registrations	126,400	130,600	140,600	149,300	154,600	155,800	157,400	158,200
No. Companies Filing CT1	92,800	100,500	110,400	122,100	129,200	123,500	124,500	124,300
Share of 2004 filers remaining	-	87%	82%	80%	77%	69%	66%	61%
No. with positive gross trading profits	48,100	52,000	54,800	58,500	53,700	45,000	46,300	49,300
Gross Trading Profit (€m)	57,400	64,500	70,300	74,200	72,600	65,200	69,800	72,500
No. with positive CT liability	44,300	47,000	49,700	53,000	53,100	44,700	40,300	33,600
CT Liability (€m)	4,400	5,200	6,100	6,300	5,100	4,000	4,200	4,200
CT Receipts (€m)	5,300	5,500	6,700	6,400	5,100	3,900	3,900	3,500

	2012	2013	2014	2015	2016	2017	2018
Live CT Registrations	161,200	161,000	167,800	175,900	175,400	182,100	199,400
No. Companies Filing CT1	125,500	132,000	135,400	143,700	153,200	162,300	167,800
Share of 2004 filers remaining	58%	56%	53%	51%	50%	48%	45%
No. with positive gross trading profits	52,800	57,200	61,800	67,900	72,800	78,100	81,900
Gross Trading Profit (€m)	74,800	80,700	95,400	143,900	158,700	158,800	182,600
No. with positive CT liability	35,600	39,400	43,400	48,900	54,400	60,000	64,700
CT Liability (€m)	4,400	4,100	4,900	6,200	7,200	8,100	10,200
CT Receipts (€m)	4,200	4,300	4,600	6,900	7,400	8,200	10,400

Source: Authors' analysis of Revenue data. Note: for the years 2004 to 2011, gross trading profit is the sum of manufacturing and non-manufacturing trading profit, in line with the tax code at that time.

[2] Transitional arrangements in respect of changes to the payment rules for CT receipts were in force up to and including 2006. This means that there are very significant once-off effects included in the yield for the aforementioned years. This explains a dip in receipts for 2007. This factor does not impact on the liability figures from the returns.

3. THE TAX BASE: FROM PROFIT TO TAXABLE INCOME

3.1 Gross Trading Profits

Companies operating in Ireland are chargeable to CT at the 12.5% rate on the profits that are generated from their trading activities. Until the end of 2010, a 10% tax rate applied to profits from manufacturing. A higher 25% rate applies in respect of investment, rental and other non-trading profits, as well as certain petroleum, mining and land-dealing activities, while chargeable capital gains are effectively taxed at a 33% rate the same as the Capital Gains Tax rate.

This section focuses on trading profit as it is the main source of both profit and CT revenues in Ireland. Gross Trading Profits ("profits") represent the starting point in calculating a company's CT liability.[3] Table 1 highlights how profits have risen sharply over time, growing over three-fold between 2004 and 2018, coinciding with Irish economic expansion and further integration into the global economy.

Table 2 shows the share of profits occupied by the five largest sectors each year. Since 2004 these sectors have generated, on average, just under 90 per cent of all profits earned per year. The share accruing to the *Financial & Insurance* sector has reduced considerably since the mid- 2000s while *Manufacturing* has dominated in the most recent years. *Manufacturing* returned to pre-2008 profit levels in 2011 and since 2015 has observed a large growth while accounting for just over 40 per cent of profits on average. This is largely driven by manufacture of computers and pharmaceuticals. *Information & Communication* and *Administrative & Support Services,* while accounting for smaller shares of profit, did not experience any decline in profits over the whole period. Growth in *Information & Communication* is largely due to computers consultancy and software publishing while aircraft and intellectual property leasing and office administration drive growth in *Administrative & Support Services*.

Table 2: Gross Trading Profits

	2004	2005	2006	2007	2008	2009	2010	2011
Manufacturing	35%	32%	32%	32%	29%	34%	34%	38%
Wholesale & Retail	13%	11%	10%	10%	10%	9%	9%	9%
Information & Communication	6%	5%	6%	5%	10%	13%	16%	16%
Financial & Insurance	28%	32%	32%	31%	34%	25%	22%	18%
Admin & Support Services	2%	4%	5%	5%	6%	7%	8%	8%
Other	15%	16%	16%	16%	12%	12%	11%	11%
All Sectors	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Total Profit (€m)	**57,400**	**64,500**	**70,300**	**74,200**	**72,600**	**65,200**	**69,800**	**72,500**

	2012	2013	2014	2015	2016	2017	2018
Manufacturing	32%	29%	28%	38%	42%	41%	44%
Wholesale & Retail	10%	11%	11%	11%	9%	8%	9%
Information & Communication	20%	22%	17%	14%	14%	12%	13%
Financial & Insurance	19%	17%	24%	19%	15%	13%	13%
Admin & Support Services	8%	9%	10%	9%	10%	13%	11%
Other	10%	12%	10%	9%	10%	13%	9%
All Sectors	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Total Profit (€m)	**74,800**	**80,700**	**95,400**	**143,900**	**158,700**	**158,800**	**182,600**

Source: Authors' analysis of Revenue data. Note: for the years 2004 to 2011, gross trading profit is the sum of manufacturing and non-manufacturing trading profit.

3.2 Losses

In the Irish CT system, as is common internationally, losses incurred can, subject to certain rules, be deducted against profits. These deductions include being set against current year profits, surrendered to group companies, offset against a prior year's profits or carried forward to the next year.[4] While a company must record losses claimed on their CT1 return, losses can only be used if there is an appropriate profit to offset. Losses are divided into those incurred in the most recent financial year ("current losses") and those carried forward from earlier periods.

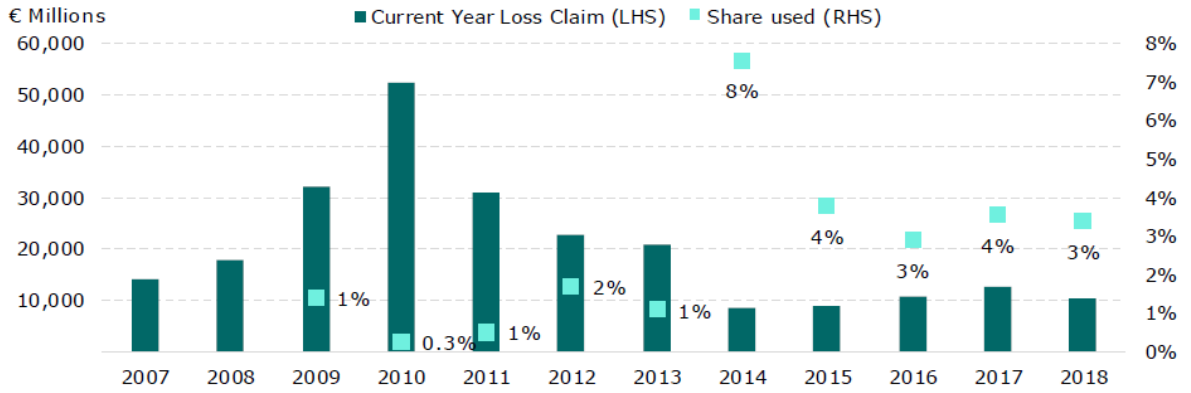
[3] Gross Trading Profits, as referred to throughout this paper, is inclusive of certain "add-backs" (such as depreciation/amortisation and certain disallowed expenses). These add-backs are amounts that are deductible under accounting rules in reporting company profits but are not deductible for tax purposes (i.e. they are "added-back" in the assessment for tax purposes).

[4] The Financial Provisions (Covid-19) (No. 2) Act 2020 introduced enhanced corporate tax loss relief to provide additional liquidity supports for businesses arising from the COVID-19 pandemic.

Current year losses provide a good indication of company financial health at different points in the economic cycle, for example, Figure 1 illustrates that the impact of the financial crisis on companies began in 2008 and peaked in 2010. By contrast, the start and peak years of impact for the labour market, as measured by the unemployment rate, were 2008 and 2012 respectively. Current year losses have been below €15 billion in each of the last five years of available tax returns. However, they can be expected to rise significantly in 2020 as a result of COVID-19.

Figure 1 also shows the share of the claim used to reduce the gross profit of the company (or another company within its group). The amount used to offset against current year profit is quite low. This general pattern arises as claims for losses carried forward must be offset first and typically exhausts the gross profit before the current year claim is applied. Put another way, most current year losses are carried forward to the next year, a pattern that holds whether the economy is contracting or expanding.

Figure 1: Current Year Loss Claim and Used as a Share



Source: Authors' analysis of Revenue data. Note: data on current year losses which are used against profit are only available from 2009 onward.

Table 3 shows which sectors occupy the largest share of current year loss claims. Until 2014, the *Financial & Insurance* sector was the largest. Its reduced share thereafter is mirrored in the recovery in its profit (Table 2). This reduction is largely driven by smaller losses accrued from the extension of credit (loans, mortgages, and credit cards etc.). Since 2015, losses in *Administrative & Support Services* and *Professional & Scientific* sectors have increased. This is largely due to increases in losses within aircraft and IP leasing and business consultancy. Given the majority of firms with losses have little or no profits and vice versa, the appearance of *Financial & Insurance, Administrative & Support Services* and *Information & Communication* in both the group of sectors with the largest current year losses and the largest profits provides an indication of the company heterogeneity within these sectors.

Table 3: Current Year Loss Claim

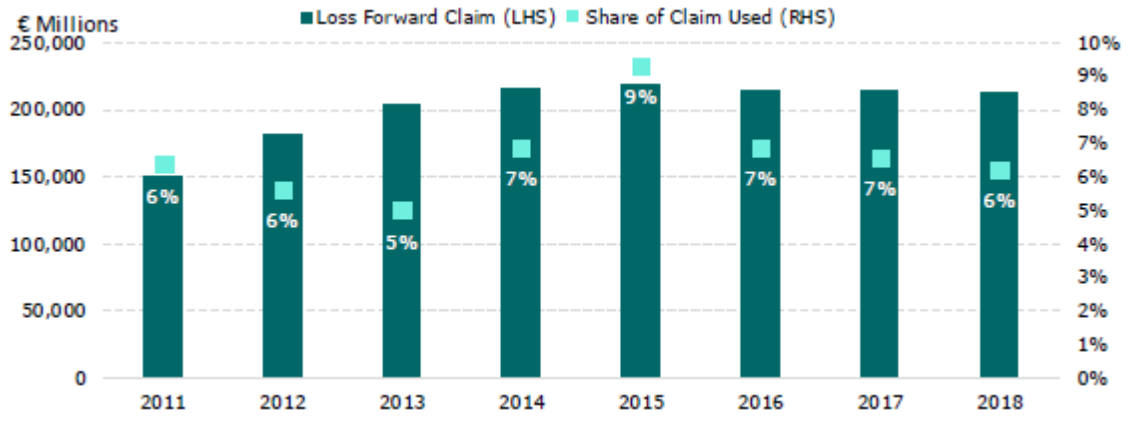
	2007	2008	2009	2010	2011	2012
Manufacturing	10%	9%	6%	1%	2%	6%
Information & Communication	3%	3%	1%	1%	2%	3%
Financial & Insurance	55%	56%	72%	83%	77%	68%
Prof, Scientific & Technical	2%	3%	3%	1%	2%	4%
Admin & Support Services	10%	2%	2%	4%	2%	3%
Other	20%	27%	16%	10%	16%	16%
All Sectors	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Total Loss Claim (€m)	**13,981**	**18,081**	**32,052**	**52,474**	**30,864**	**22,746**
	2013	**2014**	**2015**	**2016**	**2017**	**2018**
Manufacturing	4%	16%	12%	7%	7%	18%
Information & Communication	3%	10%	11%	11%	9%	13%
Financial & Insurance	72%	25%	22%	28%	29%	16%
Prof, Scientific & Technical	2%	7%	7%	14%	17%	14%
Admin & Support Services	4%	14%	14%	19%	18%	14%
Other	15%	28%	33%	22%	20%	25%
All Sectors	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Total Loss Claim (€m)	**21,011**	**8,527**	**8,977**	**10,850**	**12,726**	**10,288**

Source: Authors' analysis of Revenue data.

Revenue began capturing information on the value of carried forward losses available to offset against future profits in 2011. For the years prior to this, Revenue calculated the carried forward loss using available information, but the estimates are likely biased downward by possible under-reporting of the claim for cumulative losses by companies. It is not possible, therefore, to fully analyse the financial crisis in terms of carried forward losses.

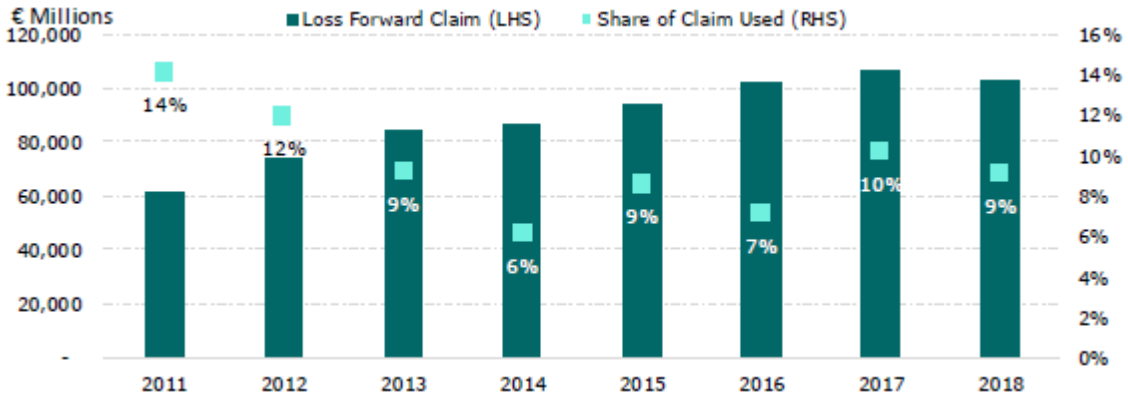
Figure 2 shows that historical losses rose since 2011 but plateaued since 2014. However, as the *Financial & Insurance* sector represents well over half of these losses Figure 3 repeats the analysis excluding this sector. In the latter figure, cumulative losses continued to rise until 2017. As is the case with current year losses, only a small proportion of carried forward losses are used to offset profit. However, the share of claims used to offset profit across all sectors has been in decline since 2015. In 2018, only 6 per cent of carried forward losses of €211 billion were offset against company profits.

Figure 2: Losses Carried Forward



Source: Authors' analysis of Revenue data.

Figure 3: Losses Carried Forward (excluding financial sector)



Source: Authors' analysis of Revenue data.

Table 4 highlights the share of loss forward claims by sector. Loss forward claims are largely concentrated in two sectors. The *Financial & Insurance* and *Administrative & Support Services* sectors together, on average, account for 71 per cent of losses carried forward from 2011 onwards (by contrast, these sectors account for 27 per cent of profits over the same period). The *Financial & Insurance* sector accumulated large losses after 2008. However, since 2011, their share has been decreasing and indicates that these losses are being offset against profit (in addition, some companies with losses forward are being liquidated). *Administrative & Support Services* has increased its share in recent years. This could be due to the presence of aircraft leasing companies in this sector, which typically would have large amounts of capital allowances that, if unused, are merged into their loss forward claims in subsequent years.[5]

[5] Other industries may also have losses carried forward attributable to unused capital allowances. Tax returns do not identify unused capital allowances carried forward separately from losses carried forward, as there is no basis in tax law for distinction

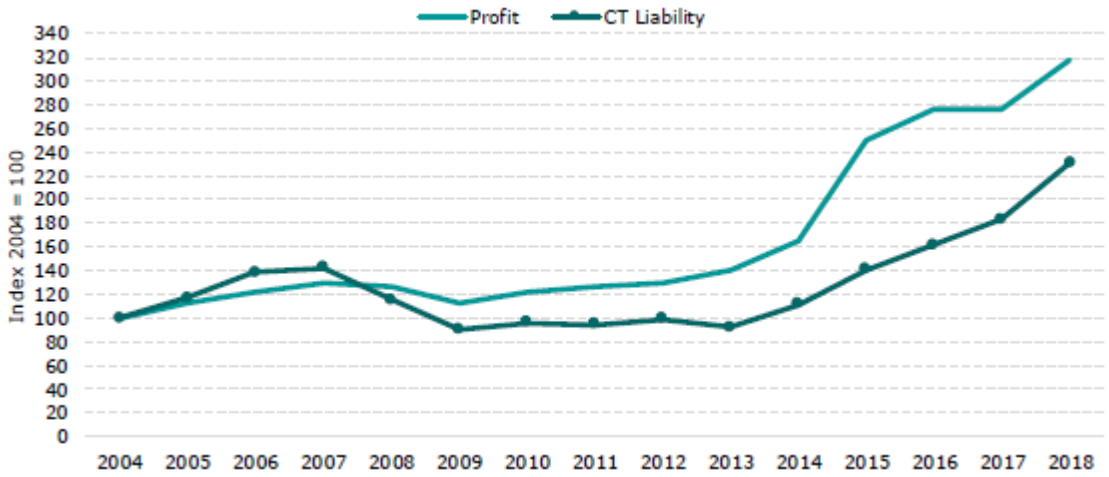
Table 4: Loss Forward Claims

	2011	2012	2013	2014	2015	2016	2017	2018
Manufacturing	6%	6%	6%	4%	4%	4%	4%	5%
Construction	5%	5%	5%	5%	5%	5%	5%	5%
Financial & Insurance	59%	59%	59%	60%	57%	53%	50%	51%
Administrative & Support Services	10%	12%	13%	14%	17%	18%	21%	19%
Other	19%	18%	18%	17%	17%	20%	19%	20%
All Sectors	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Total Loss Forward Claim (€m)	**150,604**	**180,977**	**203,629**	**215,454**	**218,335**	**214,585**	**212,949**	**210,999**

Source: Authors' analysis of Revenue data.

Figure 4 shows the growth in profits and CT liability. In periods of the economic cycle with rising profits, the growth of tax revenue is likely to be lower than that of profits since losses accumulated during the previous low point of the cycle can be deducted against profits.[6] This pattern holds in the Irish case for the years after the financial crisis (2009-2014). Conversely, in the period prior (2004-2007), liabilities grew faster than profit, suggesting that the bulk of older losses had been exhausted over the course of the long economic expansion in Ireland in the 1990s and early 2000s. Similarly, liability begins to grow stronger than profits, bar 2015, from 2014 onwards indicating the majority of losses accrued from the financial crisis have largely been used.

Figure 4: Growth in Profits and Corporation Tax Liability



Source: Authors' analysis of Revenue data.

The scale of carried forward losses going into the COVID-19 crisis, as well as the losses which will be generated during the financial crisis, might be expected to contribute to a prolonged period in future where liability growth significantly lags profit growth. However, there are two offsetting factors to consider when analysing how important losses will be for future growth in CT revenues. First, some companies will go into liquidation during recession, making their losses irrelevant for offset against profit. In its latest annual CT report, Revenue estimated around €35 billion of losses brought forward in 2018 related to companies in liquidation or otherwise unlikely to be able to ever use these losses (McCarthy, 2021).[7] Second, given the concentrated nature of CT in Ireland, it is relevant to consider the role of losses for the largest taxpayers in particular. Table 5 highlights that, for the top 1 per cent of taxpayers in 2018, their historical claim for losses equalled €15 billion, far below the total outstanding claim for all taxpayers of €211 billion. Only €764 million of the €15 billion was used to offset against profit.

between the part of a trading loss forward that is attributable to capital allowances and the part that is not; for taxation purposes it is treated as one composite trading loss. Therefore, it is not possible for Revenue to create an age profile of the losses carried forward or separately identify how much relates to unused capital allowances.

[6] Capital allowances, trade charges and group relief, amongst other items, may also be used to reduce profit subject to tax. This figure, however, is intended to show the dynamics between profits and losses during a recession in which losses are typically accumulated and then may be used at a later date.

[7] https://revenue.ie/en/corporate/documents/research/ct-analysis-2020.pdf

Table 5: Carried Forward Losses by the Top 1% Taxpayers

	Claim (€m)	Used (€m)
2011	6,136	187
2012	8,711	450
2013	11,846	1,314
2014	16,934	2,292
2015	42,027	4,746
2016	32,670	1,548
2017	10,928	357
2018	15,382	764

Source: Authors' analysis of Revenue data.

3.3 Capital Allowances

A company can reduce its profit subject to tax by claiming capital allowances on capital expenditure it incurs on certain types of business assets and premises. These deductions let a company spread the cost of a capital asset over several tax years depending on the life of the asset. For example, capital allowances for plant and machinery can be claimed at a rate of 12.5% over eight years, while allowances for industrial buildings are generally claimed at 4% over a period of 25 years. Capital allowances can also be claimed for intangible assets, either using the amortisation rate applied in the company's financial accounts or at a fixed rate over fifteen years at a rate of 7% per annum and 2% in the final year.[8] It is important to note that unused capital allowances in the year are carried forward as trading losses to the next year and appear in the carried forward losses discussed in the previous section. The total amount of capital allowances, both tangible and intangible, being claimed has increased to just under €80 billion in 2018, with this increase being driven by intangible allowances (Table 6). Most of the increase in allowances claimed from 2015 onwards can be attributed to the *Manufacturing* sector.

Table 6: Capital Allowances Claimed

	2004	2005	2006	2007	2008	2009	2010	2011
Manufacturing	19%	17%	17%	17%	17%	16%	15%	16%
Wholesale & Retail	7%	7%	7%	7%	7%	7%	7%	6%
Information & Communication	11%	9%	8%	6%	6%	5%	5%	6%
Financial & Insurance	24%	19%	16%	12%	13%	13%	11%	11%
Admin & Support Services	19%	27%	33%	37%	36%	41%	44%	40%
Other	21%	21%	19%	21%	21%	18%	18%	21%
All Sectors	100%	100%	100%	100%	100%	100%	100%	100%
Intangible Allowances (€m)	-	-	-	-	-	-	171	931
Tangible Allowances* (€m)	12,175	13,602	13,410	12,130	13,193	15,836	18,086	17,292
Total Capital Allowances (€m)	**12,175**	**13,602**	**13,410**	**12,130**	**13,193**	**15,836**	**18,257**	**18,223**

	2012	2013	2014	2015	2016	2017	2018
Manufacturing	14%	12%	11%	50%	52%	51%	54%
Wholesale & Retail	6%	6%	5%	2%	2%	2%	3%
Information & Communication	8%	11%	13%	7%	8%	8%	11%
Financial & Insurance	10%	8%	7%	3%	3%	3%	2%
Admin & Support Services	44%	45%	50%	30%	27%	28%	24%
Other	18%	17%	14%	6%	7%	9%	5%
All Sectors	100%	100%	100%	100%	100%	100%	100%
Intangible Allowances (€m)	1,213	2,522	2,653	28,871	35,737	38,332	45,365
Tangible Allowances* (€m)	18,711	18,702	21,348	22,641	29,300	30,084	34,453
Total Capital Allowances (€m)	**19,924**	**21,224**	**24,001**	**51,512**	**65,037**	**68,416**	**79,818**

Source: Authors' analysis of Revenue data. Note: Tangible includes both industrial buildings and other capital allowances. Relief for capital allowances on intangible assets came into effect mid-2009, hence is only available from 2010 onwards

[8] Claims for capital allowances on intangible assets are subject to additional requirements compared to those on tangible assets. One important element of the tax code is that capital allowances for intangible assets can only be deducted from income that is directly linked to the use of these specific assets.

Capital allowances for tangible assets primarily consist of allowances for plants and machinery, as well as for industrial buildings and motor vehicles. Plants and machinery are by far the most common tangible asset claimed for on the CT1. In the following analysis, "tangible assets" are proxied by inflating the claim for plants and machinery by 8 and "capital deepening" is proxied by taking the ratio of tangible assets to employment.[9] Aircraft leasing, which represents roughly half of all capital allowances claimed for plant and machinery in the last ten years, is excluded from the analysis as, although the companies are resident in Ireland, the underlying assets (airplanes) are located worldwide.[10]

Table 7 shows the sectoral share of tangible assets for the largest sectors. *Information & Communication* has grown strongly in recent years to become the largest sector of tangible assets, a trend driven by a small number of companies. The falling share from *Financial & Insurance* since the financial crisis largely reflects the relatively stronger growth in other sectors of the economy (its tangible assets have remained relatively constant in level terms over the last five years). The share for *Manufacturing* has risen over time, reflecting a more than quadrupling of tangible assets in this sector since the financial crisis. This growth has been reasonably broad-based within the sector.

Table 7: Tangible Assets

	2004	2005	2006	2007	2008	2009	2010	2011
Manufacturing	6%	6%	5%	8%	8%	8%	8%	15%
Wholesale & Retail	12%	12%	11%	12%	13%	12%	12%	11%
Information & Communication	19%	18%	15%	13%	11%	12%	12%	11%
Financial & Insurance	24%	23%	33%	27%	27%	29%	27%	23%
Other	39%	41%	36%	40%	41%	39%	41%	40%
All Sectors	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Total Tangible Assets (€m)	**43,810**	**46,363**	**49,171**	**42,912**	**47,412**	**54,523**	**59,915**	**70,046**

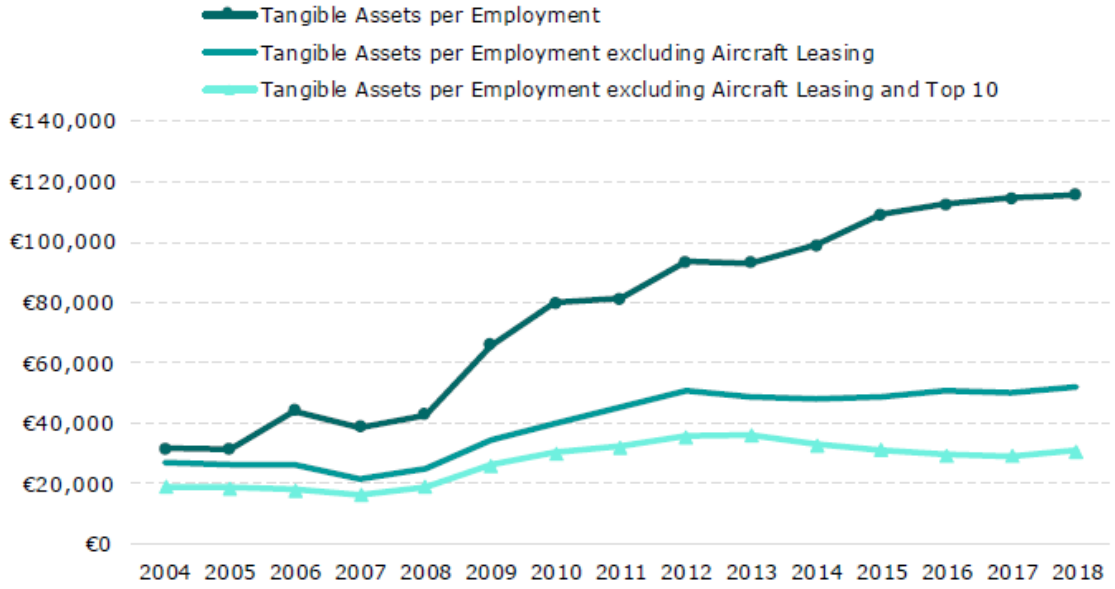
	2012	2013	2014	2015	2016	2017	2018
Manufacturing	22%	19%	17%	21%	19%	18%	18%
Wholesale & Retail	10%	11%	9%	9%	7%	7%	9%
Information & Communication	14%	20%	26%	28%	35%	37%	38%
Financial & Insurance	20%	16%	15%	14%	13%	11%	11%
Other	34%	33%	32%	28%	25%	26%	24%
All Sectors	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Total Tangible Assets (€m)	**79,026**	**80,918**	**83,776**	**93,697**	**104,884**	**110,403**	**121,112**

Source: Authors' analysis of Revenue data.

Capital deepening implies that capital per worker is increasing in the economy. It is an important component of increasing labour productivity, which in turn is the long-run driver of living standards. Taking all companies who file a CT1 in aggregate, Figure 5 indicates there has been an extremely strong increase in capital deepening in the corporate sector since 2008. However, the presence of aircraft leasing distorts the picture. When this sector is removed, capital deepening occurred between 2008 and 2012, but has been static since then. Aside from aircraft leasing, tangible assets are quite concentrated and growth by the largest asset holders can distort the aggregate ratio. Removing the top 10 for each year (some of which are in the aircraft leasing sector), indicates that capital deepening has gone into reverse since 2013.

[9] This proxy for tangible assets is on a gross basis and assumes that accounting depreciation and economic depreciation are identical.
[10] Aircraft leasing identified as companies in NACE code 7735 on Revenue records.

Figure 5: Capital Deepening



Source: Authors' analysis of Revenue data.

In 2018 there were 472 companies who made claims for intangible allowances. Examples of specified intangible assets include patents, copyrights, trademarks and know-how. These companies had CT liabilities equalling 38 per cent of the total in 2018 (and made CT payments equalling 25 per cent of the total in 2018). Table 8 tracks this cohort in 2018 back to previous years. The low numbers with positive profits in the mid-2000s highlights that many companies in this cohort were not operating in Ireland during earlier years. In 2018, these companies accounted for 45 per cent of profits earned, while in 2004 the companies in this cohort (who operated in Ireland then) only accounted for 3 per cent. A jump in their profit share is evident in 2011. A similar trend is observed in their CT liabilities. Finance Act of 2009 provided for capital allowances for capital expenditure incurred by a company on intangible assets after 7 May 2009 (known as "Section 291a").

Despite the growth in both profit and CT concentration for Section 291a claimants over time, they represent only 1 in 10 of the very largest taxpayers in the last 6 to 8 years (final row of Table 8). However, their rising share of liabilities combined with their steady share of the group of largest taxpayers implies that the average tax liability for this cohort has risen strongly over that time.

Table 8: Overview of 2018 s291a Claimants

	2004	2005	2006	2007	2008	2009	2010	2011
No. with positive profits	122	124	139	157	152	160	185	199
Share of Total Profits	3%	3%	3%	3%	7%	9%	13%	22%
No. with positive CT Liability	124	125	141	155	163	171	183	158
Share of Total CT Liability	3%	3%	3%	2%	6%	7%	13%	24%
Proportion of 291a claimants in Top 1% of CT Liabilities	4%	4%	4%	3%	4%	6%	7%	8%

	2012	2013	2014	2015	2016	2017	2018
No. with positive profits	238	263	292	324	355	397	472
Share of Total Profits	25%	22%	17%	32%	39%	39%	45%
No. with positive CT Liability	190	206	238	257	276	311	356
Share of Total CT Liability	28%	23%	23%	25%	30%	29%	38%
Proportion of 291a claimants in Top 1% of CT Liabilities	9%	9%	9%	8%	10%	9%	11%

Source: Authors' analysis of Revenue data.

3.4 Trade Charges

Trade charges allow for companies to deduct certain annual charges on income paid by a company against total profit. These may include annual interest payments, annuities or such other annual payments and royalties. Table 9 shows that trade charges have risen steadily and peaked in 2016 at approximately €24.5 billion while dropping markedly in 2017. In contrast to losses and capital allowances, the vast majority of trade charges are used to deduct from profits reducing the amount subject to tax. Trade charges claimed are dominated by f irms in the *Manufacturing*, *Information & Communication* and *Wholesale & Retail* sectors. Specifically, firms engaged in the manufacturing and production of pharmaceuticals. *Information & Communication* experienced exceptional growth between 2008 and 2013 which tapered off while *Wholesale & Retail* has become the second largest sector in more recent years.

Table 9: Trade Charges Claimed

Sector	2004	2005	2006	2007	2008	2009	2010
Manufacturing	63%	69%	75%	82%	69%	62%	59%
Wholesale & Retail	19%	3%	3%	4%	1%	1%	3%
Information & Communication	2%	2%	2%	1%	21%	30%	32%
Prof, Scientific & Technical	9%	11%	9%	6%	4%	3%	2%
Other	8%	15%	11%	7%	5%	4%	3%
All Sectors	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Total Trade Charges (€m)	**5,768**	**4,807**	**5,458**	**6,815**	**10,096**	**11,669**	**12,393**

	2011	2012	2013	2014	2015	2016	2017	2018
Manufacturing	57%	48%	43%	60%	51%	51%	58%	67%
Wholesale & Retail	3%	5%	9%	16%	23%	20%	17%	19%
Information & Communication	33%	44%	40%	18%	20%	21%	10%	7%
Prof, Scientific & Technical	3%	1%	1%	1%	2%	5%	8%	0.4%
Other	5%	2%	6%	5%	4%	4%	7%	6%
All Sectors	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Total Trade Charges (€m)	**15,606**	**15,292**	**18,299**	**17,390**	**24,198**	**24,475**	**17,460**	**17,940**

Source: Authors' analysis of Revenue data.

3.5 Group Relief

Where one company has a controlling majority (in general 75 per cent) in a group, it may use losses from one company to offset against the profits of another group member. Table 10 shows the amount of group relief claimed by sector and year. Group relief has largely declined since 2008, however it began to increase steadily from 2014 onwards. For most years, the majority of group relief claimed is used to reduce taxable income similar to trade charges. Prior to 2012, *Financial and Insurance* occupied just over half of all group relief on average. In recent years this has dropped to approximately 35 per cent while *Administrative and Support Services* has increased its share significantly. This pattern is similar to that shown in loss forward claims.

Table 10: Group Relief Claimed

Sector	2004	2005	2006	2007	2008	2009	2010
Manufacturing	33%	13%	21%	8%	9%	8%	7 %
Construction	3%	2%	5%	11%	9%	7%	4 %
Information & Communication	2%	2%	8%	3%	2%	2%	2 %
Financial & Insurance	42%	69%	48%	48%	50%	57%	69%
Admin & Support Services	3%	2%	3%	8%	4%	5%	5 %
Other	18%	12%	15%	22%	26%	22%	13%
All Sectors	**100%**	**100 %**	**100%**	**100 %**	**100 %**	**100%**	**100%**
Total Group Relief (€m)	**1,783**	**3,451**	**2,145**	**2,063**	**3,664**	**3,144**	**3,282**

	2011	2012	2013	2014	2015	2016	2017	2018
Manufacturing	15%	13%	18%	12%	15%	7%	5%	18%
Construction	3%	4%	2%	3%	1%	2%	1%	1%
Information & Communication	3%	4%	6%	4%	3%	2%	2%	6%
Financial & Insurance	54%	49%	42%	35%	25%	29%	39%	22%
Admin & Support Services	6%	9%	13%	22%	30%	39%	33%	36%
Other	19%	21%	18%	23%	25%	20%	19%	16%
All Sectors	**100%**	**100 %**	**100%**	**100%**	**100 %**	**100%**	**100%**	**100%**
Total Group Relief (€m)	**2,980**	**2,874**	**2,785**	**1,879**	**2,033**	**3,300**	**4,104**	**4,291**

Source: Authors' analysis of Revenue data.

3.6 Taxable Income

Taxable income is what is subject to tax after all deductions have been allowed for, such as trade charges, group relief, losses, and capital allowances. It is the tax base for corporate profit. Table 11 shows the tax base as a share of profit. Over the last ten years, the tax base as a share of profits has ranged from 45 per cent to 59 per cent. After falling between 2009 and 2015, the share has been on a slight upward trajectory in recent years.

Table 11: Tax Base and Profits

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Taxable Income (€m)	37,800	41,200	40,100	43,200	40,500	50,700	65,100	71,500	79,700	96,000
Profit (€m)	65,200	69,800	72,500	74,800	80,700	95,400	143,900	158,700	158,800	182,600
Tax base as share of profit	58%	59%	55%	58%	50%	53%	45%	45%	50%	53%

Source: Authors' analysis of Revenue data.

Table 12 shows sectoral shares in the tax base over time. There has been very little sectoral variation from year to year, with only *Manufacturing* showing a slight but notable downward trend in its share of the tax base over time.

Table 12: Taxable Income

	2009	2010	2011	2012	2013
Manufacturing	32%	32%	36%	31%	26%
Wholesale & Retail	12%	11%	12%	12%	14%
ICT	9%	14%	14%	17%	17%
Financial & Insurance	30%	27%	24%	26%	27%
Other	16%	15%	14%	14%	16%
All Sectors	**100%**	**100%**	**100%**	**100%**	**100%**
Taxable Income (€m)	**37,800**	**41,200**	**40,100**	**43,200**	**40,500**

	2014	2015	2016	2017	2018
Manufacturing	25%	26%	26%	24%	27%
Wholesale & Retail	13%	13%	11%	10%	12%
ICT	20%	18%	19%	16%	15%
Financial & Insurance	26%	29%	28%	30%	26%
Other	16%	15%	16%	20%	21%
All Sectors	**100%**	**100%**	**100%**	**100%**	**100%**
Taxable Income (€m)	**50,700**	**65,100**	**71,500**	**79,700**	**96,000**

Source: Authors' analysis of Revenue data.

4. TAX LIABILITIES

4.1 Sectoral Analysis

Table 13 shows the share of CT liability occupied by the four largest sectors. These four sectors typically contribute between 80 to 90 per cent of all CT owed over the period 2007 to 2018, or 83 per cent on average per year.

Table 13: Tax Liability

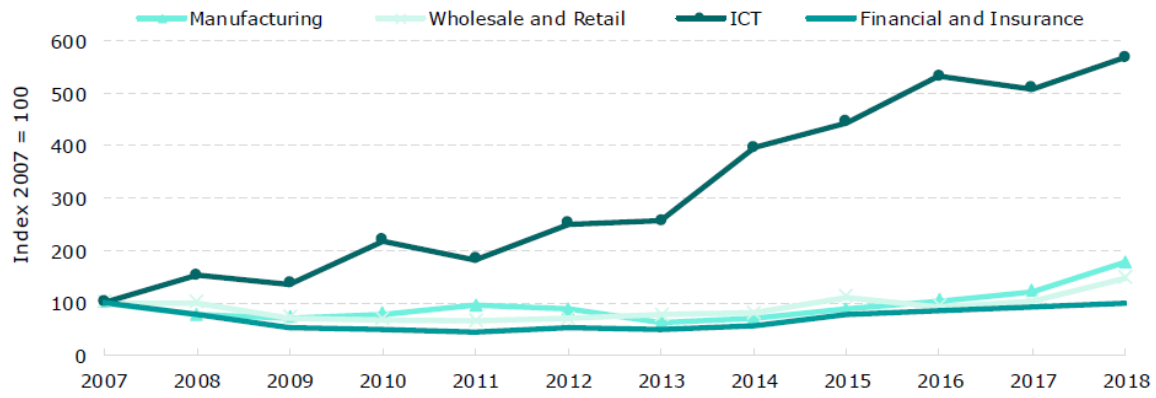
	2007	2008	2009	2010	2011	2012
Manufacturing	28%	26%	31%	32%	40%	35%
Wholesale & Retail	13%	15%	14%	13%	12%	13%
ICT	5%	9%	10%	15%	13%	17%
Financial & Insurance	34%	32%	27%	24%	22%	25%
Other	22%	18%	18%	16%	13%	11%
All Sectors	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Tax Liability (€m)	**6,300**	**5,100**	**4,000**	**4,200**	**4,200**	**4,400**

	2013	2014	2015	2016	2017	2018
Manufacturing	26%	25%	24%	25%	26%	30%
Wholesale & Retail	15%	13%	14%	10%	10%	11%
ICT	18%	23%	21%	22%	18%	16%
Financial & Insurance	26%	24%	26%	25%	24%	21%
Other	15%	15%	15%	18%	22%	22%
All Sectors	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Tax Liability (€m)	**4,100**	**4,900**	**6,200**	**7,200**	**8,100**	**10,200**

Source: Authors' analysis of Revenue data.

Figure 6 shows the growth in CT liability from the largest sectors. It took several years for *Manufacturing* and *Wholesale & Retail* to return to pre-2008 levels while *Financial & Insurance* only recovered by the end of the period. *Information & Communication* has seen large, steady increases in tax liability for the majority of years after 2008. Comparing CT liability levels between 2007 and 2018, *Information & Communication* and *Manufacturing* account for over two-thirds of the total growth.

Figure 6: Growth in Corporation Tax Liability



Source: Authors' analysis of Revenue data.

4.2 Growth in Liabilities Across the Distribution

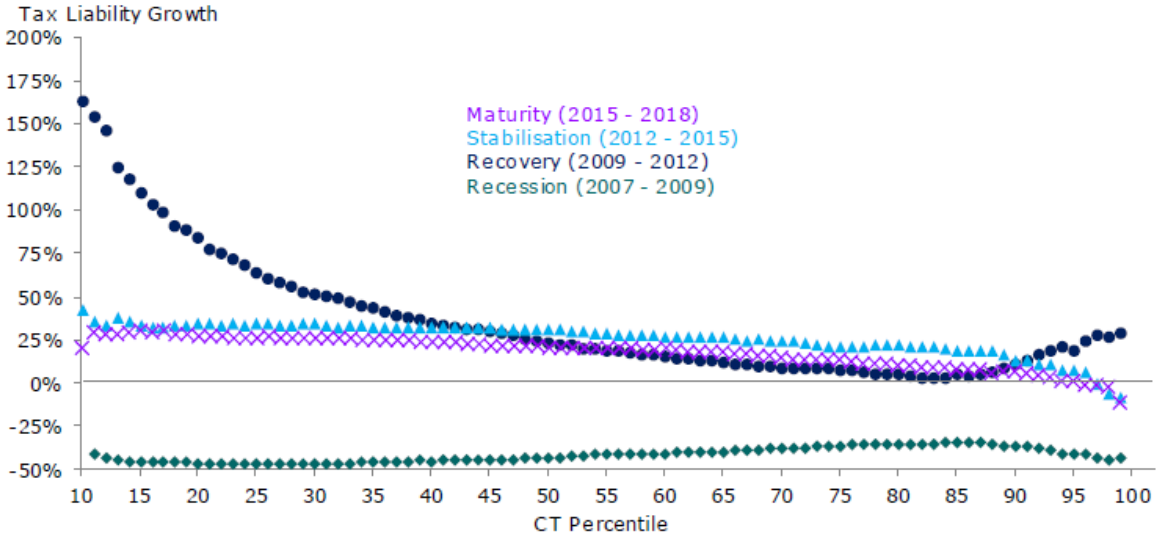
There is considerable taxpayer heterogenity both across the distribution and across time so the tax liability distribution is analysed in further detail here.

Growth rates for selected years are shown by CT liability percentiles in Figure 7 for those companies with a liability greater than the 10th percentile. A downward sloping curve, from left to right, indicates that liability growth is larger for lower paying companies, while an upward sloping curve on the righthandside indicates that the largest taxpayers experience higher CT liability growth.

The time period is divided into four phases. First, the "recession" phase (dark green line) shows that all taxpayer types experienced falls in their liability irrespective of whether they were large or small taxpayers. However, losses were less severe for larger taxpayers. Second, the "recovery" phase (navy line) shows that smaller taxpayers experienced very high growth in liabilities (caused by a low base effect). The top 10 percent of taxpayers also experienced notable growth in the recovery phase. Third, the "stabilisation" phase (light blue line) shows a contraction in the extreme growth rates experienced in the initial recovery phase. Fourth, the "maturity" phase (purple line and so called to reflect the economic cycle) shows a further slowdown in liability growth rates across the distribution.

If the patterns outlined in Figure 7 also hold for the COVID-19 crisis, it suggests that while typically all companies will see a reduction in their liabilities, the recovery will be uneven, with the tails of the distribution experiencing rapid growth in the recovery phase.

Figure 7: Growth in Corporation Tax Liability Across the Distribution



Source: Authors' analysis of Revenue data.

4.3 Companies with Zero Liability

Table 14 shows the degree of rigidity amongst companies with no CT liability, taking 2004 as the reference year. If a company has no CT liability in 2004 then, conditional on survival to 2018, there is a 72 per cent probability that company also has no CT liability in 2018. This pattern largely holds when using any year in the panel as a reference. Once a company has no CT liability there is a very large probability it will continue in this category for an extended period of time. This largely relates to the absence of profit for many of the companies who file CT1 returns as opposed to profitable companies using capital allowances and carried forward losses to reduce their liability.

Table 14: Rigidity of Companies with No Liability

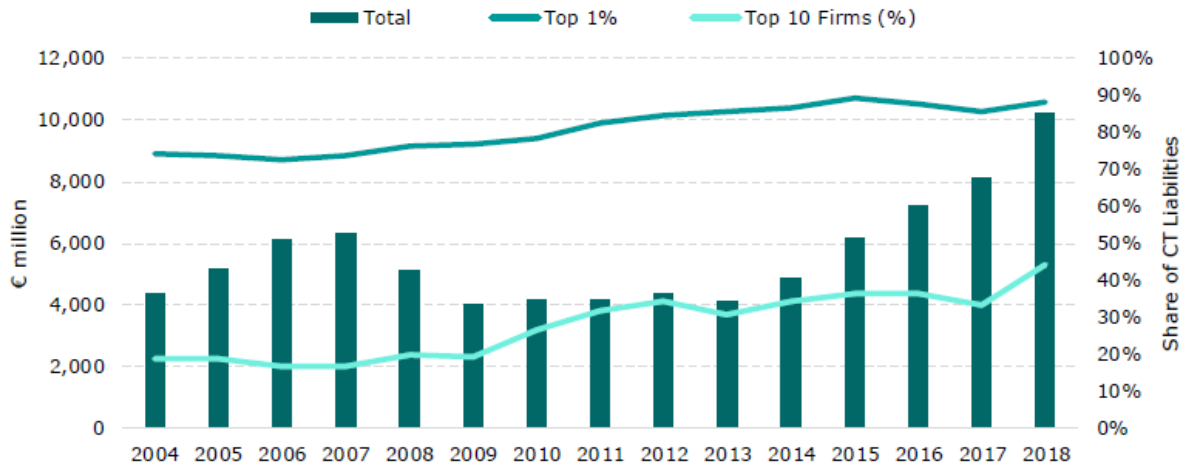
Year	Number of 2004 non-liable firms remaining	Number of 2004 non-liable firms remaining with no CT liability	Proportion of firms with no CT liability in 2004 and subsequent years
2004	48,513	48,513	100%
2005	39,646	32,250	81%
2006	36,154	27,436	76%
2007	35,224	26,196	74%
2008	33,169	23,445	71%
2009	29,161	21,527	74%
2011	27,228	20,803	76%
2011	25,066	20,829	83%
2012	23,459	19,317	82%
2013	22,406	18,096	81%
2014	20,970	16,452	78%
2015	20,220	15,601	77%
2016	19,282	14,471	75%
2017	18,468	13,596	74%
2018	17,339	12,442	72%

Source: Authors' analysis of Revenue data.

4.4 Tax Liability Concentration

Figure 8 shows the annual level of CT liability in each year since 2004. The share of the top 1% and top 10 taxpayers in each of these years is also presented. The share of the top 1% has risen steadily from the start of the period to 2015, before moderating somewhat since then. Throughout the period it has never been below 70 per cent. Since 2012, 10 firms have on average contributed 35 per cent of all CT liability owed to the state peaking at 44 per cent in 2018.

Figure 8: Concentration



Source: Authors' analysis of Revenue data.

The trends in CT concentration observed in Ireland predate the onshoring of Intellectual Property (IP) assets since 2015 and recent global tax reforms ("BEPS"). Comparing Ireland to other countries for which data are available, Table 15 highlights that the phenomenon of a highly skewed CT liability distribution is common. Singapore, the UK, and Australia emerge as similar to Ireland in their degree of CT concentration, while the US is more concentrated again. In many respects this is not surprising, given global developments in rising corporate market power and monopoly rents (IMF, 2019), lower capital costs for multinationals (Erel et al, 2020) and growing productivity dispersions between 'the best and the rest' (OECD, 2015).

Table 15: Concentration in Other Jurisdictions

Financial Year	US		UK		Singapore		Australia		Finland		Austria	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
2008-09	0.8	96	0.7	69	4	80	1.1	78			1.0	62
2009-10	0.7	96	0.6	67	3.6	79	1.2	75			0.9	58
2010-11	0.8	96	0.7	69	3.5	79	1.2	78			0.9	65
2011-12	0.8	96	0.6	67	3.6	82	1.3	76			1.0	60
2012-13	0.9	97	0.6	63	3.6	82	1.4	76			1.0	63
2013-14	1.0	97	0.6	58	3.3	83	1.3	76			1.0	61
2014-15			0.6	57	3,4	83	1.3	75	3.0	53	1.0	64
2015-16			0.5	54	3.1	83	1.4	73	3.1	55	1.1	65
2016-17			0.5	58	3.1	83	1.4	76	3.2	49		
2017-18			0.6	61	2.9	84	1.4	76	3.2	54		

Source: Authors' analysis of sources listed in Appendix. Note: (1) refers to the percentage of taxpayers and (2) refers to their share of CT tax liabilities in that jurisdiction. It is not possible to do an exact comparison of the top 1% of taxpayers in each jurisdiction, due to data availability. The Appendix outlines the methodology underlying this table.

4.5 Tax Credits and Reliefs

A company's tax liability (its taxable income multiplied by the appropriate CT rate) may be reduced through a number of reliefs and credits in the Irish CT system. Double taxation relief and the additional foreign credit, which arise because of the worldwide nature of Ireland's corporation tax regime, are the largest of the reliefs. The Research & Development ("R&D") tax credit is the largest of the tax credits.

Table 16 shows, on aggregate, the extent to which reliefs and credits reduce the gross tax liability. It demonstrates that reliefs are more important than credits. In 2018, reliefs reduced the gross tax liability by 17 per cent. In the main, these reliefs reflect the fact that many companies operate across several jurisdictions and, where Ireland has a tax treaty with that jurisdiction, the double payment of taxation on the same income is reconciled in this way. The *Financial & Insurance* sector is the main sector for double taxation relief and the additional foreign credit. *Manufacturing* is the main user of the R&D tax credit, while *Professional Services* and *Wholesale & Retail* are the main users of non-R&D credits.

Table 16: Reduction in Gross Tax Liability due to Reliefs and Credits

	Reliefs			Credits		
	Total Reliefs	of which: double taxation relief	of which: additional foreign credit	R&D Tax Credit	R&D Repayable Credit (i.e. Refund)	Other Tax Credits (excludes R&D)
2009	21%	11%	N/A	3%	1%	6%
2010	22%	11%	N/A	3%	1%	6%
2011	15%	11%	N/A	3%	2%	6%
2012	14%	12%	N/A	3%	2%	7%
2013	14%	10%	0%	3%	4%	6%
2014	17%	14%	1%	3%	5%	5%
2015	15%	11%	3%	4%	4%	4%
2016	15%	8%	6%	5%	2%	4%
2017	17%	8%	8%	3%	1%	4%
2018	17%	7%	10%	2%	1%	3%

Source: Authors' analysis of Revenue data. Note: the repayable element of the R&D tax credit does not technically reduce the gross tax liability but in practice it has this effect.

Table 17 shows the extent to which the top 1 per cent of companies (in terms of taxable income) use some of the available credits and reliefs.[11] There is a high degree of concentration in both. However, R&D tax credit concentration has slightly reduced in the most recent years, while concentration in the use of total reliefs has increased.

Table 17: Share of Top 1% in Items Reducing Gross Tax

	Total Reliefs	R&D Tax Credit	Other Tax Credits (Excludes R&D)
2009	85%	82%	5%
2010	87%	80%	12%
2011	83%	77%	8%
2012	84%	77%	31%
2013	85%	82%	14%
2014	90%	83%	13%
2015	92%	87%	10%
2016	92%	91%	13%
2017	94%	85%	14%
2018	95%	83%	17%

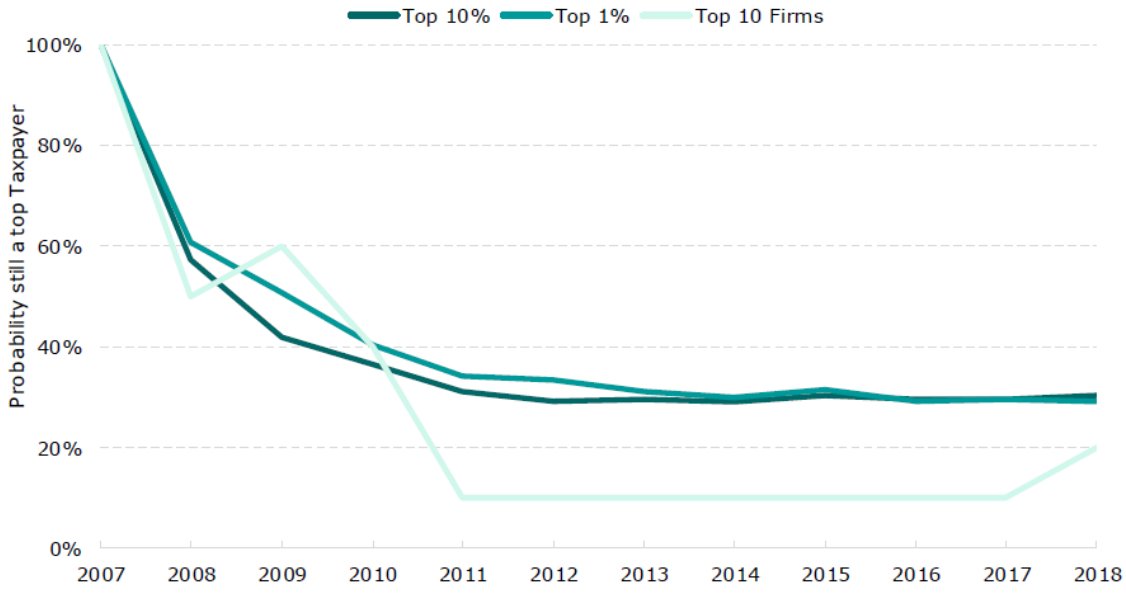
Source: Authors' analysis of Revenue data.

5. ANALYSIS OF THE FINANCIAL CRISIS OUTCOMES

5.1 Mobility

Just under 30 per cent of the top companies of 2007 – defined as being in the top 10 or 1 per cent of taxpayers or top 10 companies – remained in the cohort by 2018 (whereas 50 per cent of all 2007 companies remained in 2018). Figure 9 shows how likely a company is to remain a top taxpayer in subsequent years having been one in 2007. Most companies lost their place as a top taxpayer during the initial phase of the financial crisis (2008). Just 33 per cent of companies who were in the top 1 per cent in 2007 remained in this cohort in 2012. In 2009 and 2018, some of the top 10 taxpayers from 2007 reclaimed their place within this cohort in that respective year. Overall, the probability of remaining a top taxpayer has remained stable since 2011.

Figure 9: Probability of Remaining a Top Taxpayer in Each Year



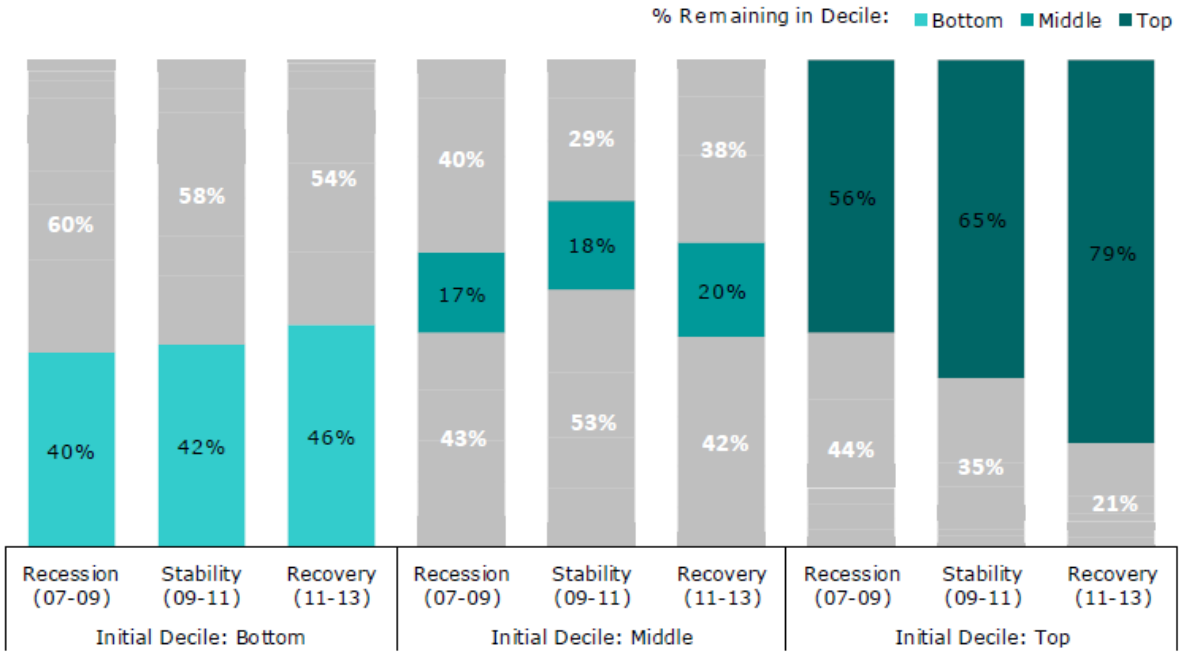
Source: Authors' analysis of Revenue data. Note: Companies can leave their respective cohorts and then return at a later date.

[11] For this analysis, the top 1 per cent of the tax base is more appropriate than the top 1 per cent of tax liabilities as liabilities reflect the position after reliefs and credits have been employed.

Figure 10 shows taxpayer mobility across the CT distribution for selected years. Taking the furthest left column, it shows where, for those in the bottom decile in 2007, companies ended up in 2009. It then repeats this for companies, in the bottom deciles, in 2009 and 2011 showing where they ended up in 2011 and 2013 respectively. For example, 40 per cent of companies who were in the bottom decile in 2007 remained there in 2009, while 60 per cent moved up and out of it (furthest left column). For companies who were in the bottom decile in 2011, some 46 per cent remained there in 2013 while 54 per cent moved up to higher deciles (third column from the left).

CT payers in the middle of the distribution are least likely to remain in their original decile. A larger proportion of companies who are in the middle decile moved down to lower deciles than move upwards in all three periods examined (middle three columns). Companies who are in the top decile of CT payers are the most likely of all companies to remain in that decile (furthest three columns on the right). This pattern strengthens over the time periods being examined, reflecting the waning effects of the financial crisis on economic activity for the largest taxpayers in particular. While 56 per cent remained in the top decile in the recession phase, this figure rose to 79 per cent by the recovery phase.

Figure 10: Mobility for Selected Deciles over 3 Year Periods



Source: Authors' analysis of Revenue data.

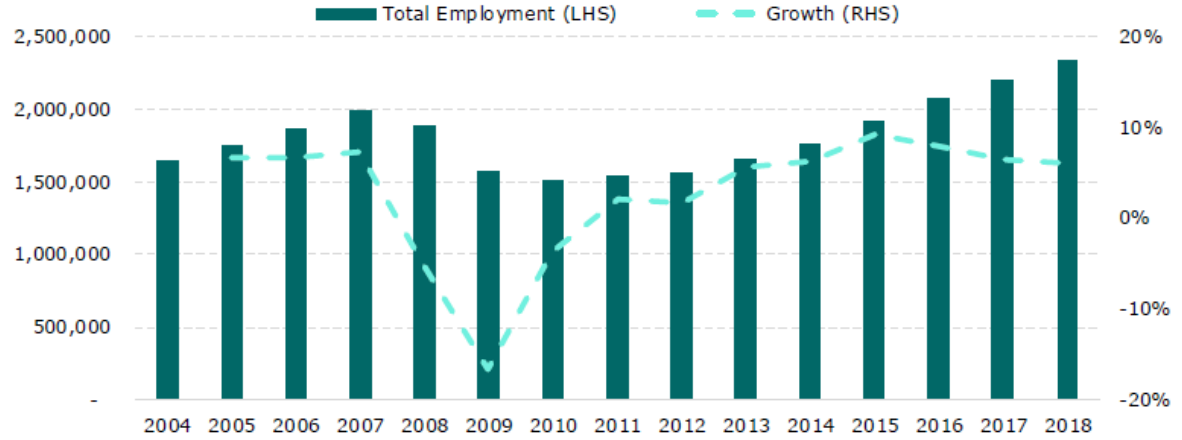
5.2 Employment

Revenue employer returns report employments (i.e., jobs) rather than employees. An employee may have more than one employment (e.g., changing employment during the year or having a second job). Employments are a mix of part-time and full-time and the figures also include those in receipt of occupational pensions from a former employer.

Figure 11 shows employment by taxpayers who filed CT returns for the years 2004 to 2018 as well as annual growth rates. Similar to official labour market statistics, 2007 represents the peak of the last economic cycle. 2010 represents the trough for employment by companies, whereas it is 2012 in the wider economy, indicating that companies contracted and recovered quicker than other business types such as sole traders, partnerships or other self-assessment (non-corporate) cases.

Employment growth for companies accelerated between 2011 and 2015 before moderating in recent years. The share of employment by Irish domestic companies (i.e., non-multinationals) was 67 per cent in 2004 before dropping to 62 per cent by 2010. Their share has been relatively constant since then. Given the stability of this share for Irish domestic companies, this implies they rather than multinationals are responsible for the bulk of employment growth among companies over the last 10 years.

Figure 11: Annual Employment



Source: Authors' analysis of Revenue data.

Table 18 decomposes the change in net employment over the financial crisis years into shrinking and growing sectors. In 2008, half of all sectors experienced a reduction in net employment while half experienced an expansion. However, the scale of reduction vastly exceeded the scale of expansion. In 2009, only one sector registered a (barely) positive net change in employment (*Health & Social Work*).

Table 18: Changes in Net Employment

Changes in Net Employment

	2008	2009	2010
Total Employment by Companies	1,884,877	1,570,268	1,511,088
Net Employment Change	-105,700	-314,609	-59,180
Net Employment Change in Shrinking Sectors	-126,670	-314,908	-76,584
Number of Shrinking Sectors	8	15	12
Net Employment Change in Growing Sectors	20,970	299	17,404
Number of Growing Sectors	8	1	4

Source: Authors' analysis of Revenue data.

Table 19 illustrates that net employment reductions were initially dominated by *Construction,* but the financial crisis impacted other sectors more, such as *Wholesale & Retail* and *Manufacturing*, in later years.

Table 19: Net Employment Reductions

	2008	2009	2010
Manufacturing	13%	13%	23%
Construction	36%	16%	33%
Wholesale & Retail	16%	21%	12%
Accommodation & Food Services	13%	15%	5%
Administration & Support Services	19%	15%	3%
Other	3%	20%	23%
All Sectors	**100%**	**100%**	**100%**
Total Net Employment Change in Shrinking Sectors	**-126,670**	**-314,908**	**-76,584**

Source: Authors' analysis of Revenue data.

Table 20 shows the number of years a sector took to reach the same level of employment it had in 2007, broken down by its average annual employment growth over the recession years (2007 to 2010).[12] In general, sectors which contracted the most in the financial crisis years took the longest to recover to their 2007 position. Services

[12] 2007 included as a recession year to account for growth rate from 2007-2008.

have experienced much stronger growth since than industry (*Construction*, *Manufacturing*, *Mining & Quarrying*). By 2018, employment in *Manufacturing* remained just below its 2007 level (although it had been on a downward trajectory prior to the financial crisis in any case). Across all sectors, it took until 2016 for employment to return to 2007 levels. This analysis is based on employment by companies only. For all employer types, this milestone was only reached in 2018, again reflecting the relative strength of companies against other employer types.[13]

In general, the positive cumulative growth experienced by *Health & Social Work, Education* and *Public Administration* over the period likely relates to increased rates of incorporation by businesses in these sectors. In other words, it might not refer to new employment but the reallocation of jobs from the non-corporate to the corporate sector.

Table 20: Length of Time to Regain 2007 Levels of Employment

	Number of years to regain 2007 employment levels	Employment share 2007	Employment share 2018	Cumulative growth 2018 to 2007
Annual average employment growth (2007 – 2010): -10% or more				
Manufacturing	Not yet	13%	11%	-1%
Construction	Not yet	11%	6%	-31%
Accommodation & Food Services	8	11%	12%	32%
Administrative & Support Services	10	11%	11%	16%
Annual average employment growth (2007 – 2010): -10% to -5%				
Mining & Quarrying	Not yet	0%	0%	-14%
Wholesale & Retail	10	23%	20%	4%
Transportation & Storage	10	5%	4%	7%
Real Estate	7	1%	1%	57%
Professional, Scientific & Technical	5	5%	7%	57%
All Other Activities	8	4%	4%	23%
Annual average employment growth (2007 – 2010): -5% to 0%				
Agriculture, Forestry & Fishing	6	1%	1%	75%
Information & Communication	6	5%	6%	53%
Financial & Insurance	3	7%	9%	44%
Annual average employment growth (2007 – 2010): Positive Growth				
Public Administration & Defence	Never contracted	0%	0%	129%
Education	Never contracted	1%	1%	121%
Health & Social Work	Never contracted	2%	4%	116%

Source: Authors' analysis of Revenue data.

6. CONCLUSION

This paper reviews CT returns over the last fifteen years and represents Revenue's continued focus on making the best use of the tax record data, encouraging openness and accountability, strengthening public debate and improving the evidence base for policy making. The panel dataset developed for the paper allows a deeper understanding than previously available of the changing distribution and composition of the CT base, liabilities and taxpayer demographics.

Certain well-known characteristics of CT in Ireland are confirmed such as the degree of tax concentration. The CT share of the top 1% of taxpayers has risen steadily from the start of the period to 2015, before moderating somewhat since then. Throughout the period it has never been below 70 per cent. In 2018, the top 10 firms accounted for close to half (44%) of CT liability. Both *Information & Communication* and *Manufacturing* sectors stand out for their contribution to CT growth since 2007.

Other trends also emerge. In all years, the number of companies with no tax liability exceeds the number of companies with a positive tax liability, reflecting the low-profit position of a large cohort of active companies, as well as the role of losses, capital allowances, group relief and trade charges in the tax system. Tax relief due to the worldwide operations of many companies, in particular double taxation relief and the additional foreign tax credit, are found to be greater drivers on aggregate of tax liability reductions than other tax credits such as the R&D tax credit. However, it is the largest companies which consistently make most use of the R&D tax credit.

[13] Using CSO Labour Force Survey data, the total number of workers employed in the economy regained its pre-recession peak in 2018 Q1.

Capital deepening – growth in capital per worker, an important component of labour productivity – has grown significantly over the period. However, when aircraft leasing companies and the ten largest holders of tangible assets are excluded, capital deepening has gone into reverse since 2013. It also emerges that domestic companies rather than multinationals are responsible for the bulk of employment growth among companies over the last 10 years.

As well as providing a detailed overview of CT, a secondary aim is to review the performance of companies during the financial crisis to garner insights for the COVID-19 crisis. After the financial crisis it took very large sectors like *Manufacturing*, *Wholesale & Retail* and *Financial & Insurance* between 4 to 7 years to return to their pre-recession profit position. Services experienced much stronger employment growth than industry during the last recovery. Across all companies, as a whole, it took until 2016 for employment to return to 2007 levels while companies in *Manufacturing* and *Construction* have yet to return to these levels. An examination of the CT liability distribution following the financial crisis suggests that any recovery this time will likely be uneven, with both the very smallest and the very largest taxpayers likely to experience the strongest and earliest rebound in CT, while companies in between may take longer to recover.

APPENDIX – CORPORATION TAX CONCENTRATION IN OTHER JURISDICTIONS

This appendix outlines the method behind Table 15.

	% of taxpayers	% of liabilities
US	All returns of active corporations with total income tax (after credits) more than or equal to $500,000, calculated as a percentage of total returns of active corporations.	Combined income tax liability of these returns, as a percentage of total income tax liability (after credits)
UK	Companies with CT liabilities greater than or equal to £500,000, as a percentage of all corporate taxpayers	Combined tax liabilities of these companies as a percentage of total CT liabilities
Singapore	Companies with chargeable income above S$5,000,000, as a percentage of all taxpayers	Combined net tax of these companies, as a percentage of total assessed net tax
Australia	Companies with net tax liabilities greater than $1,000,000, as a percentage of all taxable companies	Combined net tax liabilities of these companies, as a percentage of total positive net tax liabilities
Finland	Number of large enterprises (classified by size), as a percentage of all corporate taxpayers	Income tax imposed on large enterprises, as a percentage of total income tax imposed on corporations
Austria	Corporate taxpayers with taxable income greater than €2.5million, as a percentage of all corporate taxpayers	Combined share of CT liability of these companies

Source: Authors analysis. Note: all data were accessed in July 2020.

References

Erel, I., Yeejin Jang, J. and Weisbach, M.S. (2020). "*The Corporate Finance of Multinational Firms*," NBER Working Papers 26762

IMF (2019). *World Economic Outlook*, April 2019, Ch.2 The Rise of Corporate Market Power and its Macroeconomic Effects

OECD (2015). *The Future of Productivity*. OECD: Paris.

McCarthy, L. (2021). *Corporation Tax - 2020 Payments and 2019 Returns*, Office of the Revenue Commissioners.

Data sources for Table 15 (all data sources were accessed in July 2020):

Australian Taxation Office - Taxation Statistics (https://data.gov.au/data/organization/australiantaxationoffice)

Department of Statistics Singapore: Statistics on Public Finance: Taxable Individuals and Companies (https://www.singstat.gov.sg/find-data/search-by-theme/economy/public-finance/latest-data)

Her Majesty's Revenue and Customs (HMRC): Corporation Tax Statistics Reports (https://www.gov.uk/government/collections/analyses-of-corporation-tax-receipts-and-liabilities)

Internal Revenue Service (IRS): Corporation Tax Statistics SOI Tax Stats (https://www.irs.gov/statistics/soi-tax-stats-table-22-returns-of-active-corporations-other-than- forms-1120s-1120-reit-and-1120-ric)

Statistics Austria - Corporation Tax Statistics (http://www.statistik.at/web_en/statistics/Economy/Public_finance_taxes/index.html)

Statistics Finland and the Finnish Tax Administration – Statistical Databases: Business Taxes (http://vero2.stat.fi/PXWeb/pxweb/en/Vero/)

VOTE OF THANKS PROPOSED BY AISLING DONOHUE

[Edited transcript] I would like to thank Donough for the presentation and predominantly for the work that went into the paper to begin with because there was obviously an awful lot of data that they went through there and while it's not going to tell us much about the future it tells us some interesting things about trends and some very interesting things about tax reform. I'm sure that most of you are aware of the fact that global tax reform is happening at a very rapid pace at the moment and we're already seeing some of the consequences of the last attempts at global tax reform feeding through into Donough and Jean's numbers. The initial thing that struck me went I first read the paper was how obvious things can appear with hindsight and the most obvious point there relates to the financial crisis. When we looked at the information about the finance sector with hindsight it's really obvious that we were in a bubble and that it was going to crash, and there are going to be consequences. But at the time, working as a practitioner in the Irish tax market in 2005-2006 we really didn't see that coming quite to the extent that it was going to come. Global tax reform has had consequences in terms of things that were announced or said in 2013, 2014 and 2015 and that's already showing up in Donough and Jean's data which is really interesting to see. We had the G7 in the last week where they were talking about moving global tax reform on further and your brain is starting to wonder what this data will look like if Donough and Jean do the same immense body of work in a couple of years' time.

The pace that change is happening is really interesting and again that's something that's coming out and the other part that is kind of coming out more than the paper and less in the presentation was the 'dog that didn't bark in the night time' which I'll get on to.

Table 3 relates to current year loss claims and if you look at the financial and insurance sector there in 2007, it's 55% of losses and then it goes up to an eye watering 83% in 2010 because obviously companies have to have some kind profitability before they can actually use their losses. If we look at the most recent year in 2018 it's back down to 16% to the total there whereas the total loss for 2010 was 52,000(€m) now it's down to 10,000(€m). It's not particularly interesting to think about the Irish financial crisis in this data but it's far more interesting when we move on to the subsequent slides looking at the impact of global tax reform as to how much things change.

In May 2013, Tim Cook gave evidence to the Houses of Congress about Apple having a special tax arrangement with the Revenue Commissioners in Ireland and a lot of people in Ireland put their head in their hands when they heard him say that. That comment was a fairly major trigger for global tax reform which is notoriously difficult to do. In about June 2014, Margrethe Vestagert and the D-G comp started their investigation in Apple's tax affairs in Ireland and simultaneously to that the OECD BEPS project really started taking off in 2015. The other point that's missing there concerns the Trump tax reform, passed in 2017, but which really began to affect the numbers in 2018.

I mentioned that Apple said what they said in 2013. Commissioner Vestagert started investigating them in 2014. The world started getting quite annoyed at the structures and at the idea that there were large royalties leaving Ireland and the BEPS project started taking off. If you look at the capital allowances on intangibles data which is if the average company's historical paid their royalties to Bermuda and nobody taxed that royalty, everyone was getting very vexed about those kinds of structures. We have had this provision since I think 2008 which allows you to claim tax depreciation on intangible assets and if you claim tax depreciation on intangible assets then you cease paying a royalty to Bermuda. You will notice there that the amount of the claimants for Section 291A relief and the amount of profits that have been claimed subject to 291A has gone up quite significantly.

Table 9 roots out the amount of trade charges being claimed as relief against corporation tax. Trade charges are significant when you pay royalty to a company of a connected company for the use of their intangible assets. Again, as we look at the total trade charges here, it peaked in 2015 which is roughly the same time as the BEPS project is really getting legs and the world of tax becomes aware that these paying royalties to Bermuda structures, which we're going to result in Bermuda not taxing the royalties, had a very limited shelf life and so you can see

these royalties starting to fall off here. If you look at 2015-2016 it's €24 billion and then as we come back down to 2017-2018 is coming down to €17/18 billion. That appears to be the BEPS project both working and not working in real time. The project wanted to stop companies having income which was taxable nowhere, so it discouraged the payment of royalties, but because of the existence of Section 291A a lot of these companies simply revised their structures and instead of paying tax free royalties to Bermuda, instead they brought the IP on-shoring into Ireland and amortised it giving them, depending on the company, a not necessarily massively dissimilar tax result.

My initial thought looking at this data was that it is causing me to ask a lot more questions than it is providing me with answers, because everything here is historic, and everything about tax reform and tax changes is in real time or in the future. and we have massive difficulty predicting that. I am fairly sure that an awful lot of the particular tax NGOs would be outraged to discover that Ireland's corporate tax take was going to increase as a result of the BEPS project, even though most tax practitioners assumed that was going to be a fairly necessary consequence of the project. This has led to the original BEPS project now being superseded by what's being referred to as BEPS 2 so that's Base Erosion Profit Shifting even though BEPS 2 doesn't deal with base erosion or profit shifting at all. It deals with the idea that some countries are claiming a lot of profits in global groups and not necessarily taxing those profits, while other jurisdictions that are generating lots of profits by providing particularly tech companies with a lot of users, don't have any ability to tax those profits at all. At the moment everyone seems to be agreeing that globe tax reform is necessary and assuming that it will progress but as is always the case with these things, compromises will be reached, the progress will be less rapid than people were expecting it to be, and sometimes various states would put their national interests ahead of any sort of perceived global interest and that will delay things. Traditionally in the world of global tax reform, it's the US who is the main driver of these things. When the US is insular nothing happens, when the US is outward looking things can change. There is a degree of optimism around the Biden presidency.

What will the future look like? We don't know because looking at that historic data we can see the impact of the financial crash, we can see the impact of BEPS 1 (as it would now be considered), but we don't know what the actual impact of BEPS 2 will look like. But as Donough explained there's a huge concentration problem, a small number of very large tax payers account for a very large amount of the tax take. I was discussing that Seamus Coffey did a piece in the last week or so about the possibility that Microsoft may be paying as much as €1 billion in corporation tax in Ireland in a year. Even something as small as a change in the state of Washington in their state taxes but not in federal income tax could cause Microsoft to do something which then could have material impact on the Irish tax take. I'm fascinated by this paper as I just keep looking at the various tables and would like to thank Jean and Donough for the work that they did.

DISCUSSION

John FitzGerald: I thank the authors for a very useful paper and asked them two questions. My first question is in relation to the treatment of losses over time, on the part of banks. My second was in relation to the depreciation of intellectual property and whether it would be possible for a firm that timed its exit from Ireland to avoid recording any profit here.

Paul Sweeney: I ask a question around the large number of entities that survive for a number of years without recording any profits.

Patrick Honohan: I thank the authors for very interesting material. My first question is in relation to the 60% of so companies not paying any corporation tax in any given year. My second question related to the share of tax revenue coming from the top 1% and asked whether the distribution could be plotted to give more information. My final comment relatsd to the so-called 'recovery phase', in particular the increase at the top of distribution.

Eddie Casey: I ask a question in relation to the level of concentration, in particular that while Ireland might be not unusual for concentration among the top 1% of payers, whether its concentration is more unusual if the focus were on the top 10 companies only?