Commission on Taxation & Welfare
An Coimisiún um Chánachas ⁊ Leas

Briefing Paper

Tax Volatility in Ireland

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Subject	**Volatility of Irish tax receipts**
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Key points:

- Significant revenue volatility has been an important feature of Irish tax receipts over the past two decades, potentially related to Ireland's economic vulnerability to exogenous shocks, as one of the most open economies in the world.
- This was especially evident in the substantial increase in receipts up to 2007 and the subsequent collapse of taxation revenue thereafter related to the impact of the global financial crisis.
- The recovery in receipts from the beginning of the 2010s is attributable to structural reforms of the tax base as well as overall economic growth.
- The relatively stable performance of tax receipts since 2020 is attributable to the highly sector-specific nature of the 'Covid shock' to the economy juxtaposed with the progressive nature of the income tax system.
- In the longer run, while Capital taxes, Corporation tax and Stamp Duty are observed to have the highest annual growth rates over the longer term they are also among the most volatile taxes in terms of standard deviation.

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1. Introduction and executive summary

The following is a brief overview of the main points relevant to the volatility of tax receipts in Ireland, drawing in particular on the more detailed analysis carried out by the Department of Finance in the Annual Taxation Reports.

Looking at trends in receipts over the past 20 year, significant revenue volatility has been an important feature over the past two decades, with a substantial increase in receipts up to 2007, the subsequent collapse of taxation revenue thereafter and the recovery in receipts from the beginning of the 2010s. Significant volatility was also observed across individual taxes with those tax heads that observe the highest growth rates also representing the most volatile over time.

A number of structural deficiencies were addressed following the global financial crash and the performance over the last decade has broadly tracked economic growth and is therefore considered relatively stable[1]. The stable performance of tax receipts since 2020, despite the economic shock arising from the global pandemic, is attributable to the highly sector-specific nature of the 'Covid shock' to the economy as well as the highly progressive nature of the income tax system.

A wider point for consideration is the extent to which Ireland's economic growth (as measured by GDP) is more volatile and therefore more vulnerable to exogenous shocks. As one of the most open economies in the world, international trade comprises a high proportion of national income[2]. This suggests that Ireland's tax system is more vulnerable and therefore potentially more volatile, though that may be a function of the economy rather than the tax system per se.

2. Trends in Exchequer receipts 2000 to present

Figure 1 shows the evolution of Exchequer tax receipts over the past 20 years.

At the aggregate level, three distinct phases are evident pre-2020:

- First is the rapid increase in receipts over 2003-2007;
- Second is the downward trend between 2008 and 2010; and
- The upward trajectory for receipts from 2011 until 2019.

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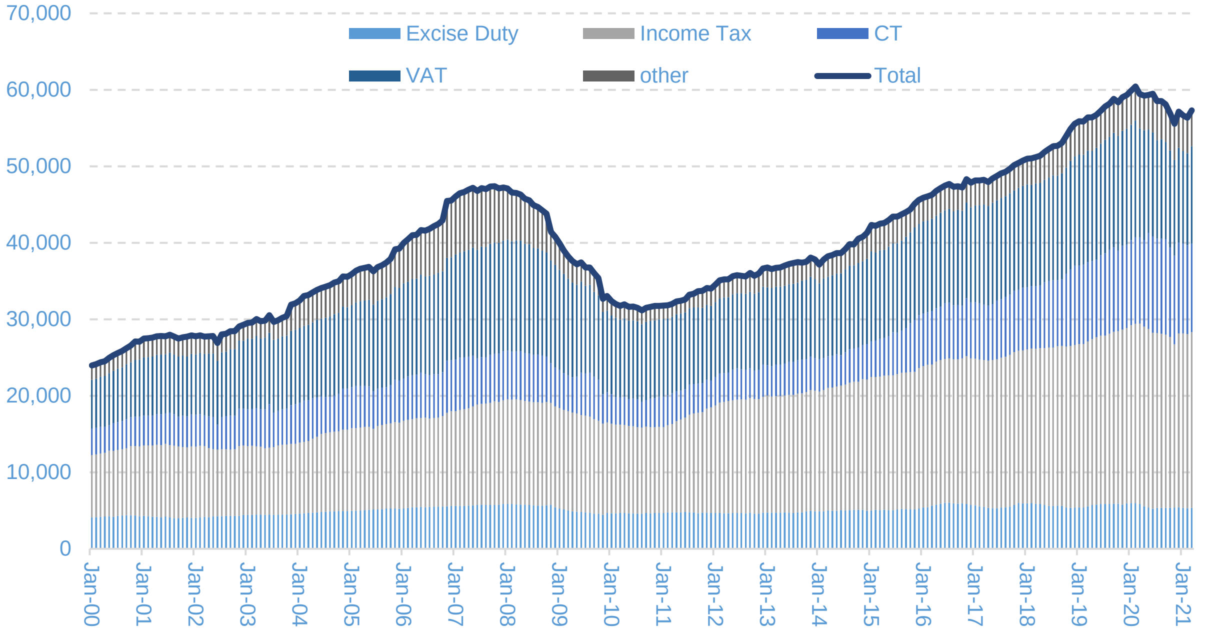
[1] Excluding corporation tax, which is discussed further below – including the policy steps being taken to ensure there is not an over-reliance on such receipts.

[2] For example, around 38% (€22.7 billion) of income tax receipts in 2020 came from both domestic and foreign owned multinationals, highlighting the Irish income tax system relies heavily on the internationally traded sectors.

Figure 1: taxation revenue, 2000 – present, € millions



CT: corporation tax.
From 2011, income tax includes the Universal Social Charge. Figures presented on a 12-month rolling sum basis.
Source: Department of Finance calculations.

2.1 Rapid growth from 2003 to 2007

Over the period 2000 – 2007, taxation revenue increased broadly in line with overall economic growth, with annual average growth of around 9% in receipts broadly in line with a 10% growth rate of nominal GDP. At their peak of just over €47 billion in mid-2007, taxation receipts had effectively doubled from the level pertaining at the beginning of the decade. Interestingly, Value Added Tax (VAT) receipts were the single largest source of tax revenue at this time, having surpassed income tax receipts as the largest tax revenue stream in early 2003.

Apart from the substantial increase in overall taxation revenue over the 2000-2007 period, the most noticeable feature is the rise in the share of receipts accounted for by the 'other' taxation category. The 'other' category is primarily composed of stamp duties (taxes on a broad range of written documents), capital taxes (taxes on capital gains and on capital acquisitions) and customs duties (taxes on imports from outside the European Union). As turnover in the residential and commercial property sector increased sharply during the mid-2000s, with both sectors ultimately moving into 'bubble' territory, transaction-based taxes (such as stamp duties on property transactions and capital taxes) surged. As a result, receipts from this category rose from 8% of total receipts at the beginning of the millennium to 16% in 2007.

The construction bubble also contaminated other tax revenue headings. For instance, income tax receipts[3] were distorted by 'excessive' employment in the house- building sector – the construction sector directly accounted for 1 in every 8 persons employed in the mid-2000s[4]. Additionally, VAT receipts were inflated by the exceptional level of new house building – which amounted to over 90,000 units at its peak – as VAT is payable on new housing. In a similar vein, corporation tax receipts were artificially boosted by the highly profitable (at the time) property-related activities in the banking and construction sectors.

The erroneous policy of using the highly cyclical, transaction-based taxes to finance both a narrowing of the income tax base (in 2007, for instance, around 42% of all taxpayer units were outside the income tax net, as a result of the significant increases in tax credits) and increased public expenditure (which, in nominal terms, doubled over the period 2000 – 2007) lay at the heart of the subsequent collapse of the public finances from 2008.

2.2 Reduction

The structural weaknesses in the Irish taxation system were exposed with the bursting of the construction bubble in 2008 and receipt initially fell rapidly as revenue from transactions taxes effectively dried up, while other revenue streams were adversely affected by the deep recession at the time. Total receipts declined from a peak of just under €47.25 billion at end-2007 to a low-point of just over €31 billion in mid-2010, a decline of one-third from peak-to-tough.

The speed and scale of this decline was almost unprecedented for an advanced economy; moreover the decline in yield occurred notwithstanding a significant policy response, with revenue raising measures amounting to around €5.5 billion (around 3.25% of GDP) introduced in 2009 alone. The decline in receipts was broad-based with all taxation sub-heads adversely affected by the collapse in domestic demand which reflected the fact that the construction bubble had permeated many sectors of the economy, and the subsequent correction affected all sectors and tax components.

The largest decline was recorded in the 'other' category where receipts declined by just over €6 billion (80%). At the peak, receipts from this tax cohort accounted for 16% of the total tax yield; by mid-2010, these receipts made-up less than 6% of the total tax-take. Within this category, the sharpest fall was

[3] While not part of Exchequer revenue, PRSI receipts were also inflated.

[4] Available data do not disaggregate construction employment into its sub-components; however, it is reasonable to assume that, given the high (and unsustainable) level of new house building, a large part of those classified as employed in the construction sector at the time were employed in the house building subsector. Moreover, this sector also indirectly boosted employment through the provision of ancillary services such as conveyancing, estate agency, etc.

recorded in stamp duty receipts which fell from a peak of just under €4 billion in 2007 to an annualised level of under €1 billion in mid-2010, as turnover in the residential and commercial property markets effectively dried up.

Consumption taxes were also adversely affected by the severe decline in economic activity. Aggregate household disposable income declined significantly, mainly due to the fall in labour income associated with declines in employment and wages as well as the higher direct tax burden. Moreover, households at the time responded to heightened levels of uncertainty as well as the need for balance sheet repair by ramping up their savings from disposable income – the household savings rate almost doubled from 6% in 2007 to around 11% in 2010. These factors depressed consumption, resulting in a fall in both VAT and excise receipts. Excise receipts fell by 20% while there was a 30% decline in the VAT yield from €14.5 billion in 2007 to an annualised level of just over €10 billion in mid-2010. The fall in VAT was driven by the decline in the price level over this period and by the collapse in new house building.

The low-point for income tax receipts was reached towards end-2010, when annualised receipts amounted to €11.2 billion, a decline of €2.5 billion (nearly one-fifth) from the annualised peak recorded in early-2008. The decline in yield mirrored labour market developments, with falling employment and a decline in per capita wages in some sectors. Indeed, the fall in receipts would have been more substantial in the absence of significant income tax revenue raising measures implemented in 2009-2010.

2.3 Recovery

The subsequent re-balancing of the taxation system and economic recovery from around 2012 onwards helped restore the revenue side of the fiscal accounts.

Overall tax revenue increased between the low point in mid-2010 and 2019 by €28.1 billion over this period, an increase of over 70%. Of this, €24.2 billion (over four-fifths) of the increase was due to higher income tax (€11.7 billion), VAT (€4.9 billion) and corporation tax (€7.6 billion) receipts.

The step change in revenue over that decade reflects two main factors.

Firstly, discretionary revenue-raising measures introduced to stabilise the public finances following the bursting of the property market bubble played an important role. In addition to raising revenue, many of these tax changes were aimed at addressing the imbalances in the Irish taxation system – such as the narrowing of the income tax base. Prominent base-broadening reforms included the Universal Social Charge (USC) in 2011 and Local Property Tax (LPT). Simultaneously, several tax expenditures – that is expenditure conducted through the taxation system – were curtailed over this period[5]. As a result, the tax base was widened considerably and re-oriented towards more stable revenue streams[6].

The second factor behind the recovery in tax revenue was the economic turnaround. In 2011, the economy began to stabilise and subsequently embark on a modest recovery path, initially driven by the exporting sectors. Tax revenues began to increase in tandem, at least initially, with nominal GDP growth. As economic recovery gained traction and gradually spread to the domestic sectors – which are typically more 'tax-rich' than the exporting sectors – tax revenues increased also. These revenues increased at an annual average rate of over 7% between 2011 and 2019, with the level of receipts at the end of the decade reaching €59.3 billion, the highest level ever[7].

By mid-2016, taxation receipts had exceeded their pre-crisis peak, albeit with important compositional differences. Income tax receipts are once again the single most important source of taxation revenue, having surpassed VAT receipts in early-2009.

The largest increase in receipts was in the income tax yield which, at the end of 2019, amounted to just over €20 billion, an increase of €8.8 billion (77%) relative to its low-point. Receipts within this tax-head were boosted by the introduction of the USC (which amounted to around €4 billion in 2019). The recovery in the labour market, which began around 2012, has also had a favourable impact on the income tax yield. By 2019, total employment was 12% higher (circa 230,000 jobs) than at its low-point. Wage inflation has also contributed to higher income tax receipts.

Also of note is the very strong performance of corporation tax receipts since its low-point in mid-2010. The performance has not been uniform over this period – modest increases were recorded up until 2014 but from 2015, the data shows a rise in the share of corporation tax receipts. Corporation tax receipts then effectively doubled over three years up between 2016 and 2019[8]. Corporation tax receipts are now, by far, the third largest revenue stream for the State. To put this into perspective, it is noteworthy that, over the period 2000-2014, there was very little difference between the level of

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[5] Evidence shows that tax expenditures are not only costly to the State (including deadweight costs) but can, in many cases, be regressive.

[6] Analysis carried out by the Parliamentary Budget Office in 2019 looked back at the volitality of tax receipts from 1984 until 2017. Among a number of conclusions, including the existence of a trade-off between tax revenue growth and volatility, their report highlighted that income tax and VAT which are the foundation of our current tax system, have been reasonably stable relative to other tax heads.

[7] This is slightly below the growth of nominal GDP which averaged 9% over this period, and likely reflects the fact that the recovery has been, up until recently, driven by the less tax-intensive export sectors (including the 35% increase in GDP recorded in 2015). As a result, the ratio of tax revenue to GDP has fallen in recent years; however, the ratio of tax revenue to GNI* has remained stable.

[8] Corporation tax receipts increased by almost 70% between 2015 and 2020.

excise and corporation tax receipts (the average monthly difference was just €170 million). At the end of 2019 corporation tax receipts exceeded excise duty receipts by over €2 billion.

The share of corporation tax revenue accounted for by the top ten largest firms has been on an upward trend and in 2020 the top ten largest firms accounted for a majority (51%) of all corporation tax revenue. In response to this concentration risk and also to ensure past mistakes of using less stable receipts there have been political commitments around the use of corporation tax receipts[9] – for example, for a certain portion of 'excess' receipts to be ring-fenced for investment in the Rainy Day Fund[10].

By end-2019, total tax receipts had reached €59.3 billion, the highest level ever and almost twice the level of mid-2010 (€31.2 billion). On a 12-month-rolling sum basis, tax revenue peaked at €60.4 billion in February 2020, immediately prior to the pandemic. Taxes on income (corporate and personal) as well as consumption taxes (mainly VAT and, to a lesser extent, excise duties) accounted for 93% of this.

2.4 Receipts in 2020

The key factor in the relative stability of government revenues over 2020 was the distinct, highly sector-specific nature of the 'Covid shock' to the economy juxtaposed with the highly progressive nature of the income tax system.

The most notable development on the tax revenue front last year was the performance of income tax, with receipts from both PAYE and self-employed ("Schedule D") workers broadly flat on year-on-year basis[11]. In 'normal' economic shocks, the fall-out in the labour market would typically trigger a fall in income tax receipts. In 2009, for instance, falling employment (the unemployment rate rose by 5.5 percentage points) resulted in a 10% decline in income tax that year. On this basis, in the *Stability Programme Update 2020* the Department of Finance projected a steep fall in income tax receipts driven by a projected sharp drop in employment and the associated decline in the national wage bill. However, while an exceptionally large fall in employment did occur, the effect on income tax receipts proved to be almost negligible.

The driver behind this surprising resilience was the sector-specific nature of the labour market shock. The majority of job losses during the pandemic have been in sectors with a greater proportion of

[9] Budget 2020: Addressing Fiscal Vulnerabilities, October 2019, prepared by the Department of Finance
[10] More recently, the Minister for Finance has stated that policy planning will be based on the assumption of a decline in corporation tax receipts from 2022 onwards relative to baseline, due to international tax reform efforts being led by the OECD's *Base Erosion and Profit Shifting* (BEPS) process.
[11] 2020 income tax receipts fell by just 1% on 2019, itself a record year

employees either on relatively low wages, in part-time employment, or both. Due to the progressive nature of the Irish income taxation system (one of the most progressive among OECD countries) those at the lower end of the pay spectrum pay a relatively small share of overall income tax. The sharpest declines were recorded in contact-intensive sectors, such as arts and accommodation & food suffered steep declines. In terms of explaining the income tax performance, it is notable that 'income tax-rich' sectors such as public administration, finance and ICT did not record any employment losses. It is this asymmetry — job losses in 'tax-poor' sectors and limited (if any) loss in the more 'tax rich' sectors — that underpinned the income tax performance last year.

The strength of income tax receipts was key in keeping the general government deficit below what was initially feared at the beginning of this unprecedented period. The contrast between the current situation and the 2010s crash, where tax revenues fell by more than one-third, is indicative of the crucial changes in composition in the tax base. Prior to the onset of the crash, the State had become overly reliant on highly volatile revenue sources that collapsed when external shocks hit the property market.

The difference between the previous crisis and now is demonstrated by a comparison of the relative change in the labour market and aggregate tax revenues. The surge in unemployment in 2020 far outstripped anything seen at the low-point of the previous crisis, yet the reduction in aggregate tax receipts is only a fraction of the previous decline.

The unprecedented events of 2020 left the public finances with a substantial deficit, but tax revenue, in the aggregate, was resilient.

The pronounced sectoral effect was also seen in the strong performance of corporation tax revenue, which despite the pandemic, reached another record high in 2020. Corporation tax revenues provided a welcome boost to the public finances, but simultaneously highlighted the risks associated with the concentration of receipts amongst a relatively small number of large foreign-owned payers.

The resilience of aggregate tax receipts in 2020 meant that Government had at its disposal greater resources to fund the necessary policy interventions to support households, businesses and the health sector through the pandemic.

3. Individual tax volatility

Officials from the Parliamentary Budget Office published an article in 2019[12] examining the volatility of Ireland's tax base further in the context of optimum diversification. In it they found that, *" In the period preceding the crisis, while the tax portfolio was relatively more diversified, it was also more volatile, with greater holdings of more volatile revenue streams such as Stamp Duty and Capital Taxes."* They go on to say that post 2008 they found that, *"… volatility of the tax portfolio declined, as the portfolio became more concentrated around less volatile taxes (e.g. Income Tax)."*

Table 1 below shows the mean return and standard deviation for the seven tax categories examined as part of the review. While Capital taxes, Corporation tax and Stamp Duty are observed to have the highest annual growth rates over the longer term they are also among the most volatile in terms of standard deviation.

Table 1: Mean Revenue Growth and Standard Deviation, 1985-2017

Tax Category	Mean Growth Rate (Return)	Standard Deviation (Risk or Volatility)	Return-Risk Ratio
Income Tax	6.61%	6.90%	0.96
VAT	6.68%	7.91%	0.84
Excise Duty	4.24%	5.55%	0.76
Corporation Tax	12.24%	17.27%	0.71
Stamp Duty	9.42%	23.07%	0.41
Customs	4.25%	14.96%	0.28
Capital Taxes	16.38%	33.91%	0.48

Source: Authors' analysis based on Department of Public Expenditure & Reform – Databank.

4. International commentary

The extent to which Ireland is an international outlier or particularly vulnerable to volatility in tax receipts is likely linked with the extent to which Ireland's economic growth is more volatile and therefore more vulnerable to exogenous shocks.

[12] Examining the Volatility of Ireland's Tax Base in the Paradigm of Modern Portfolio Theory – Economic Social Rreview (2019)

As one of the most open economies in the world, international trade comprises a high proportion of national income. The concentration risks around corporation tax receipts are well discussed, but perhaps of greater concern is the exposure of income tax receipts, which are the largest tax head (40% of all Exchequer receipts in 2020. Around 38% (€22.7 billion) of those 2020 income tax receipts came from both domestic and foreign owned multinationals, highlighting the Irish income tax system relies heavily on the internationally traded sectors. This suggests that Ireland's tax system is more vulnerable to external factors and therefore potentially more volatile as a result. That may be a function of the economy rather than the tax system, but may be relevant for deliberations about stimulating future economic growth.

While perhaps arising more out of a prudential caution rather than expressing concern about tax volatility in Ireland, externally, the EU Commission's Post-Programme Surveillance reports have stressed the continued importance of further broadening the tax base since at least 2017[13], most recently commenting on corporation tax and the overall tax base:

> ***"A question mark remains over the sustainability of corporate tax collection.*** *Its solid growth might not persist over time, and a sudden reversal cannot be ruled out. The high concentration of tax receipts among a few large firms, their volatility and potentially transitory nature, along with the rising share of corporation tax in total tax revenue, underline the risks of relying on this revenue source.*

A broader tax base remains key to strengthening the resilience of public finances*. Base broadening could be achieved in a revenue neutral way, accompanied by mitigating measures, for instance, on personal income tax rates. The Rainy Day Fund, whose initial allocation of EUR 1.5 billion in 2019 was drawn down in 2020 to face the current crisis, could be replenished when macroeconomic conditions allow. In addition, government plans to develop tailor-made fiscal and macroeconomic indicators to better reflect the idiosyncrasies of the Irish economy remain welcome*."

[13] The most recent publication may be viewed here https://ec.europa.eu/info/publications/post-programme-surveillance-report-ireland-spring-2021_en