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***CURRENT AND FUTURE WAVES OF TECHNOLOGICAL TRANSFORMATION:
POTENTIAL ECONOMIC IMPACTS AND THE CHALLENGES FOR PUBLIC POLICY IN IRELAND***

*Dermot Coates, Harry Williamson, Keith FitzGerald, Kevin Daly, and Neil Gannon
(Irish Government Economic and Evaluation Service)*

AN ECONOMIC AND TAX OVERVIEW OF COMPANIES WITH NO CORPORATION TAX LIABILITY

Yvonne Hayden (Office of the Revenue Commissioners and Irish Government Economic and Evaluation Service)

SEVENTY YEARS OF IRISH FISCAL POLICY: 1954-2024

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BOSTON OR BERLIN? HOW DOES IRELAND'S TAX AND SPENDING COMPARE?

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***SYMPOSIUM: THE EVOLUTION OF DATA NEEDS FOR POLICY/RESEARCH IN IRELAND
[MARKING THE DONATION OF ROY GEARY'S PAPERS TO THE UCD GEARY INSTITUTE]***

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Martina Lawless (Economic and Social Research Institute)

Sarah Glavey, Marianne Cassidy, and Alan Plummer (Department of Public Expenditure, Infrastructure, Public Service Reform and Digitalisation)

BARRINGTON LECTURE 2025-2026:

***INTERNATIONAL COMOVEMENTS AND PERSISTENCE IN IRISH INFLATION: A NONLINEAR
APPROACH***

Adnan Velic (Technological University Dublin)

Volume LV

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Current and Future Waves of Technological Transformation: Potential Economic Impacts and the Challenges for Public Policy in Ireland

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(read before the Society, 30th October 2025)

Abstract: Change is a constant and economic history has been shaped by not only multiple waves of technological change but the transformative impact of these changes for both industry and society. As new technologies come to pervade more sectors and occupations over time, it is likely that this technology will give rise to challenges and risks but also opportunities and benefits. If we are honest, we cannot know for certain the trajectory of emerging technologies but for this paper, we aim to make a contribution by looking at the possible impact of current – and future – waves of technological change in Ireland. Building upon earlier work, we suggest that Ireland is relatively more exposed to AI than is the case for other advanced economies and that factors such as gender, age and educational attainment have an important role to play here. We contend that the extent to which AI augments – or replaces – human labour in the medium to long-run will depend on a variety of economic, social and policy factors (including levels of AI regulation and the future interaction between AI and advanced robotics). We consider the limitations of this type of work and suggest some possible avenues for future analysis. We show that that multiple aspects of public policy will have an important role to play; that the process of technological change has the potential to impact Ireland’s Exchequer in many ways (including the risks posed by any potential global speculative investment bubble); and that issues such as lifelong learning, public trust and social inclusion cannot be overlooked..

Keywords: artificial intelligence, technological change, labour markets, public policy, Ireland

JELs: J21, J24, O31

1. INTRODUCTION

The process of technological transformation is not new but rather, it is continuous albeit that the speed of change does tend to vary over time. In some cases, change has occurred rapidly but in other cases it has been incremental over successive years (or even decades). This notwithstanding, the prospect of change can give rise to uncertainty and anxiety as to the implications for the macroeconomy, employment and earnings. For instance, the various waves of automation witnessed over many decades led to concerns around substantial job losses. Undoubtedly, there has been displacement between sectors – or reduced demand for certain occupations – but the aggregate level of employment has continued to expand (Przegalinska and Wright, 2021; Terborgh, 1966). This, however, is not a basis for complacency as the global economy adjusts to a broad range of new technologies including, but not limited to, the deployment of artificial intelligence (AI) alongside advanced robotics, quantum computing, cell and gene therapies, nanotechnology, biotechnology, distributed ledger technologies, augmented reality and 3D printing.

Public expectations around emerging technologies such as AI – and the associated commercial investments – may well be running ahead of the actual capabilities of this particular technology. At the current juncture, some cynicism is emerging regarding the potential of AI technology to deliver the kind of transformative change that the market is anticipating. While a significant sum have been invested to date, it is unclear when the technology will deliver a return on this investment.³ Acemoglu has suggested that AI can carry out just 5% of jobs, downplaying the prospect of an impending *economic revolution*.⁴ The ECB has also raised concerns about the possibility of an AI-related

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Disclaimer: The views expressed herein are those of the authors only. All errors and omissions are our own.

² The authors would like to thank colleagues at the CSO’s Labour Market Analysis Unit for their assistance with this research.

³ “AI will take time to show a return on investment”, *Financial Times*, July 2024.

⁴ “AI Can Only do 5% of Jobs, Says MIT Economist Who Fears Crash”, *Bloomberg*, October 2024.

asset price bubble, given the concentration of market capitalisation and earnings among few US firms.⁵ In addition, AI adoption by enterprise continues to lag.⁶ It should be noted, however, that a lull in the pace of adoption following the initial investment in an emerging technology is to be expected (and is in line with the dynamics of the productivity J-curve (discussed below)). Another important consideration is the speed of change and whether this is accelerating, as evidenced by Google's recent unveiling of the new Willow quantum microprocessor.

The Irish economy has for many years had exposure to – and has developed a broad-based expertise in – a range of emerging and frontier technologies, including microprocessors and bio-pharma as well as cybersecurity, communication platforms and e-commerce. Ireland also has a long track record of attracting, and retaining, FDI and has become an important hub for many MNCs (or multi-national corporations). Consequently, close to 10% of Ireland's workforce are engaged in ICT and other high value-added categories of employment. To put this differently, close to 263,000 persons were employed in the 'foreign-owned' MNC sector⁷ of the economy by 2023 (up by 75% since 2012). Given the foregoing, policy-makers in Ireland are keenly aware of the potential implications of technological change for Ireland's future economic performance. In the most recent National Risk Assessment (Government of Ireland, 2024), AI and other advanced technologies were identified for additional prominence. The latter assessment recognised the likely opportunities that AI will provide and the need to adapt to new technologies in order to maintain Ireland's competitiveness but it also noted that *'disruptive potential could negatively affect existing jobs or sectors, undermine critical infrastructure, or bring about ethical or legal risks'*.

The growing importance of certain types of work in Ireland's economy over time is also a function of the global distribution of 'compute' resources. The term compute here refers to applications requiring resources for purposes such as computation and processing (i.e. cloud computing or big data). This is a core input to the development and deployment of AI. For instance, Central Processing Units (CPUs), Accelerated Processing Units (APUs) and Graphics Processing Units (GPUs) are considered compute resources. Lehdonvirta et al. (2024) consider the global deployment of those chips necessary to underpin compute for AI development and deployment (i.e., to train AI models). They also consider the geographic dispersal of public cloud compute⁸ (or 'public cloud regions'), including market leaders such as AWS, Microsoft Azure and Google Cloud. The aforementioned work found that a small number of countries constitute 'Compute North' (or those countries which host the technology necessary for AI development). The rest of the globe is categorised as 'Compute South' (i.e. technology for AI deployment rather than development) and 'Compute Desert' (i.e., those countries which host no public cloud AI compute at all).

The vast majority of countries across the globe have no public cloud regions. Despite its small size, Ireland is one of only 39 countries to host at least one public cloud region and is one of only 17 countries – Compute North – where the type(s) of high-end chips required to provide compute for AI are located. Indeed, close to 20% of the EU27's GPU-enabled regions are based in Ireland (rising to 25% for more advanced chip technology).⁹ These technological investments are certainly promising when one considers the prospects for Ireland in a changing global economy but it should not go unnoticed that – in Ireland at least – these developments are being driven by private sector actors. Recent data indicates that the Rest of the World (i.e., foreign funding) accounts for close to 10% of the total R&D spend in the EU. For Ireland, however, the equivalent figure is closer to 26% whilst the Government share of total R&D spend in Ireland is almost half of the EU average.¹⁰ The role of the private sector in Ireland is not necessarily a bad thing but it does underscore the importance of giving due consideration to the role of the State in preparing the economy to respond to these changes (and the readiness, and/or capacity, of the State to do so). There is also a need to reflect on our shared cognitive dissonance. In other words, we can often hold two (potentially) contradictory views: (i) previous waves of technological change may have impacted certain occupations negatively but never led to a net decrease in employment; and (ii) past events are no indicator of future outcomes.

This paper builds upon our earlier work – Williamson et al. (2025) – and extends that analysis in order to consider broader technological and public policy challenges for Ireland arising from technological change. In particular, the paper considers the potential for impacts that extend beyond 'narrow' AI applications alone, including the possible impact of advanced robotics on occupations currently assessed as having limited exposure to narrow AI. It also considers a range of public policy challenges arising from technological change, including those relating to the public finances, lifelong learning, public trust and social inclusion.

⁵ "Financial Stability Review", ECB, November 2024.

⁶ "AI is showing 'very positive' signs of eventually boosting GDP and productivity", Goldman Sachs, May 2024.

⁷ Specifically, this refers to foreign-owned State Enterprise Agency client firms. Most of these firms are IDA Ireland client firms.

⁸ These large providers are sometimes referred to as 'hyperscalers' and the reference to 'public' does not imply any Government affiliation (but rather that these services are available on demand and shared by many customers).

⁹ Ireland being home to two of the EU27's 11 GPU-enabled regions as well as two of the EU27's eight AI10-enabled regions (the latter being the Nvidia A100 GPU developed in 2020).

¹⁰ [R&D expenditure - Statistics Explained](#)

The paper then assesses Ireland’s overall labour market exposure (and complementarity) to AI and places these results in a comparative international context. We also examine the characteristics of persons in highly exposed occupations. In undertaking this work, the authors seek to contribute to the emergent discourse around AI and the labour market, while recognising that this can only represent an initial contribution. We are clear that the process of AI adoption remains at a relatively early stage, that this limits the availability of real-world empirical data and that further analyses will be necessary over time. Indeed, we recognise the uncertainty inherent in the future trajectory of these disruptive technologies.

The remainder of this paper is structured as follows. Section 2 summarises the relevant literature, while Section 3 outlines the methodological and theoretical approaches adopted in this paper. Section 4 presents the main results, followed by a discussion in Section 5 of the potential public policy challenges arising. Section 6 concludes.

2. LITERATURE

The emergence of advanced digital systems, including advanced robotics and AI technology, is often characterised as the advent of a fourth industrial revolution. Schwab (2016) has outlined three previous industrial revolutions, roughly each one a hundred years apart. Each of these had a transformative impact on the production process, income levels and standards of living. The first industrial revolution (c. 1784) came with the use of steam power to mechanise production. This preceded a second industrial revolution (c. 1870) that saw electricity powering mass production, while a third industrial revolution (c. 1969) was marked by the use of electronics and information technology to drive automation. Building on the groundwork laid during the latter period, the fourth industrial revolution is developing at an unprecedented pace. Within these distinct periods of innovation, development and change, new industries, occupations and tasks have emerged while others have diminished or disappeared entirely. For example, advancements made in the extraction of petroleum during the late-1800s enabled the production of kerosene – leading to the decline of the whale oil industry – whilst kerosene would come to be supplanted by the use of electricity.

2.1 Capital distribution

The adoption of AI technology by industry could significantly disrupt our current understanding of “typical” economic activity. AI systems have the potential to bring about extraordinary benefits for society but also to sow disruption across many sectors of the economy, including labour markets globally. Each previous industrial revolution had a transformative impact but also created winners and losers in the labour market: eliminating some jobs but generating and augmenting others. As AI comes to pervade more sectors and occupations over time, it is likely that this technology will give rise to challenges and risks but also opportunities and benefits. Whilst prior technological developments are generally considered to have been a global net ‘good’, we must always remind ourselves that past performance is no guarantee of future results. Indeed, the key difference here is the nature of tasks that will be transformed. AI has the potential to perform complex cognitive tasks, setting it apart from previous general-purpose technologies which primarily affected physical tasks at the time of their invention. Certain tasks within occupations will become susceptible to automation, while others will benefit from AI assistance, enhancing productivity and augmenting human capabilities. The extent to which jobs are enhanced, rather than replaced, will depend on how well the strengths of AI and humans can complement each other within each job. There will also be a role for public policy and regulation in shaping the balance between technology, capital and labour.

2.2 Labour and productivity

The impact of technological change upon the labour market is perhaps best represented by the contention that 60% of all jobs in the US today did not exist less than a century before (Autor et al., 2022). Research by the IMF (Cazzaniga et al., 2024) has found that 40% of employment globally is exposed to AI. This rises to 60% of employment in advanced economies with approximately half of these considered to be negatively affected. This paper finds that, as a result of capital deepening and a productivity surge, AI adoption can boost total income, and, if AI is complementary to labour in certain occupations and productivity gains are sufficiently large, higher growth and demand for labour could more than compensate for the partial replacement of labour tasks, increasing incomes along most of the income distribution. From a labour market perspective, the current international literature typically only provides an indication of impacts based on recent understandings of AI applications and does not attempt to predict how AI technologies will evolve in future, nor the rate of adoption across the enterprise base. There are those with a pessimistic viewpoint that suggest that AI will have a detrimental effect on employment through the substitution of capital for labour. There are also those optimists that expect that there will be significant efficiency gains associated with the use of AI that will result in the creation of new job and task opportunities. For instance, Frank et al. (2019) have found that AI will likely impact on specific skills rather than on whole occupations. In other words, whilst many jobs may be exposed to AI, relatively few are at risk of disappearing completely.

There are also those – for example, Felten et al. (2021, 2023) – that have suggested that the most exposed industries will likely be those “white-collar” industries requiring high levels of education whilst a survey of AI experts concluded that certain skills required in high-skilled roles are susceptible to automation due to recent advances in AI. There is also potential for a high level of complementarity between AI and human capabilities for many ‘highly exposed’ roles. The OECD has found that being highly exposed to AI may be beneficial for workers, provided they have the skills to use AI technologies effectively (Lane, Williams and Broecke, 2023). Other studies – such as the World Economic Forum’s Future of Jobs Survey 2023 – have found that the number of companies expecting AI to be a net creator of jobs is far greater than those expecting AI to be a net displacer.

Acemoglu (2024) estimates modest effects on total factor productivity (TFP) from AI within the next decade, with an upper bound of 0.07% in terms of annual TFP growth. The impact on GDP is also estimated to be modest, and within the range of 0.9% to 1.1% over the next decade (although this could be as high as 1.8% in the event that there is a large AI investment boom). In terms of labour productivity, however, the latter work suggests that any gains will be quite low (at 0.1% p.a.), albeit that other research has estimated that the growth will be far higher (at between 1.5% and almost 3.5% p.a. over the next decade). Recent work by the OECD has found that annual labour productivity growth could be increased by close to 1% in the US but that the comparable increase for other advanced economies would likely be lower¹¹ (Filippucci, Gal and Schief, 2024). Furthermore, recent research from the US has found that even where AI yields increased labour productivity, this may not impact evenly across the workforce or result in broad-based wage growth (National Academies of Sciences, Engineering, and Medicine, 2024).

There is, however, a significant degree of uncertainty with regard to how future waves of technological change will impact the economy. Whilst the labour market (including labour productivity) will be a key channel for the transmission of the impact of new technologies across the broader economy, the extent to which AI augments – or replaces – human labour then into the future will depend on a variety of economic, social and policy factors (including levels of AI regulation). A key factor in this regard will be the speed of adoption, across both sectors and countries (Figure 1). A summary of some of the key literature in this space is provided in Tables 1 and 2 (see: Annex).

Table 1 outlines the main findings of Trammel and Korinek (2023) on the effects of AI on output growth, the labour share, and wages across different model types. These models differ in how far AI can substitute for labour, contribute to idea generation, and augment capital. The authors find that AI could significantly alter long-run growth dynamics, challenging Kaldor’s (1961) “stylised facts” about stable output and labour shares. If human labour remains essential to production, the labour share stays positive and humans retain economic importance. In any scenario where AI capital can self-improve and innovate without human input, however, the implications for labour are far more disruptive. Finally, the authors note that while current models do not show a clear mechanism for existential risk from AI, this reflects a limitation of existing growth frameworks rather than reassurance. Table 2 provides an overview of estimates of the exposure of global labour markets to the adoption of AI technology, as derived from a review of the relevant literature. This table further details the type of technology examined (e.g. generative AI, robotics) and includes additional notes where relevant. As shown, estimates of the exposure of the global labour market range from 15% to as high as 40%, however, there is considerable variability across the range of studies.

2.3 Considering the unknowable

A number of commentators have voiced a concern that expectations are running far ahead of the reality (at least in the medium-term). For instance, Daron Acemoglu of MIT has estimated that only five per cent of all jobs will be impacted by AI – whether these are replaced or assisted – over the coming decade and that much of the productivity gains and efficiencies that are currently envisaged will not be realised for many years (Fox, 2024). Indeed, there is some cynicism emerging regarding the potential of AI technology to deliver the significant change that investors are expecting. While a significant sum has been invested to date, it is unclear when the technology will deliver a return on this investment.¹² The ECB has also raised concerns about the possibility of an AI-related asset price bubble, given the concentration of market capitalisation and earnings among few US firms.¹³ In addition, AI adoption by enterprise continues to lag.¹⁴

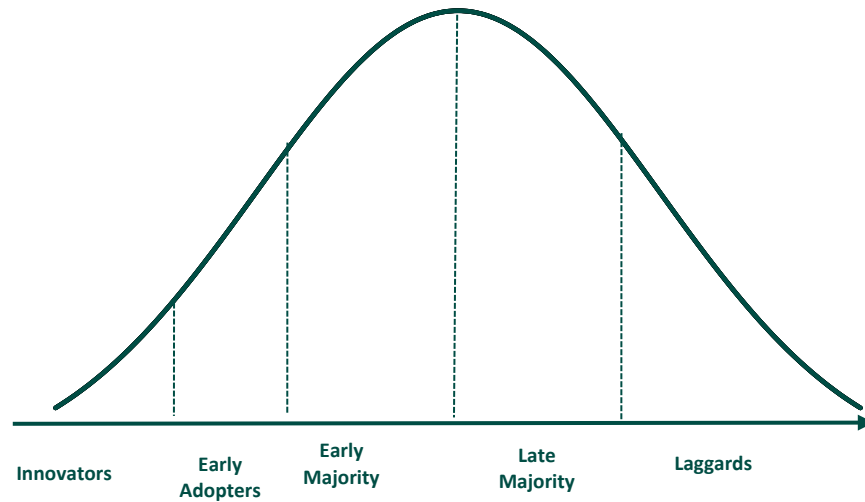
¹¹ Due to slower rates of adoption.

¹² “AI will take time to show a return on investment”, *Financial Times*, July 2024.

¹³ “Financial Stability Review”, ECB, November 2024.

¹⁴ “AI is showing “very positive” signs of eventually boosting GDP and productivity”, *Goldman Sachs*, May 2024.

Figure 1: Example of the Adoption Curve



Source: Authors' based on Rogers (2003). Note: the adoption curve describes the time from initial take up of a new technology by early innovators to widespread adoption and use.

Korinek and Suh (2024)¹⁵ have presented three alternate scenarios regarding the trajectory of AI development and assigns each scenario with at least a 10% probability of occurring. These scenarios range from “business as usual”, where AI has a relatively muted impact on employment, to the advent of AGI in as little as five years, with explosive economic growth implications. For each scenario, this paper warns of the need to reform social security nets, tax systems, the conduct of monetary policy, and financial regulations. In practice, regulations, constraints on capital investment and accumulation, and societal preferences on the role of AI, could all act to limit AI progression and adoption. Brynjolfsson and Unger (2023)¹⁶ also present alternate pathways to describe the macroeconomic impact that AI adoption could have, in terms of productivity, income inequality and industrial concentration, emphasising the role played by public policy in determining which path will ultimately be followed. This paper outlines that no scenario represents a foregone conclusion, and the realisation of the “better future” will require creative policy experiments, including a set of goals for what society wants from AI (as opposed to negative outcomes that need to be avoided), and the flexibility to evolve, alongside the rapidly evolving technological possibilities of AI technology.

These authors find that public policy will ultimately determine the extent to which AI complements – rather than substitutes for – labour, as well as the ability of firms to access AI technology irrespective of their size class. The paper flags an imbalance between the research efforts advancing the frontier of AI technology and the more limited research aimed at understanding the economic and social consequences of adoption. As examined by Acemoglu (2024), the macroeconomic implications of the recent advances in AI technology remain an open question. Acemoglu outlines the potential types of macroeconomic effects that AI can have in the medium run, from revolutionising the economy and bringing about massive improvements in productivity, to more modest impacts on productivity and costs, with ambiguous possible effects on wages. However, the paper notes that there is no evidence of revolutionary effects to date.

3. DATA AND METHODOLOGY

3.1 Constructing a measure of exposure and complementarity

The AIOE (exposure index) measure is derived by breaking down occupations into their constituent tasks and analysing the degree of overlap between these tasks and various AI technologies. Using crowd-sourced dataset¹⁷ on the relatedness between given AI applications and a set of occupational abilities, Felten et al. had previously

¹⁵ *Scenarios for the Transition to AGI*, Korinek and Suh (2024), NBER Working Paper, Available at: <https://www.nber.org/papers/w32255>

¹⁶ *The Macroeconomics of Artificial Intelligence*, Brynjolfsson and Unger (2023), IMF, Available at: <https://www.imf.org/en/Publications/fandd/issues/2023/12/Macroeconomics-of-artificial-intelligence-Brynjolfsson-Unger>

¹⁷ This data set was created using survey responses of “gig workers” from Amazon’s Mechanical Turk web service. Respondents were asked to assess the relatedness between ten AI applications (such as image recognition and translation) and fifty-two occupational abilities (such as oral comprehension and peripheral vision).

constructed a “relatedness” score (bound between 0 and 1) between each occupational ability and each AI application.¹⁸ An occupational ability’s AI exposure (A_{ij}) measures the extent to which each ability is exposed to AI. This is weighted by the prevalence (L_{jk}) and importance (I_{jk}) of that ability within each occupation and scaled by the weighted sum of all abilities used within an occupation (the denominator) to create an AIOE score. Abilities that are essential to an occupation have high prevalence and importance scores, while the opposite is true for abilities that are used less often. This ensures that AIOE provides a relative measure of AI exposure.

$$AIOE_k = \frac{\sum_{j=1}^{52} A_{ij} \times L_{jk} \times I_{jk}}{\sum_{j=1}^{52} L_{jk} \times I_{jk}}$$

An AIOE score, however, only assesses occupational exposure and is agnostic as to whether an occupation is likely to be substituted or complemented by AI. To resolve this issue, Pizzinelli et al. constructed a complementarity measure, θ , to augment the AIOE score. This measure adjusted specifically for two dynamics: job contexts and job zones. The former refers to those factors that shape the nature of work and the latter refers to factors such as occupations characterised by similar levels of education, on-the-job training, and professional experience required to perform the work.¹⁹ A given occupation is assigned a measure of potential complementarity of AI with that occupation and the baseline AIOE exposure level is then adjusted. For the purposes of this paper, we utilise this complementarity adjusted AI occupational exposure (C-AIOE) index to identify the occupations in Ireland that are most exposed to AI and to measure the extent to which AI is a substitute (or complement) for labour in those occupations.

This index provides a quantitative measure of the exposure of different occupations to AI technologies. The main advantage of this methodology compared to others is that it controls for complementarity to better measure occupational exposure to AI. Other studies focus on occupations that could be automated, without adjusting for complementarity (e.g., OECD, 2023; Briggs and Kodnani, 2023; Webb, 2020), or focus on specific AI applications. The World Economic Forum (2023), for example, assessed potential occupational AI exposure and complementarity to large language models only. The AIOE (exposure index) measure, originally constructed by Felten et al. (2021), is derived by breaking down occupations into their constituent tasks and analysing the degree of overlap between these tasks and various AI technologies.

$$C-AIOE_i = AIOE_i * (1 - (\theta_i - \theta_{MIN}))$$

Analysing these two criteria in tandem (exposure and complementarity) is critical to understanding the potential labour market shifts each occupation might encounter over time. Occupations heavily exposed to AI, where tasks can be performed autonomously, may witness a decline in demand for human labour, with implications for labour income and income inequality. Conversely, heavily-exposed occupations with a high degree of complementarity to AI could see productivity enhancements, leading to an increased demand for labour. Complementarity can only be leveraged, however, if workers develop the skills required to take advantage of AI as a supporting technology. The median values for AIOE and θ ²⁰ used here are taken from Felten et al. and Pizzinelli et al., respectively, to allow for cross-country comparisons.²¹ When interpreting the findings presented below, it is important to bear in mind that the measures of exposure and complementarity used in this study are both relative measures. They describe which occupations are more or less exposed/complementary than others. A high C-AIOE score does not mean that an occupation, or tasks within that occupation, will be replaced, but rather signifies its comparatively higher exposure to AI than other occupations.

This analysis was undertaken as an early contribution to the public discourse in this field but there are, however, some important caveats attaching to this work. Firstly, the measure of AI exposure used in this study – drawing on the work of Felten et al. – focuses on ten specific AI applications, all of which can be considered to be “narrow” AI. Given that Felten’s work was published in 2021, it does not capture the latest advancements in AI

¹⁸ The AI applications were based on categories defined by the Electronic Frontier Foundation’s (EFF) AI Progress Measurement project, while occupational abilities were extracted from the Occupational Information Network (O*NET) database developed by the United States Department of Labour.

¹⁹ As with the AIOE measure, this complementarity measure was created by using aspects of the O*NET repository, specifically work contexts and job zones. O*NET defines work contexts as the “physical and social factors that influence the nature of work”. These include contexts such as “public speaking” and “frequency of decision making”.

²⁰ These are used here: the median values for AIOE and θ across all US SOC-2010 occupations are 6.002 and 0.576, respectively.

²¹ Pizzinelli et al. later converted the US-based SOC occupations into broader ISCO-08 occupations for their analysis. ISCO is the International Standard Classification of Occupations. For the purposes of this paper, it was possible to map ISCO-08 occupations to UK SOC codes, which is the occupational classification system used in Ireland, using a crosswalk from ISCO-08 to UK SOC-2010.

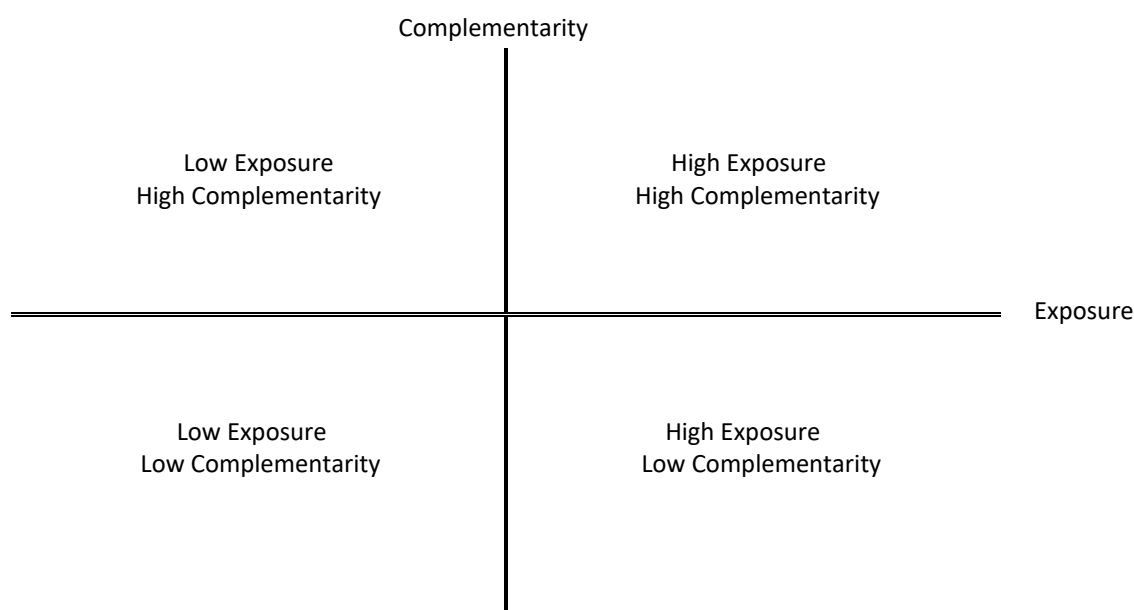
technology, such as document summarisation or LLM-based searching – AI applications that are already widely used through software such as ChatGPT, Gemini, Copilot and others. As with any new technology or innovation, research on the impact of AI will always lag behind the rapid pace of development in the field.

Secondly, this analysis provides a static view of AI exposure and complementarity. The analysis does not consider workers' ability to re-locate across sectors or to develop new skills to realise the benefits of AI, even when their occupation has relatively low complementarity with AI applications. The analysis only provides an indication of relative exposure based on recent understandings of AI applications²² and does not attempt to predict how AI technologies will evolve in the future, nor the rate of adoption across the enterprise base. The extent to which AI augments or replaces human labour will depend on a variety of economic, social and policy factors, including levels of AI regulation.

3.2 Conceptual framework

We outline a framework whereby each occupation is presented as belonging to one of four categories: (i) High Exposure, High Complementarity; (ii) High Exposure, Low Complementarity; (iii) Low Exposure, High Complementarity; and (iv) Low Exposure, Low Complementarity (Figure 2). Quadrants are segmented using the median values of both AIOE and θ . In other words, an occupation is considered to be 'highly exposed' if its AIOE value is greater than the median AIOE across all occupations. Similarly, if an occupation's complementarity value θ is greater than the median θ across all occupations, then it is considered to be 'highly complementary'. If an occupation has high exposure and low complementarity then it is considered to be 'at risk'. Importantly, as the quadrants are split using the median values of both exposure and complementarity of US-SOC occupations, the total number of occupations is not split equally between the four quadrants in Ireland. For example, 72 occupations are considered to be in a relatively 'at risk' (high exposure, low complementarity) category, while 105 occupations are located in the 'high gain' (high exposure, high complementarity) quadrant in Ireland. The US-SOC figures are used to allow for consistent cross-country comparisons.

Figure 2: Conceptual Framework for AI Exposure and Complementarity



Source: IMF

²² These exposure/complementarity levels are relative across occupations. In a scenario where an equal number of people were employed in each occupation, 25% of employment would fall into each of the respective exposure/complementarity categories.

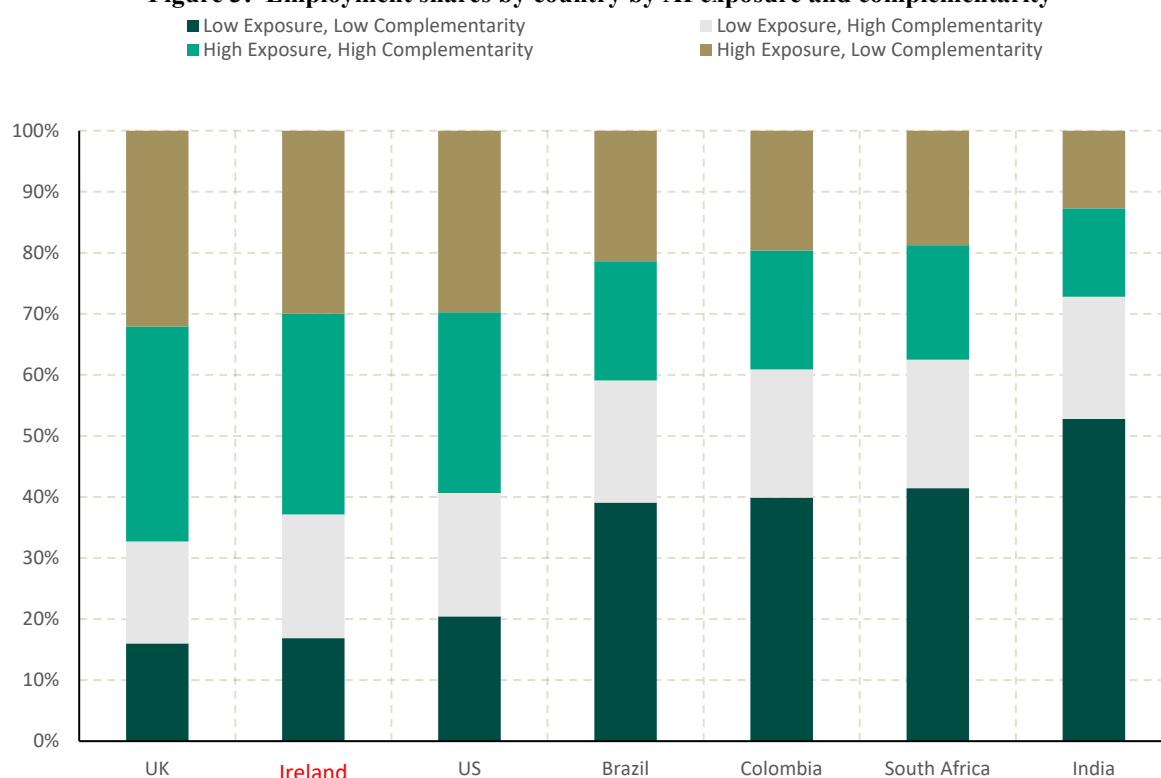
4. RESULTS AND DISCUSSION

4.1 Overall results and international comparators

The IMF has estimated that 60% of employment in advanced economies is highly exposed to AI. Our own work, however, has indicated that 63% of employment in Ireland is relatively highly exposed to AI, with 30% of employment falling into the ‘at-risk’ category (or high-exposure, low-complementarity)²³ and approximately 37% of persons work in occupations that are considered to have low exposure to AI. These results would suggest that Ireland’s labour market is marginally more exposed to AI than the advanced economy average, with 63% of persons in employment working in highly exposed occupations. In their analysis, Cazzaniga et al, focused on six countries at various levels of economic development: the UK, US, Brazil, Colombia, South Africa and India. Figure 3 presents a visual representation of the employment shares in each exposure-complementarity category within each country. For comparison, Ireland’s shares of employment have also been included below.

Of this cohort, only the UK has greater labour market exposure to AI than Ireland, with 67% of persons in employment working in highly-exposed roles. In the US, just under 60% of persons are employed in highly exposed roles, in line with the average across all advanced economies (Cazzaniga et al, 2024). While Ireland may have a higher-than-average share of persons in highly-exposed roles, Ireland also has a high share of persons working in high-complementarity roles. Approximately 53% of persons in Ireland work in roles which are highly complementary to AI, compared to 52% in the UK, and 50% in the US. In emerging market economies, such as India, the share of persons working in highly exposed roles is much lower, although a far lower proportion of persons work in roles that are highly complementary to AI. There appears to be a high degree of polarisation in exposure to AI in the Irish labour market. On the one hand, a considerable share of workers are employed in high-exposure, low-complementarity roles, and are therefore at higher risk of labour displacement. On the other hand, there is a substantial share of workers employed in high-exposure, high-complementary occupations. According to the IMF, these are the workers that are most likely to gain from increased AI adoption, potentially experiencing productivity gains.

Figure 3: Employment shares by country by AI exposure and complementarity



Source: IMF and author’s calculations

²³ There are a number of caveats in relation to this work to be borne in mind. Firstly, the AIOE measure of AI exposure developed by Felten et al focuses on ten specific AI applications, all of which can be considered to be ‘narrow’ AI and does not capture more recent technological advancements. Secondly, as with any new technology or innovation, research on the impact of AI will always lag behind rapid pace of development of the field. The analysis provides an indication of exposure based on recent (2021) understandings of AI applications and does not attempt to predict how AI technologies will evolve in future.

4.2 Results by economic sector and occupation

To give some indication as to the type of roles that fall into each category, four occupations per quadrant are labelled in Figure 4. The roles of ‘Nurses and Midwives’ and ‘Barristers and Judges’, for example, are highly exposed to AI but also display a high level of complementarity. In comparison, ‘Telephone Salespersons’ and ‘IT Operations Technicians’ are also highly exposed to AI but have relatively low levels of complementarity with the technology. For ‘Telephone Salespersons’, the extent to which AI replaces human labour will depend on a number of factors, including societal preferences and the value consumers place on human-to-human interaction. For instance, AI may be adept at handling routine telephone queries but non-standard conversations are likely to require human intervention. In other words, AI may struggle to build meaningful long-term relationships with clients and these can be critical for creating customer loyalty. This example underlines the fact that there remains a great deal of uncertainty of AI’s potential impact on various occupations, and results should be interpreted with this in mind.

The bottom right quadrant can be viewed as reflecting an ‘at risk’ area, where occupations are relatively more exposed and substitutable to AI applications. The closer an occupation is to the bottom right-hand corner, the greater its relative risk to AI. It is again important to highlight that occupations falling into this category will not necessarily be substituted (or transformed) by AI. Rather, our current understanding of AI applications indicates that these are the occupations which would be most at risk, relative to other occupations. There are 72 occupations in Ireland which fall into this category. These occupations account for 30% of total employment in Ireland. When we consider the position of different occupations, Figure 6 illustrates the share of employment in Ireland within each exposure/complementarity category across broad occupational groups.

For instance, highly skilled occupations such as Managers, Directors and Senior Officials, alongside Professional Occupations, are highly exposed to AI. These, however, are also likely to benefit from high levels of complementarity. For those working in Professional Occupations, two-thirds of same work in high-exposure, high-complementarity roles. Persons in these occupations potentially have the most to gain from AI, provided they are equipped with the skills to use AI as a supporting technology. On the other hand, Administrative and Secretarial Occupations and Sales and Customer Service Occupations are considered to be most ‘at risk’ from AI, relative to other occupations. Almost all occupations falling into these two broader occupational groups are in the ‘at risk’ category. These workers may need to be targeted for re-skilling and up-skilling interventions to ensure smooth transitions to more viable occupations. Other occupational groups, such as Elementary Occupations, Process Plant and Machine Operatives, and Skilled Trades Occupations, are considered to be relatively low risk in terms of their exposure to AI. These groups may have greater exposure to other digital technologies such as robotics, however, which isn’t captured in this measure of AI exposure.

Alternatively, we can examine these analyses through the prism of those NACE sectors in which persons are employed. The ‘Financial and Insurance’ and ‘Information and Communication’ sectors are most exposed to AI, with 97% and 94% of persons in these sectors working in highly exposed occupations, respectively. The majority of these workers are in relatively ‘low complementarity’ roles, potentially posing a risk to employment as occupations within these sectors are relatively substitutable to AI. However, increased AI adoption within these sectors will give rise to new firms and new jobs, especially those involved in the designing and building of AI systems. There will therefore not necessarily be job losses in these sectors, but rather a redeployment of labour from low complementarity to high complementarity roles. Ireland’s skills architecture will need to be adaptable enough to ensure that education and training provision is aligned with rapidly changing skills needs.

At the other end of the spectrum, the Agricultural, Forestry and Fishing sector is least ‘at risk’ from increased AI adoption, with the majority of persons working in this sector being employed in low exposure roles. Worth noting is the extremely high share of persons in high exposure, high complementarity roles within the Education sector. AI has the potential to enhance various teaching and administrative processes within the education sector. In particular, AI has the potential to automate marking for certain types of tests (e.g. multiple choice) and provide real-time feedback on students’ work. In addition, AI may also be able to assist with curriculum design and creating new teaching materials, freeing up teachers to focus on tasks that require human interaction and creativity. This sector therefore potentially has the most to gain in terms of productivity improvements, provided workers are equipped with the skills to use AI as a supporting technology.

From a Gross Value Added (GVA) perspective, sectors with the highest GVA – with the exception of manufacturing (although this will be highly exposed to robotics) – appear to be the most exposed to AI applications. In simple terms, GVA is the value that producers have added to the goods and services they have bought. It is a measure of the individual contributions of different sectors to the economy. Sectors highly exposed to AI could potentially benefit most from increased productivity, investment and competitiveness. This would serve to boost GVA further but these sectors most likely to face the greatest labour market disruptions. In the

text that follows, we consider how AI exposure and complementarity varies with workers' demographic characteristics. It is possible to build a picture of the type of workers that are most vulnerable to AI, and those that are most likely to benefit from AI adoption.

Figure 4: AI Exposure (AIOE) and Potential Complementarity (θ) in an Irish Context

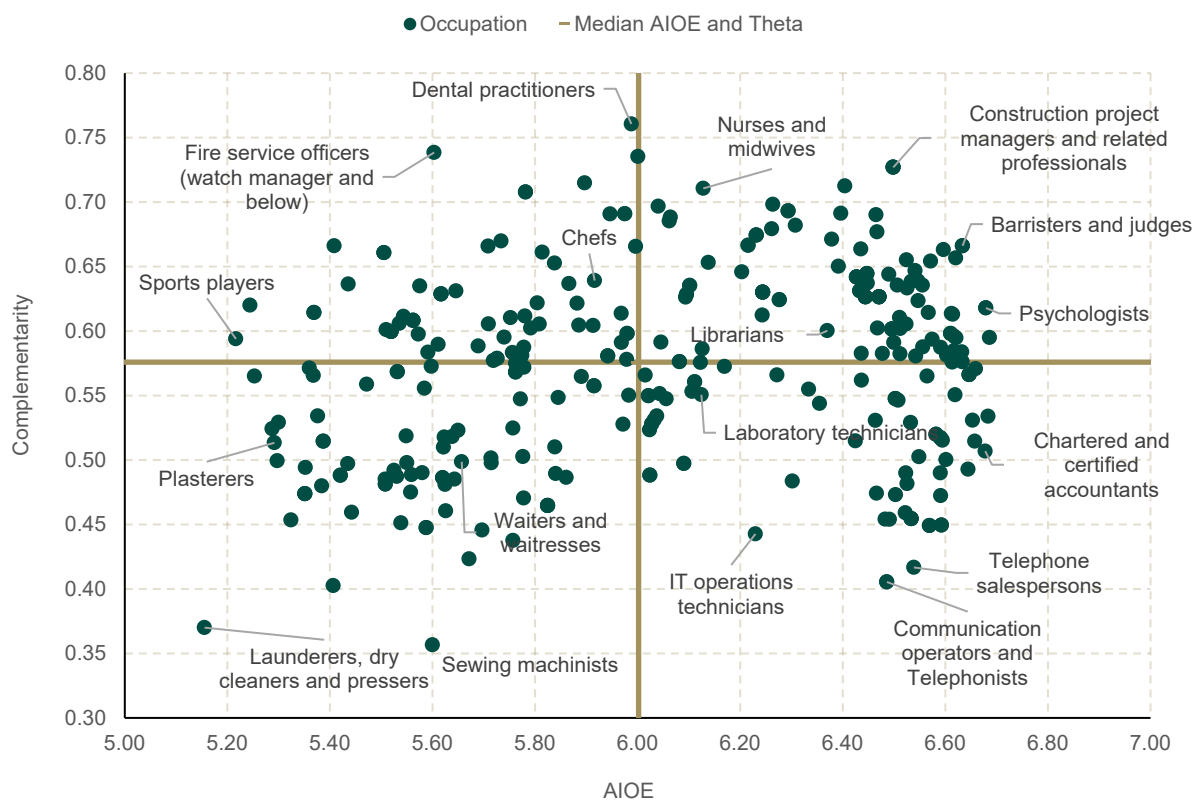


Figure 5: AI exposure and complementarity across economic sectors

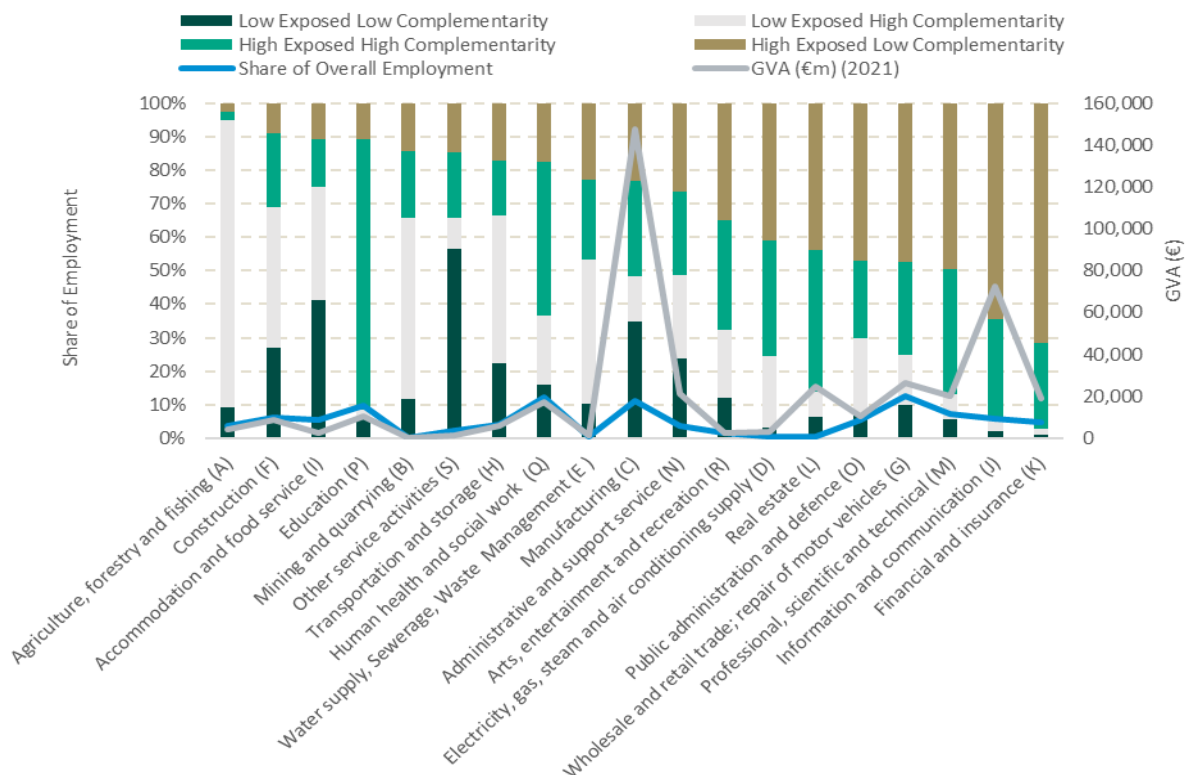
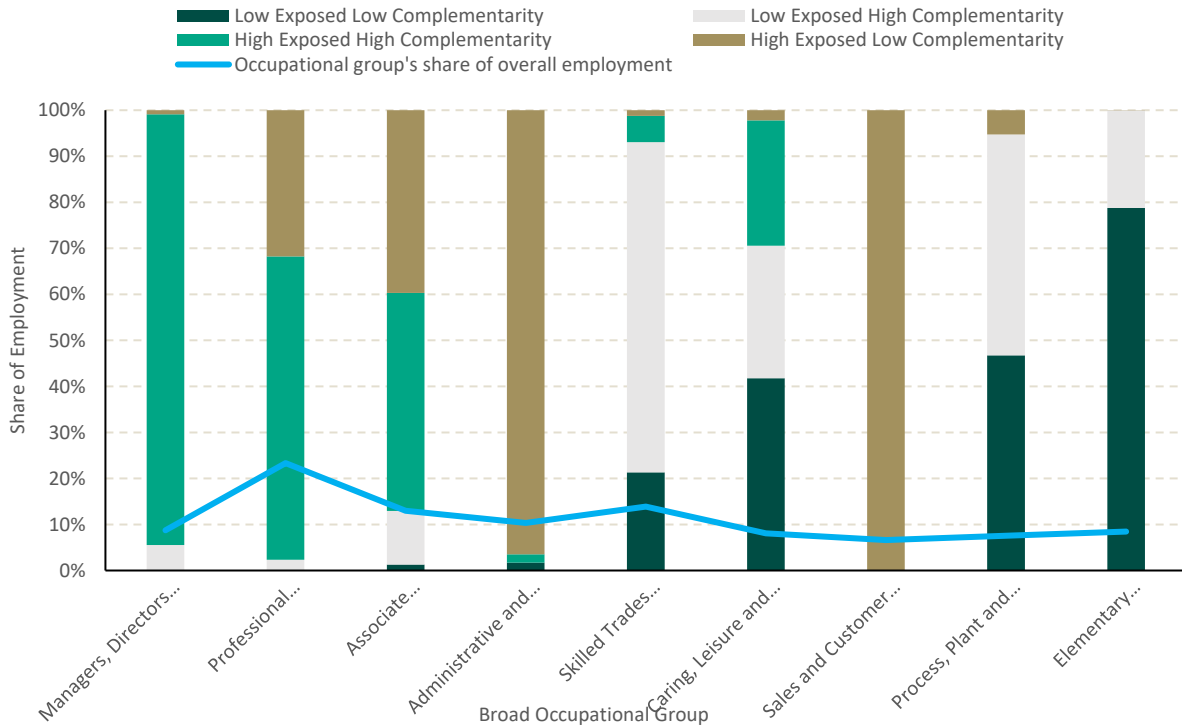


Figure 6: AI exposure and complementarity across broad occupational groups



Source: Author's calculations

4.3 Overview of additional considerations

When looking at exposure and complementarity, the relative employment shares differ significantly for males and females (see: Annex). Females are far more likely to work in highly exposed roles compared to males, with 76% of females working in occupations in these categories. This is compared to 51% of males. Furthermore, approximately 38% of females are employed in roles which are considered to be most 'at risk' of AI disruption, far higher than the share of males in this high-exposure, low-complementarity category (23%). For example, approximately 5.8% of females are employed as 'Sales and Retail Assistants', an occupation which is considered to be highly exposed with low complementarity. In comparison, only 2.5% of males are employed in these roles.

Younger workers (with the exception of those aged <24 years) appear to be slightly more exposed to AI compared to older workers, with greater shares working in both 'at risk' and 'high gain' roles (Figure 8). This is expected given the educational attainment levels of the various cohorts. Older workers are much more likely to have left education with no/few formal qualifications and consequently, to be working in those Elementary or Skilled Trades roles which have relatively low exposure to AI. Despite their lower exposure, older workers are less likely to engage in lifelong learning and are typically less proficient at using digital technologies. It will be important to ensure that AI re-skilling/up-skilling interventions manage to reach groups that have previously had little engagement with the further education system.

An individual's educational attainment is a strong predictor of their likely exposure and complementarity to AI in their job. It is possible to assess the varying levels of educational attainment levels with regard to AI exposure and complementarity. Exposure to AI increases as educational attainment increases. Approximately 95% of persons with a Doctorate work – or did work (for unemployed persons) – in occupations that are highly exposed to AI. This compares to just 26% of persons in the lowest educational attainment category (no formal education/primary education/lower secondary education). It is notable that exposure to AI not only increases with educational attainment, but complementarity does too. Persons with the lowest levels of educational attainment are more likely to work in low complementarity jobs (49% of persons in this category are in/were in high complementarity roles), compared to 80% of persons with a Doctorate.

Finally, this analysis suggests that there is a positive correlation between AI exposure and earnings. Approximately 44% of occupations in the first decile are 'highly-exposed' to AI, compared to 97% in the 9th decile and 90% in the top decile. Potential AI complementarity also increases with earnings, in a similar vein to educational attainment. This suggests that higher earners stand to benefit most from increased AI adoption, with potential implications for income inequality. This is consistent with findings by the IMF (Cazziniga et al, 2024). Occupations in the 'at risk' high exposure, low complementarity category, are more evenly distributed across the earnings distribution, however, with the highest share of occupations in this category falling in the 6th income decile.

4.4 Examples of a Labour Market Beyond AI: Advanced Robotics

As presented in Section 4 above, there are a variety of elementary and skilled trade occupations – from cleaners and drivers to decorators and tilers – that would appear to have a limited risk of exposure to AI but this is not the whole story. The AIOE measure presented earlier does not capture exposure to AI-enabled robotic technologies. At present, some but not all robotics incorporate AI technologies. This is, however, clearly an area characterised by rapid and significant change and the integration of advanced robotics and AI has the potential to further impact the labour market. For instance, we can already see the emergence of AI-powered robots with the ability to collect, analyse, and act on information about their surroundings in near real-time in order to complete tasks. These robots use cameras, accelerometers, and sensors – for vibration, proximity, and other conditions to collect information about their environment – which allows them to undertake real world physical tasks. Examples of these include the use of AI-enabled robots to greet customers in stores and provide personalized information and directions; to harvest vegetables; to serve made-to-order lattes in coffee shops, and to handle physically demanding and/or dangerous tasks. There is then the potential for impacts that go beyond ‘narrow’ AI alone and this will ultimately further re-shape the labour market for what we may now consider to be ‘manual occupations’ (i.e., driverless vehicles and the automation of tasks such as tile-laying, window-cleaning, and landscaping services).

5. CHALLENGES FOR PUBLIC POLICY

Those analyses presented above demonstrates that there are a number of sectors across Ireland’s economy that are exposed to some degree of risk (i.e., high exposure but low complementarity). This includes a broad range of sectors – from manufacturing to professional services and from ICT to finance – that make an important contribution to the economy in terms of employment generation as well as value-added and tax revenues. Indeed, a number of these sectors are characterised by a high concentration of foreign-owned firms and the latter have consistently been an important source of high-end employment. For instance, the MNC sector provides close to 10% of total employment in Ireland at present as well as close to 58% of total GVA²⁴ across the economy. The challenges which rapid, and accelerating, technological change pose for public policy, however, are not simply limited to considerations around employment. These will inevitably also touch on the necessity to re-focus Ireland’s FDI proposition in a way that allows us to not only maintain our current MNC base but also ensures that we remain a destination of choice for future waves of investment. The State will also have a central role to play on issues pertaining to regulation and compliance, in taking steps to remove any barriers to the adoption of new technologies and in supporting the SME sector to make the transition.

5.1 Public Finances

In addition to remaining competitive for future FDI, there are also considerations relating to Ireland’s Exchequer. In the first instance, these relate to the composition of Exchequer revenues given that Corporation Tax now accounts for 27% of total Exchequer revenues (compared to 11% a decade previously (Figure 7)). A question arises then as to the capacity of the public finances to absorb – and adjust to – any unexpected and rapid structural change in the balance between corporation, consumption and income taxes. A further consideration is necessity of meeting the demand for further public expenditure. For instance, there will continue to be increasing demand on the National Grid arising from the necessary accelerated electrification of our economy and society, including energy consumption from data centres located in Ireland, in part due to the digitalisation of enterprise (and in particular, the use of energy-intensive AI technology). This will require elevated future investment in the National Grid. The National Competitiveness and Productivity Council (2024) has noted that data centres equipped to support AI servers are significantly more energy intensive. These could potentially consume ten-fold more energy than standard data centres currently located in Ireland. Based on projected demand from existing and proposed data centre projects that are either already connected to the National Grid or have signed connection agreements, data centres will drive a significant increase in aggregate power consumption over the coming decade.

Further development of this critical digital infrastructure, notably in respect of power-intensive AI data centres, would clearly accelerate this trend. Given that data centre projects are, however, a potentially important anchor²⁵ for the presence of many high value-added enterprises in Ireland, it is difficult to reasonably argue that Ireland can continue to attract and retain such investment without unlocking development in associated enabling infrastructure. To ensure continued economy-wide decarbonisation, and robust energy security, this will require further investment in renewable energy, dispatchable electricity generation, and the National Grid. (Figure 8).

²⁴ Refers to non-financial corporations in 2023.

²⁵ This remains to be seen as it is unclear as to whether Ireland will be – in the long-term – a viable location for next generation data centres.

Figure 7: Composition of Tax Receipts 2013-2023

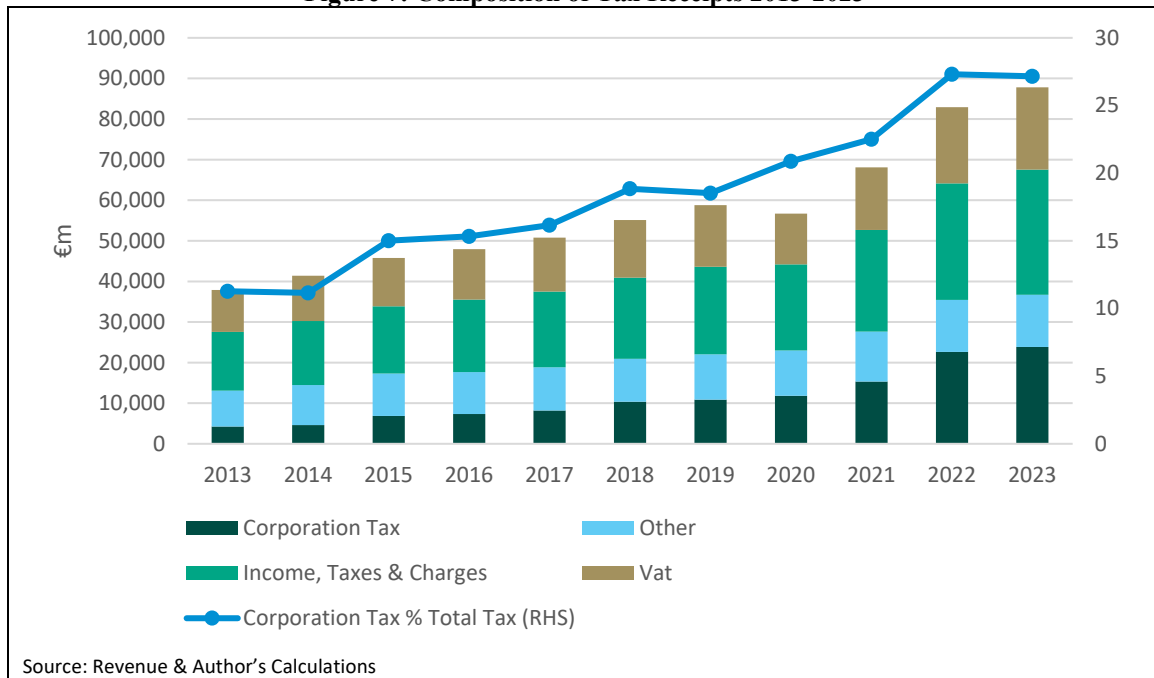
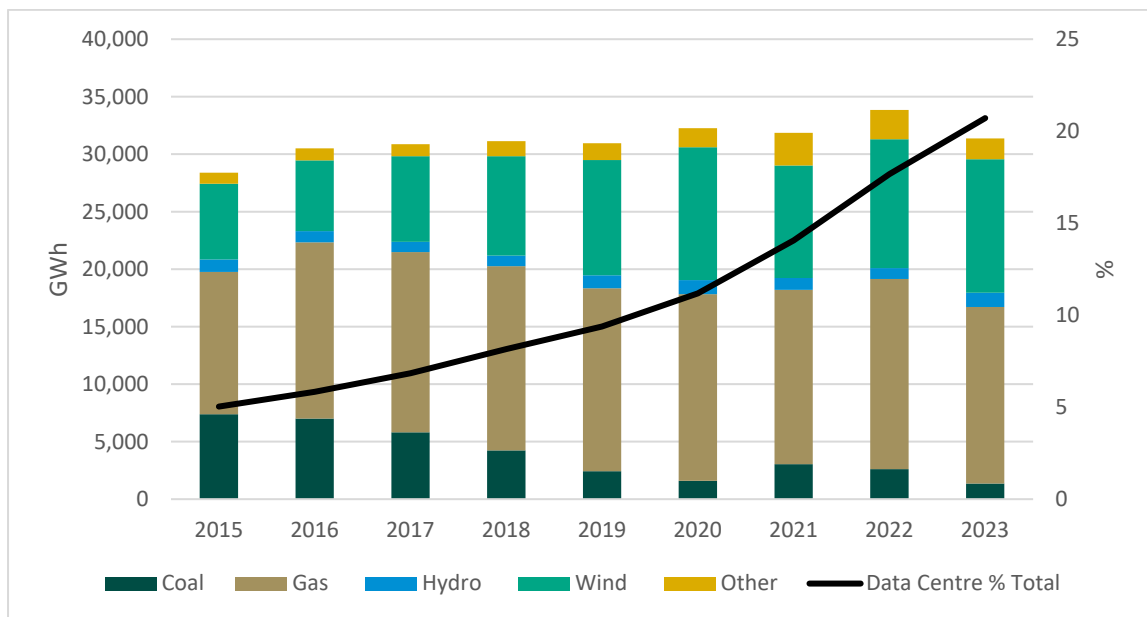


Figure 8: Electricity Generation by Fuel Type²⁶ and Data Centre Energy Consumption as % of Total Metered Consumption



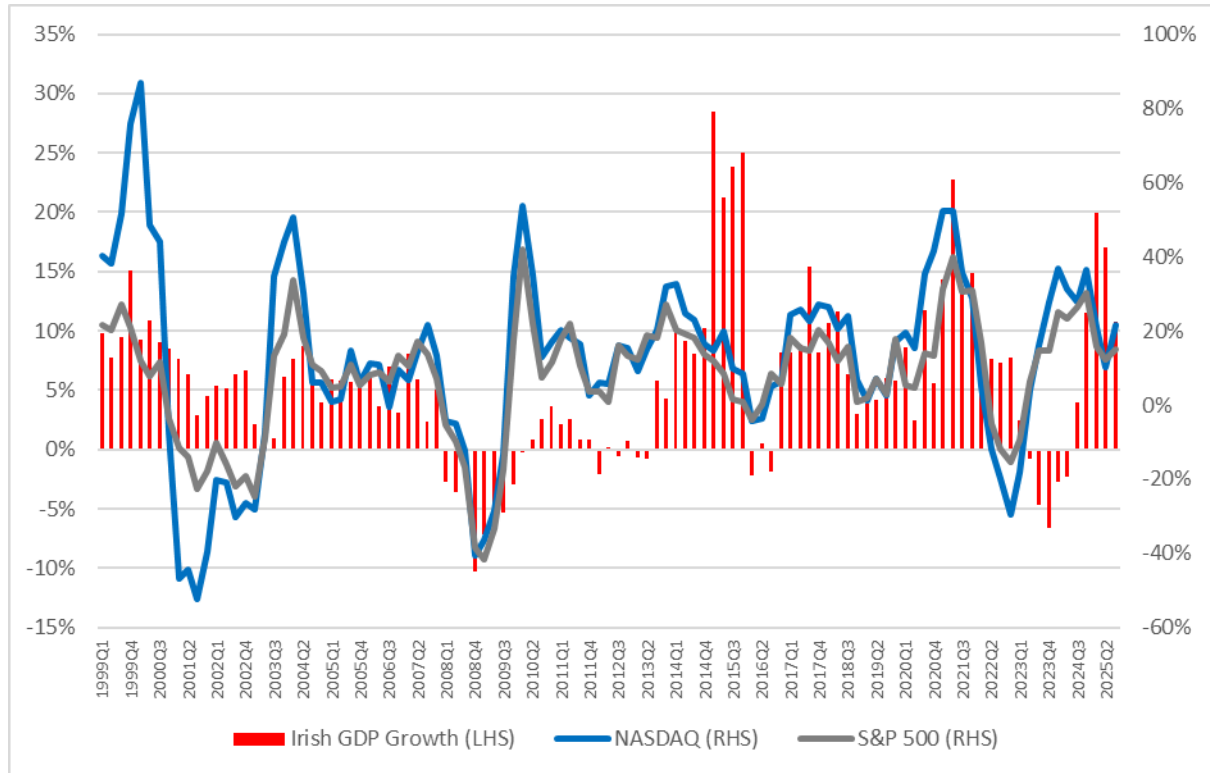
Finally, there is also the risk of damage to Ireland's economic growth (and tax revenues) arising from the bursting of any (possible) speculative bubble around AI investments. It is clear that many large corporations are investing significantly in AI and other new technologies with a small group of core MNCs leading in this regard. Some of these corporations have in turn, now come to account for close to 30% of the entire S&P 500 Index. In the case of Nvidia alone, the share price has increased by 300% in just the past two years and the market capitalisation of this one corporation is now greater than the UK's GDP (see Table 3).

²⁶ 'Other' includes oil, biofuel, waste and solar PV.

Table 3. Market Cap of the five largest US technology firms

Company	2016 Market Cap	2021 Market Cap	2026 Market Cap (February)	2016 vs. 2026
Nvidia	\$57.53B	\$735.27B	\$4.184T	+7,180%
Apple	\$608.96B	\$2.901T	\$4.055T	+566%
Microsoft	\$483.16B	\$2.522T	\$2.925T	+505%
Amazon	\$356.31B	\$1.691T	\$2.380T	+568%
Alphabet	\$546.19B	\$1.918T	\$4.01T	+634%

In previous periods, we have witnessed the impact of the bursting of stock market bubbles in the US – the dotcom bubble in 2000 and the GFC in 2008, for example – rippled outwards and how these impacted the global economy (including Ireland) and weighed on sentiment and investment. In the case of the former, this was one of the factors which contributed to a global slowdown in 2000 and 2001. For Ireland, this was echoed in a notable fall-back in the rate of economic expansion in late-2000 and again in late-2001 (Figure 9) and in sectoral terms, there was a year-on-year fall in ICT employment in late-2000 and early-2001.²⁷ In the case of the latter period, much has already been written on this topic but suffice to say, this greatly exacerbated the consequences of the ending of our own domestic construction boom with significant adverse impacts upon growth, employment and tax revenues. Beyond these specific considerations, the Exchequer will no doubt have a role to play in a variety of other areas, including the funding of education, activation and upskilling measures as well as ensuring that Ireland’s social welfare system continues to protect those most at-risk (perhaps, ultimately, through some form of Universal Basic Income (UBI)).

Figure 9: Ireland’s GDP Growth (q-on-q) versus change NASDAQ and S&P 500 (quarterly average)

Source: Authors' based on NASDAQ; S&P

²⁷ Between 2002-2004, there were annualised declines in ICT sector employment for ten consecutive quarters.

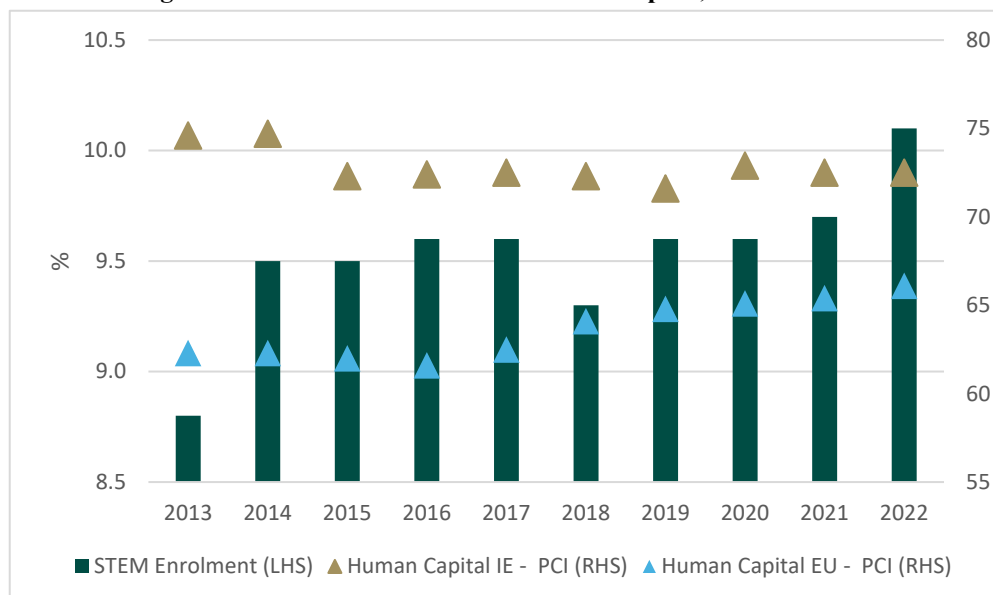
5.2 Education, Skills and Lifelong Learning

Public policy will also need to be sufficiently agile to avoid a two-tier labour market and to ensure that social safety nets are fit-for-purpose. In terms of education and skills policy, the work presented above indicates that AI is highly complementary with higher levels educational attainment. The capacity to leverage the potential benefits afforded by AI requires that workers develop the skills necessary to take advantage of AI as a supporting technology. This, in turn, underscores the importance of public investment in education, including life-long learning and the provision of upskilling and reskilling opportunities. Programmes aimed at continuous skills development for young cohorts (given their high relative exposure), and to promote the greater participation of women in high complementarity roles will be key to facilitating a just transition, and to ensure that Ireland is well positioned to take advantage of future opportunities.

According to the UN's Productive Capacities Index (PCI), Ireland already scores highly in terms of human capital.²⁸ Ireland scored 73 in 2022 (compared to 66 for the EU as a whole) but there is still work to be done. Ireland lags not just the US (82) but also small, advanced economies such as Finland (90) and New Zealand (80). The proportion of students enrolled in STEM subjects (Science, Technology, Engineering and Mathematics) in Ireland has increased significantly over recent years (Figure 10) and by 2022, Ireland had the highest proportion of tertiary education graduates in STEM subjects (40%) across the EU. This compared very favourably with the EU average (23%).²⁹

This notwithstanding, the Irish Universities Association (2023) have criticised public policy relating to STEM as inadequate and called for greater integration between second and third-level education. Ireland also outperforms almost all EU member-states – as well as North America – in terms of expected years of schooling³⁰. An Irish child can now expect to spend approximately 19 years being educated. The comparative figure in 1990 was less than 13 years (with an increase of almost three years occurring between 1997 and 1998 following the phasing out of third-level student fees between 1995 and 1997). Indeed, only Australia, Finland and New Zealand performed better than Ireland under this metric (based on data as at 2022). This metric, however, does not reflect the subjects being taught during this period. Furthermore, whilst the take-up of lifelong learning in Ireland has improved over time, it still remains very low. For instance, only 12% of persons participated in learning in 2023 (Figure 11 a and b). This is below the EU average and significantly lags the performance of countries such as Sweden and Denmark. The OECD has found that the number of days of instruction in a school year in both lower and upper secondary public school are particularly low in Ireland³¹ whilst the instructional time allocated to maths and science at primary level lags the EU average. Indeed, the National Academies of Sciences, Engineering, and Medicine (2024) found that AI will have a significant impact on education at all levels. This relates not solely to the delivery – and take-up – of lifelong learning but also to what subjects are taught at school and how they are thought.

Figure 10: STEM Enrolment and Human Capital, 2013-2022



Source: Eurostat & UNCTAD PCI

²⁸ This measure captures the education, skills and health conditions possessed by population, and the overall research and development integration in the texture of society through the number of researchers and expenditure on research activities.

²⁹ [Tertiary education statistics - Statistics Explained](#)

³⁰ Number of years a child of school entrance age can expect to receive if the current age-specific enrollment rates persist throughout the child's years of schooling.

³¹ [Education GPS - Ireland - Overview of the education system \(EAG 2024\)](#)

Figure 11a: Expected Years of Schooling and Lifelong Learning, 2007 - 2022

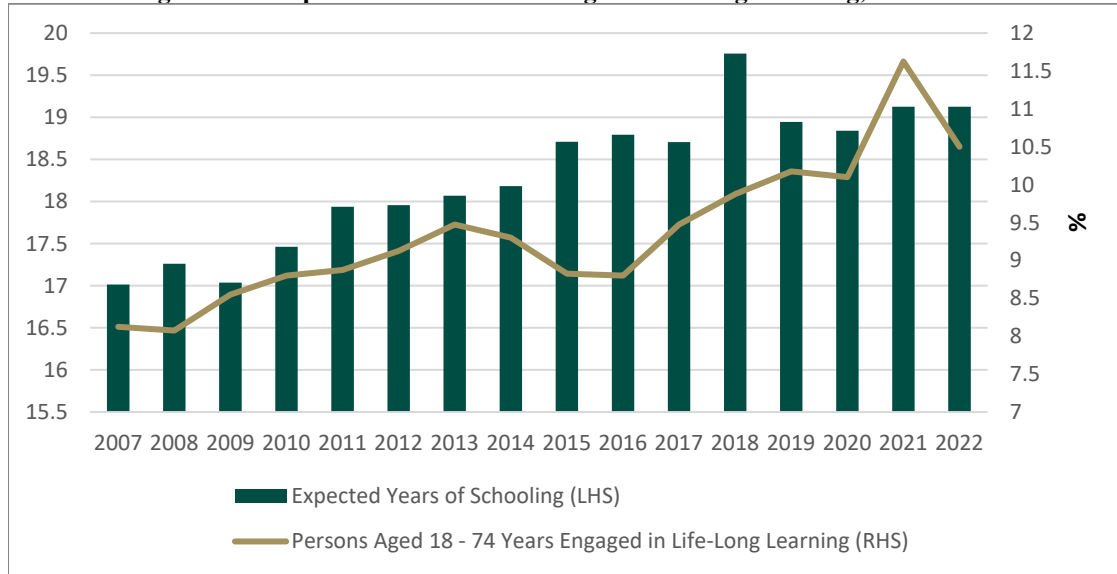


Figure 11b: Total Instructional time in Primary/Lower Secondary Education and Proportion of Instructional Time Spent on Science and Math Education, Ireland vs EU, 2023



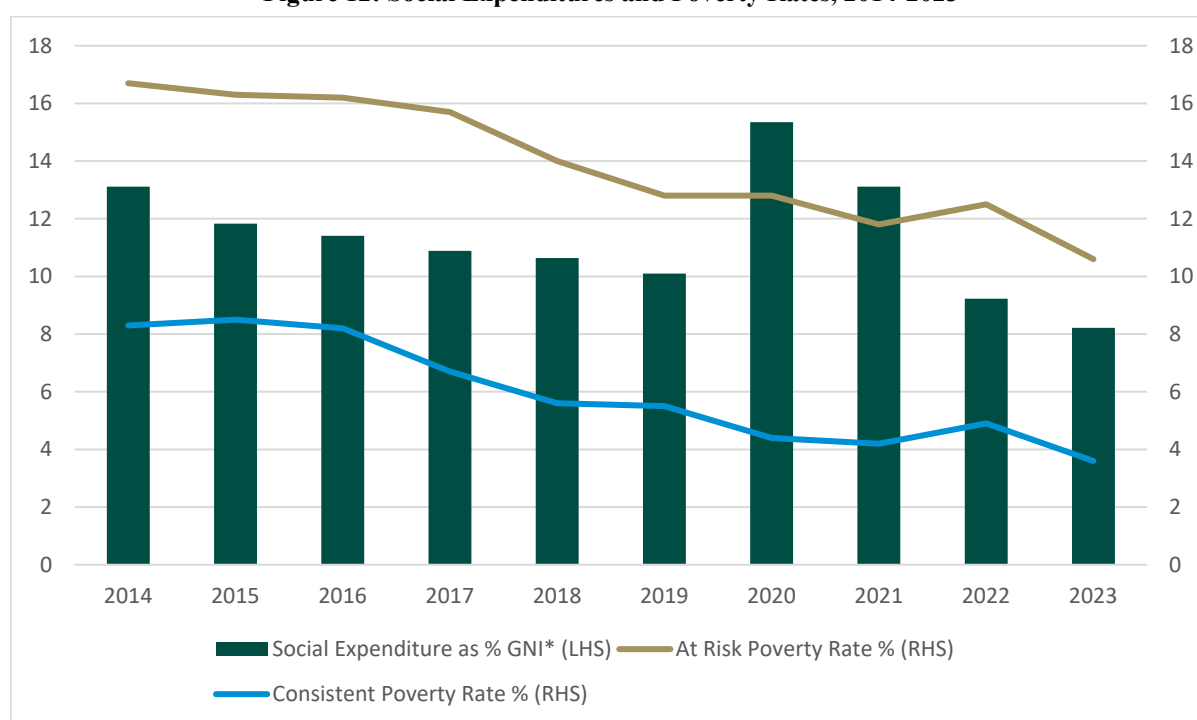
5.3 Public Trust and Social Inclusion

Ireland has made significant progress in terms of tackling poverty and inequality over the past decade. Both the AROPE³² and consistent poverty rates have fallen since 2013 (Figure 12) but technological change will present a new range of challenges to be addressed. Public policy has a role to play in ensuring that technological change does not compound existing inequalities. Specifically, there is a need to ensure that robust frameworks are in place to ensure distributive justice in the allocation of access to beneficial forms of technology lest change happens in a manner that further disenfranchises poorer communities, reduces opportunities and narrows the scope for upward social mobility. To this end, public policy will need to be agile, promoting a fair transition and – should displacement occur – assist workers in adapting to a changing labour market.

³² At risk of poverty of social exclusion

Finally, the National Competitiveness and Productivity Council (NCPC) recently developed a new *Competitiveness and Productivity Framework*, an analytical tool to guide and shape future analysis of these themes in the Irish context (Coates et al., 2024). This framework identified six drivers of competitiveness and productivity, including macroeconomic stability; infrastructure; and education and skills. This framework posited effective and stable public institutions – including the role of reputational capital to the State – as an important determinant of broader macroeconomic stability but this is another sphere where AI could potentially present a challenge to public policymakers. More specifically, the spread of misinformation – including the increasing prevalence of realistic but false images and audio (or deepfakes) and online echo chambers – could have serious and negative consequences for public discourse via the rise in polarisation and separation that will likely follow (European Parliament, 2023). These factors represent a threat to both public trust in these shared institutions and to democracy as well as posing risks with regard to data protection, privacy rights and the cybersecurity of public services.

Figure 12: Social Expenditures and Poverty Rates, 2014-2023



Source: CSO and Author's Calculations

6. CONCLUDING COMMENTS

The paper then assesses Ireland's overall labour market exposure to AI and places these results in a comparative international context. We do so by means of building upon methodologies developed by Felten et al. (2021) and Pizzinelli et al. (2023) in order to create a complementarity-adjusted AI occupational exposure (C-AIOE) index for Ireland. This approach allows us to consider both exposure and complementarity in parallel. This is critical to understanding the potential labour market shifts a given occupation might encounter over time. For instance, those occupations heavily exposed to AI – and where tasks can be performed autonomously – are likely to see a decline in demand for human labour. By contrast, heavily-exposed occupations with a high degree of complementarity to AI could see productivity enhancements, leading to an increased demand for labour. This paper suggests that the impacts of AI on the labour market are unlikely to be uniform. We find that 63% of employment in Ireland is relatively highly exposed to AI, with 30% of employment falling into the 'at-risk' category.

This finding suggests that Ireland is relatively more exposed to AI than is the case for other advanced economies. We also find distinct differences in the likely impact of AI adoption for workers across multiple dimensions. For instance, we find that female workers in Ireland are far more likely to work in highly exposed roles compared to males and that younger Irish workers are more exposed to AI than are older workers. We also find that whilst exposure to AI increases in line with educational attainment, so too does complementarity. The extent to which AI augments, or replaces, human labour in the medium to long-run will depend on a variety of economic, social and policy factors, including levels of AI regulation. Furthermore, the capacity to leverage the potential benefits afforded by AI requires that workers develop the skills necessary to take advantage of AI as a supporting technology.

As with any new technology or innovation, research on the impact of AI will always lag behind the rapid pace of development in the field. The measure of AI exposure used in this study focuses on ten specific AI applications, all of which can be considered to be “narrow” AI. Given that Felten’s work was published in 2021, it does not capture the latest advancements in AI technology, such as document summarisation or LLM-based searching. These are AI applications that are already widely used through a variety of software models. Furthermore, the AIOE measure used here does not capture exposure to advanced robotics. As noted above, advanced robotics – and the integration of same with AI – will further re-shape our understanding of the future of work and have profound impacts on the labour market. The analysis presented here only provides an indication of impacts based on recent understandings of AI applications and does not attempt to predict how AI technologies will evolve in future, nor the rate of adoption across the enterprise base.

These impacts, and the scale and speed of change, present a series of challenges for public policymakers. It is clear that the economic impact is dependent on a variety of factors, from the rate at which AI’s capabilities evolve to the scale and speed of adoption to a series of demographic, social, institutional, and political forces. The recency of these developments means that it is quite challenging to forecast the impact of these changes but it is clear that these will not impact solely on the labour market but will also have consequences for public policy in terms of Budgetary strategy, public trust, education and social inclusion. Indeed, whilst technological change – and in particular, AI – will present challenges for policymakers, there will also be opportunities. For instance, many advanced economies are currently experiencing a tight labour market and it is possible that labour scarcity could become more pronounced over time as the population in these countries ages (alongside low birth rates and a rising ratio of older persons to workers). It may be that AI will form some part of the solution to this scarcity. AI adoption is also likely to impact on graduate recruitment in highly exposed sectors, disrupting early career employment opportunities. Further, the convergence of AI, robotics, and quantum computing could amplify automation capabilities, enabling machines to perform more complex physical, analytical, and optimisation tasks. This raises long-term questions about the distribution of GVA between labour and capital. If productivity gains from these technologies accrue mainly to the owners of capital, the labour share of GVA could decline. These issues merit further discussion in future work. Finally, this is clearly an area that requires ongoing and inter-disciplinary work to enable us to better understand the impact of technological change and how best the State can respond to emergent risks and challenges.

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ANNEX

Table 1. Implications of AI for growth, the labour share and wages – range of models

Model Assumptions	Reference	Impact on Economic Growth	Impact on the Labour Share	Impact on Wages
HS in production and capital-augmenting technology growth	Acemoglu and Restrepo (2018)	No change in long-run output level, or growth rate	Approaches 1	Upward shift in wage path
HS (but not PS) in production and capital-augmenting technology growth	Nordhaus (2021)	Type I growth explosion	Approaches 0	Type I growth explosion
PS in production and capital-augmenting technology growth	Trammell and Korinek (2023)	Type I growth explosion	Approaches 0	Driven to low but constant rate
HS in final good production, HS in robotics production	Mookherjee and Ray (2017); Korinek and Stiglitz (2019)	Increase in long-run growth rate	Approaches 0	Driven to low but constant rate
HS in final good production, LS in robotics production	Mookherjee and Ray (2017); Korinek (2018)	Shifts output path up, without changing growth rate	Pushed to positive constant (not necessarily lower or higher)	Pushed to positive constant (not necessarily lower or higher)
PS in production, with one-off capital-augmenting technology increase, and savings increase	Korinek and Stiglitz (2019)	Type I growth explosion	Approaches 0	No change in level or growth rate
LS in production and task automation and replacement	Acemoglu and Restrepo (2018)	Type I growth explosion	Pushed to positive constant (not necessarily lower or higher)	Type I growth explosion
HS in production and task automation and creation	Hémous and Olsen (2014)	Type I growth explosion	Approaches 0	Type I growth explosion
AI-assisted elasticity-change in idea discovery	Agrawal et al (2019)	Type II growth explosion	n/a	n/a
HS in production and HS in idea production	Aghion et al (2019)	Type II growth explosion	n/a	n/a

Notes. HS, LS and PS refer to High Substitutability, Low Substitutability and Perfect Substitutability, respectively. Type I growth explosion refers to a continuous acceleration in growth, where the growth rate grows without bound. Type II growth explosion refers to an acceleration in the growth rate that is rapid enough to produce infinite output over a finite time period.

Source: Authors' based on Trammel and Korinek (2023).

Map 1: Cloud Services

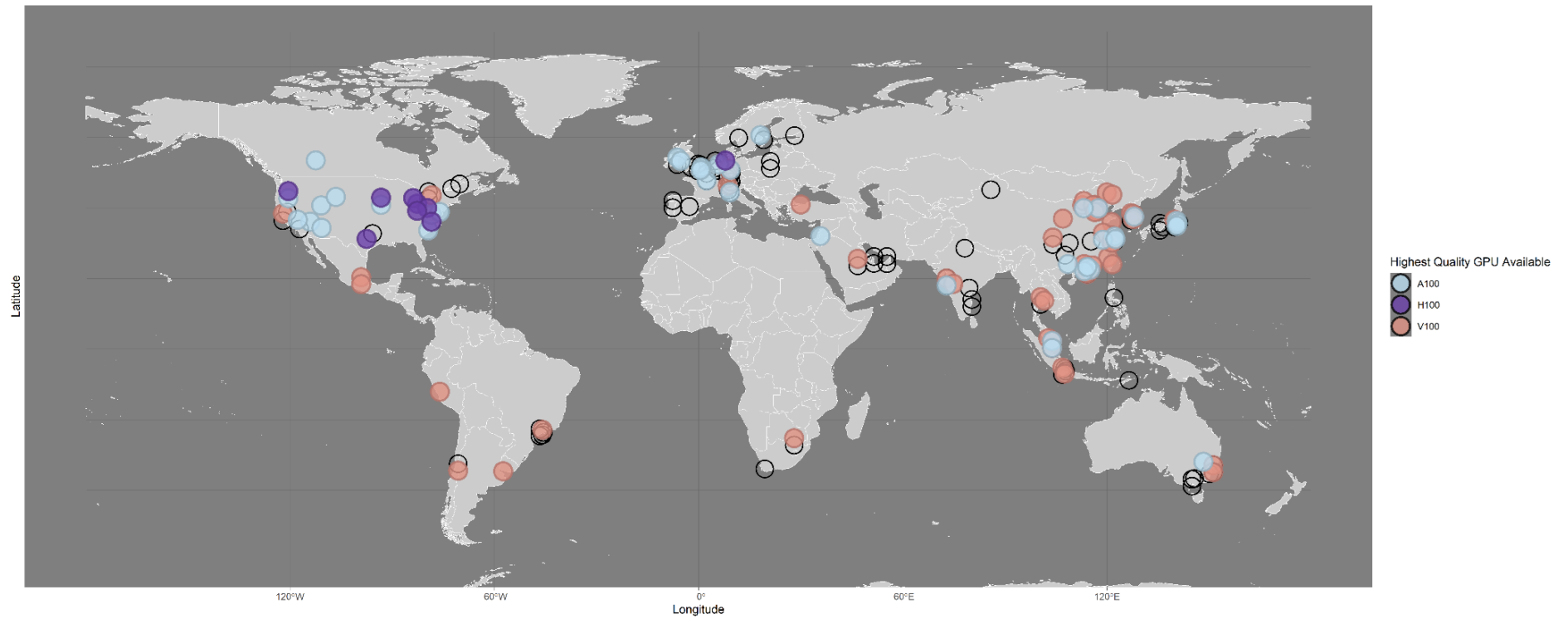
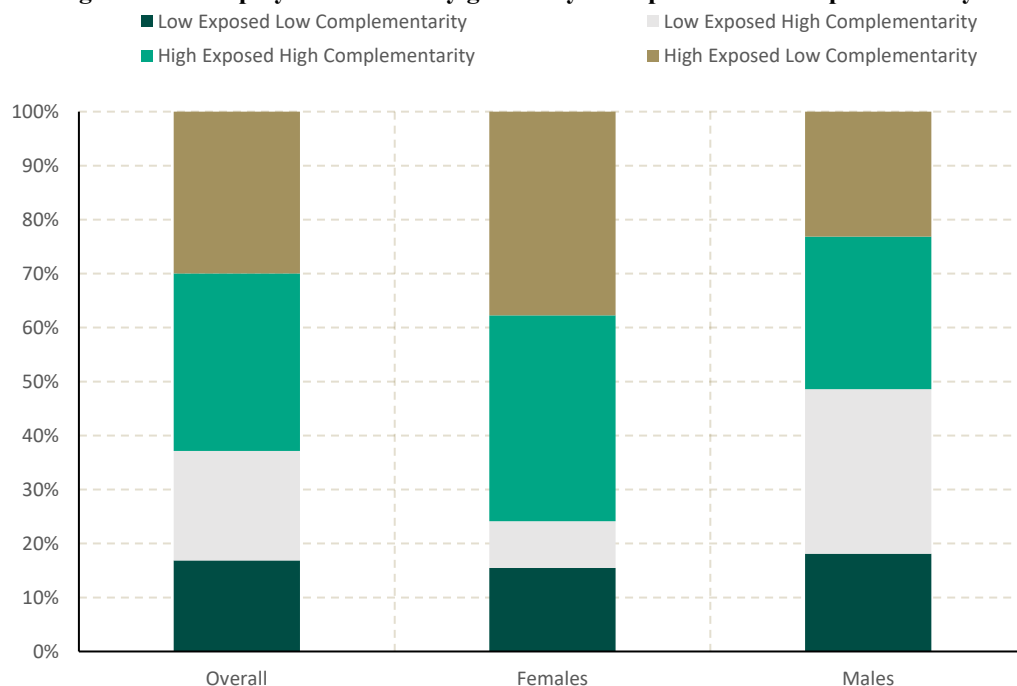


Table 2: Estimates of the exposure of the labour market to AI adoption

Paper	US	Global	Europe	Other	Technology	Notes
Department of Finance/Department of Enterprise, Trade and Employment (2024)	n/a	n/a	63% - Ireland	n/a	Focuses on Generative AI. Does not account for the interaction between AI and robotics.	Figures relate to overall exposure, which is further assessed in terms of substitutability and complementarity.
Jung and Desikan (2024)	n/a	n/a	11%-59% - UK	n/a	Range based on here-and-now technology, to more integrated technology.	Overall exposure is assessed, however, there is no quantification of exposure in terms of substitutability and complementarity.
Manyika et al (2017)	23%	15%	24% - Germany	9% - India 13% - Mexico 16% - China 26% - Japan	Automation driven by robotics and AI technologies.	Refers to percentage of work activity hours expected to be automated by 2030.
Briggs and Kodnani (2023)	25%	18%	24% - Euro Area 25% - UK	26% - Japan 29% - Hong Kong 24% - Argentina 23% - Chile	Automation driven by generative AI technologies. With robotics, the US estimate rises to 35%.	Exposure defined by share of tasks that AI can be expected to perform. This is used to derive estimates for the share of employment exposed to automation. Exposure is assessed in terms of substitutability and complementarity.
Agrawal, Gans, and Goldfarb (2020)	34%	n/a	n/a	n/a	Improvements in predictive modelling and decision-making through machine-learning.	Includes discussion of potential for machine-learning technology to both replace and substitute for labour.
Hawksworth and Berriman (2018)	38%	n/a w	31% - Ireland 30% - UK 44% - Slovakia 34% - Austria 31% - Netherlands 30% - Belgium 30% - Denmark 25% - Norway 22% - Finland	24% - New Zealand 24% - Japan 22% - South Korea	AI and robotics driving automation of routine and physical tasks.	Derived from a task-based assessment of individual roles. Describes three waves of automation over the period to the 2030s (algorithm, augmentation, and autonomy).
Muro, Maxim, and Whiton (2019)	46%	n/a	n/a	n/a	AI and robotics.	Based on the current-task automation potential of occupations.
Frey and Osborne (2013)	47%	n/a	n/a	n/a	AI and robotics.	This figure relates to the percent of employment in the high-risk category for automation.
Cazzaniga et al (2024); Pizzinelli et al (2023)	60%	40%	70% - UK	41% - Brazil 39% - Colombia 37% - South Africa 26% - India	Focuses on Generative AI. Does not account for the interaction between AI and robotics.	Figures relate to overall exposure, which is further assessed in terms of substitutability and complementarity.

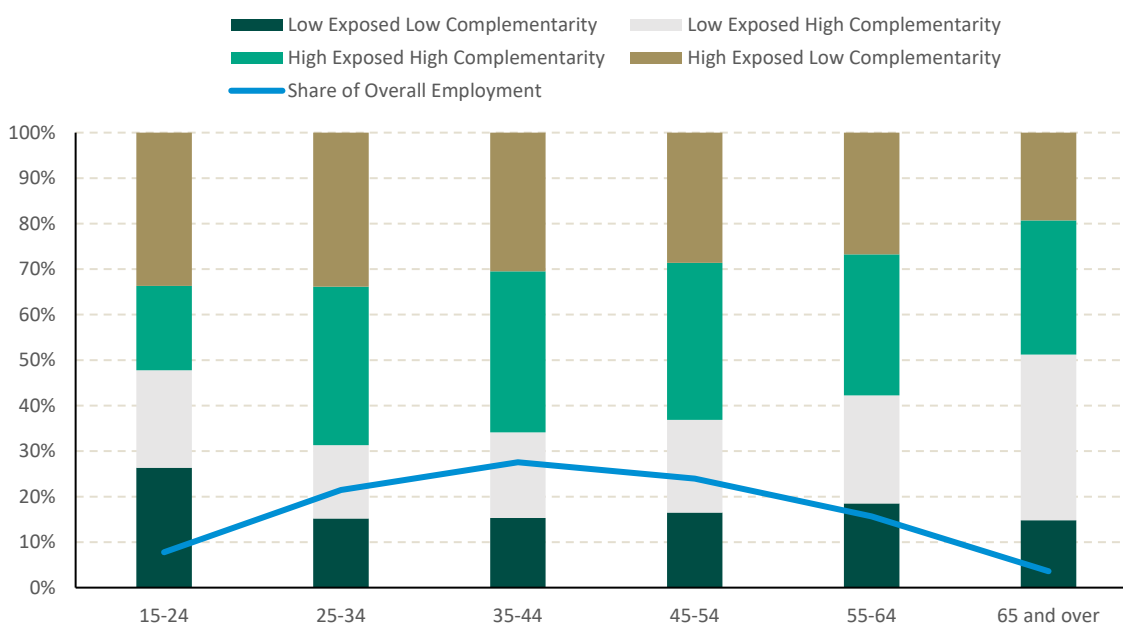
Bowles (2014)	n/a	n/a	54% - EU-28 49% - Ireland 47% - UK 51% - Germany 51% - Finland 54% - Estonia 50% - Netherlands 50% - Belgium 50% - Denmark 54% - Austria 55% - Slovakia	n/a	AI and robotics.	This figure relates to the percent of employment in the high-risk category for automation.
Eloundou et al (2023)	19%	n/a	n/a	n/a	Focuses on generative AI, specifically large language models (LLMs). Does not account for the interaction between AI and robotics.	Exposure defined based on whether the use of LLMs reduces the time taken to complete a task, without an adverse impact on quality.
Albanesi et al (2023)	n/a	n/a	23%-29%	n/a	Focuses on generative AI, specifically large language models (LLMs). Does not account for the interaction between AI and robotics.	Exposure based on tasks and occupations being in the upper tercile of the exposure measures used.
Arntz, Gregory and Zierahn (2016)	9%	n/a	12% - Austria 6% - Estonia 8% - Ireland 10% - UK 7% - Sweden 11% - Slovakia 10% - Norway 7% - Finland 9% - Denmark 10% - Netherlands 7% - Belgium 12% - Germany	7% - Japan 6% - Korea 9% - Canada	AI and robotics.	Figures refer to the percentage of individuals facing high exposure (i.e. an automatability of at least 70%, based on tasks associated with occupations).

Figure A.1: Employment shares by gender by AI exposure and complementarity



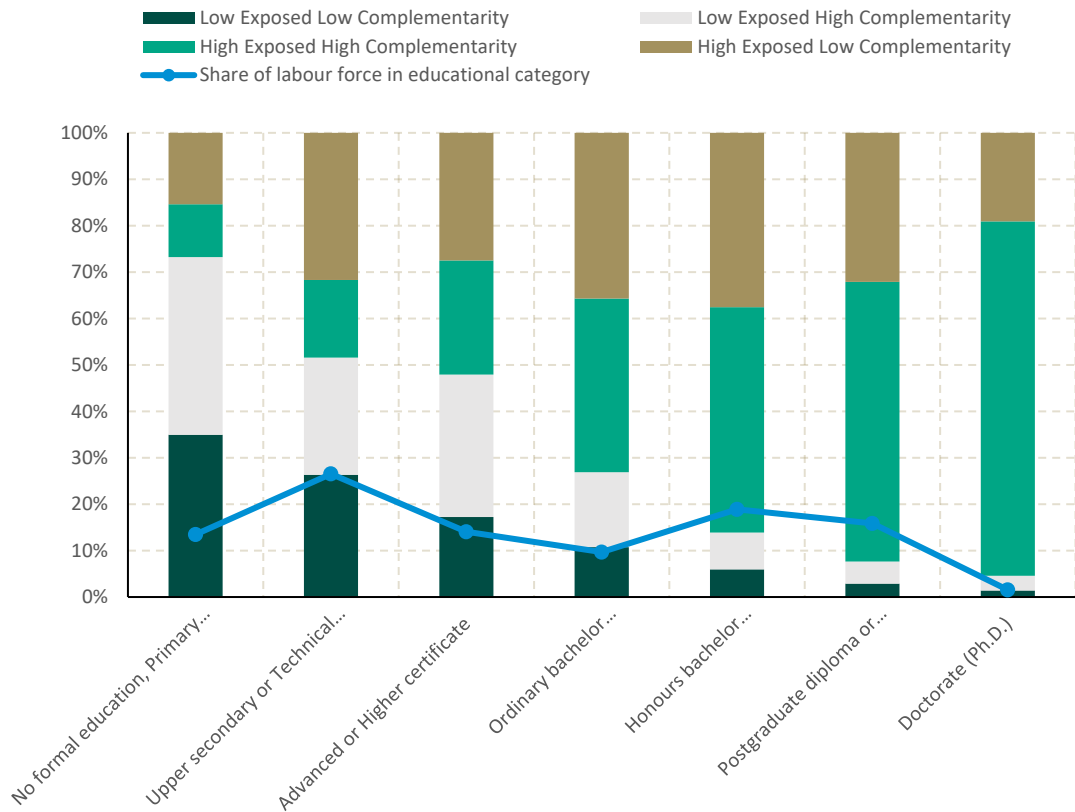
Source: Author's calculations

Figure A.2: AI exposure and complementarity by age cohort



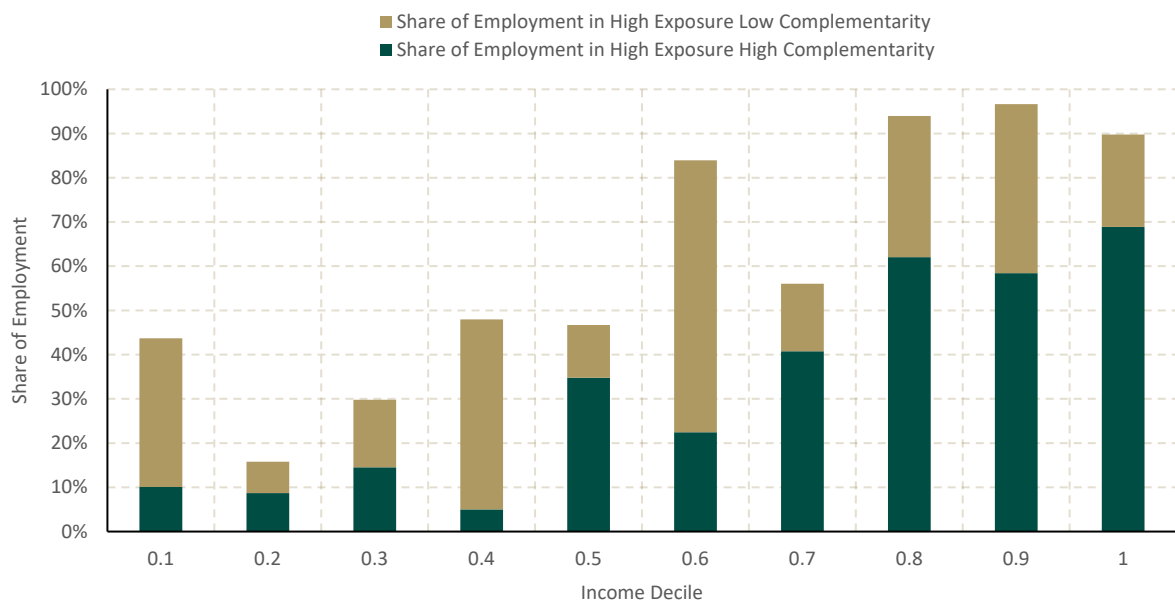
Source: Author's calculations

Figure A.3: AI exposure and complementarity by educational attainment



Source: Author's calculations

Figure A.4: AI exposure and complementarity by income decile



Source: Author's calculations

**FIRST VOTE OF THANKS PROPOSED BY JOHN FITZGERALD,
ECONOMIC AND SOCIAL RESEARCH INSTITUTE**

This is a very useful paper. As yet, there has been limited research on the possible implications for employment from the widespread adoption of AI. This paper fills a gap in our knowledge, providing detailed and robust analysis, helping us understand how the adoption of AI in Ireland and elsewhere may affect employment and potentially benefit the wider economy.

The paper divides jobs into four categories:

1. Those that will be affected by AI and may benefit from using it, increasing productivity (complementarity).
2. Those that will be affected but could be replaced by AI. This would increase output per person and reduce costs.
3. Those that will not be directly affected and will not be users of AI.
4. Those that will not be directly affected but could use AI.

The authors state “The results of our analyses indicate that 63% of employment in Ireland is relatively highly exposed to AI, with 30% of employment falling into the ‘at-risk’ category (or high-exposure, low-complementarity).” This is a high level of exposure. However, as the authors point out, many of these jobs may be users of AI rather than being merely replaced by AI. The authors also say that “Ireland also has a high share of persons working in high-complementarity roles. Approximately 53% of persons in Ireland work in roles which are highly complementary to AI, compared to 52% in the UK, and 50% in the US”.

An optimistic view of the implications of AI for the economy would see those sectors and workers for whom AI is “complementary” to their work raise output with unchanged inputs, raising productivity and potentially increasing output and returns for investors and those working in the sector.

An alternative pessimistic possibility is that AI, by replacing the work that many people currently do, would produce a major fall in employment. With similar output levels in the affected sectors, this would reduce the cost of producing a given good or service. In turn, there would be a demand response seeing output rise, partially offsetting the cut in labour input. The companies and countries that reaped the benefits of such a reduction in costs first could gain a competitive advantage and increase market share and output. Thus, the full implications of such changes need not necessarily be negative for the Irish economy.

Most of the jobs that might be at risk are for people with third level education. This cohort currently experiences low rates of unemployment in Ireland and elsewhere so, for those who lose their jobs as a result of AI, on current trends they are likely to find another job. The extent to which they suffer a loss of income from changing employment will depend on the extent to which their education was purely job specific or provided a broader education, fitting them for different roles. If those being redeployed find satisfactory employment, the effects of this change, combined with the increase in productivity in the firms directly affected, could increase output and national income. If successful redeployment does not take place, then the effects on the economy could be negative.

Looking at employment across the EU-27 since 2008, all of the increase in employment has been for people with third level qualifications, with major loss of jobs for those with lower levels of education.

	All jobs (000)	Third level (000)	First and Second level (000)
EU			
Total	16086	24567	-8482
Manufacturing	-1573	2932	-4504
IT	2432	2435	-3
Professional services	2466	2686	-220
Sub total	3325	8052	-4728
Public sector	6890	8307	-1417
Other	5871	8208	-2337

The question is whether this pattern will be affected by AI. Will time freed up by AI be redeployed within jobs or within sectors. To date there is no evidence that AI is leading to significant job losses for those with a good education.

Looking at what is happening globally, there is huge investment in developing the AI models, requiring massive energy input. The most obvious impact is the need to build and operate massive data centres to make AI models work. While Ireland has until recently been a focus for data centre investment, so that for a short period it had one of the biggest concentrations of centres in the world, this is going to change.

The problem with the latest data centres is that the computer chips needed to “train” the latest AI models require a dramatic increase in power, concentrated into a tight space. In turn, using all this power they use large amounts of water to keep them cool. The concentration of power, using the latest computer chips, together with their energy and water demands, are dramatically greater than those of existing Irish data centres.

Meta is building a centre in Louisiana that will require 2 GW of electricity generation, enough to power much of Ireland. These new data centres are on a scale way beyond anything operating in Ireland today and they even pose major challenges for the US economy. By 2028, US data centres could account for 12% of all electricity generated in the US, adding 3% to 4% to US greenhouse gas emissions and substantially increasing electricity prices across the US. There is no point in Ireland trying to compete in building these centres to train AI models, with the associated computing and energy infrastructure. The cost of energy in Ireland is too high. Ireland will be a user of AI and cannot try and produce it.

These investments in data centres to run AI, which are mainly taking place in the US, are massively expensive. This year the investment will amount to over 2% of US GDP. McKinsey estimates that by 2030 the cumulative cost of the investment needed to make AI work will be over 20% of US GDP. This raises a key question – will the investments pay off.

To make money on the investment, the income generated from this investment will first have to pay for all the computers and electricity generation and transmission equipment. The chips used may have a life of only three years. It will also have to pay for the energy consumed each year, and investors will also want a return on their investment. This means that by 2030 the AI models will need to generate income of well over 3% of US GDP, possibly even greater than 5%.

If the AI models are worth what they are costing, they would have to raise US productivity by at least 5% by 2030. This seems unlikely. Alternatively, they would need to replace well over 5% of all jobs in the US by 2030, which is even more unlikely. This raises serious concerns that the future value and profitability of investment in AI is exaggerated and, if this proves to be the case, the investment boom could prove to be a bubble. Bursting it could prove very disruptive for the world economy. The paper notes the negative effects on the Irish economy of just such a slowdown in the early 2000s when the “dotcom” bubble burst.

Policy implications

Ireland should not go after the data centre market. We could not handle the size of the latest investments. We are well fitted to use AI provided by cloud services, wherever in the world they are located. Having your data and models in a data centre down the road may have been appropriate 50 years ago, but today this is not necessary for many activities. As noted in the paper, we need to ensure that the educational system provides skills for a range of future occupations or vocations. People may need to be flexible moving jobs to where their skills are most valuably deployed. Already, third level education is doing a good job, fitting labour market entrants for a range of possible career paths. We have the highest share of STEM graduates per head of population of any EU member, around twice the EU average. (Other countries with high shares are Denmark, France and Finland.) This is a good start. We need to make good use of AI to enhance productivity and growth. Worrying too much about how it may change the labour market could see Ireland miss an opportunity.

This paper provides a very valuable basis for planning policy in Ireland to make the best use of the opportunities that AI may provide. However, if the world is currently exaggerating these opportunities, we could see serious disruption to the international economy in the next few years.

SECOND VOTE OF THANKS PROPOSED BY JAMES BROWNE, COMREG

I would like to thank the authors for a well-motivated and important contribution to the literature on this topic. The focus on Ireland makes this paper particularly important given the potential impact of AI on Ireland as a small open economy. The publication of this paper is also extremely timely. The media has recently focused on the negative impact of AI, using individual company job loss announcements to spread fear, even if many of these losses are due to regular labour migration. It is therefore useful that this paper makes the distinction between boosts (complements) and risks (job loss) from AI.

Of course, to realise these benefits and risks there are two requirements:

- the technological transformation must continue, the type and use of AI applications must continue to grow, and investment is needed for that. The idea of an investment bubble has been discussed frequently, and while the paper notes that a lag in adoption is expected for new technology, at some point monetisation will become a key priority to justify the valuations of large US firms.
- The outcomes also depend on adoption by firms. The paper makes this point clearly and shows that we may not see the full extent of the exposure for a while. A recent paper from the ESRI ‘Artificial Intelligence and Firm-Level Productivity: Early Evidence from a Small Open Economy’ supports this point. It uses data from the ICT survey from the CSO to show that adoption to date is low and the average productivity gains from AI are modest, delayed, and short-lived.

In terms of policy implications, there are two areas that I would like to mention:

- Firstly, I compared the points raised in the paper to some of the issues that Ireland’s National AI Strategy 2024 is aiming to address. The strategy was published in 2021 and redrafted in 2024 as it recognised the significant advancement in AI in that time period. The aim of the strategy is to act as a roadmap for how Ireland can leverage AI for productivity, addressing societal challenges, and delivering public services. There is significant overlap between what it covers and some of the points raised in the paper such as: an awareness campaign to encourage SME adoption, creating an environment for innovation and research, encouraging female participation, and conducting a study on the potential impacts of AI on key sectors of the Irish economy.
- Secondly, it is important to note the underlying infrastructure requirements for AI to fully benefit the economy – the National Broadband Plan ensures more equitable access to new technologies and offers the potential for more exposure to AI e.g. farming use cases. The paper covers the importance of meeting energy requirements and increased demand on the National Grid but does not mention other requirements.

Finally, one minor limitation of the paper is that the AI applications covered are from 2021. Given recent advances in AI, figures in the report could therefore be seen as a lower bound with more occupations now exposed to and complemented by new applications and use cases.

An Economic and Tax Overview of Companies with No Corporation Tax Liability

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(read before the Society, 3rd December 2025)

Abstract: Most Irish companies – around 55–60% between 2017 and 2023 – report no corporation tax (CT) liability and the factors for this remain unclear. Using administrative tax data, this paper examines the composition, characteristics, and economic contributions of these companies. The results show that persistent nil-liability is common and primarily arises from loss carry-forwards, capital allowances, and a large cohort of low-profit or non-trading companies, with patterns differing sharply across sectors and company ages. Despite low taxable profits, many of these companies generate substantial labour demand and exhibit active investment behaviour. Understanding these dynamics is essential for assessing the resilience and inclusiveness of Ireland’s corporate tax base.

Keywords: corporation tax liability, nil liability, capital allowances, loss carry forwards, profits, tax

JELs: H25, H32, E62

1. INTRODUCTION

Corporation tax (CT) is a cornerstone of Ireland’s public finances, contributing nearly 27 per cent of total tax receipts in 2023. Yet more than half of all incorporated companies – between 55 and 60 per cent each year since 2017 – report no CT liability. For the purposes of this paper, a company that has no liability to corporation tax in a year is one where the amount of corporation tax payable to Revenue in respect of a tax return filed in that year is nil (i.e. the corporation tax payable is less than or equal to zero). Understanding why such a large share of registered companies have no CT liability is critical for assessing the resilience and inclusiveness of the tax base, especially given Ireland’s fiscal reliance on a small number of very large, profitable multinationals. A persistently high share of nil-liable companies raises questions about the sustainability of tax revenue, the effectiveness of reliefs and allowances, and the broader productivity and dynamism of the domestic enterprise sector.

This paper addresses the central question: why do so many Irish companies have no corporation tax liability, and what does this imply for revenue stability and economic contribution? It examines the composition, characteristics, and economic role of companies reporting no CT liability between 2017 and 2023, distinguishing among (i) profit-making trading companies whose tax liability is fully offset by reliefs or allowances, (ii) loss-making trading companies, and (iii) non-trading entities such as holding, investment, rental, and dormant companies. Although these companies contribute little directly to CT receipts, they may still generate employment, wages, and investment that affect the wider economy.² In this paper, a profit-making trading company is one that has tax adjusted trading profits (i.e. excluding non-tax deductible expenses such as accounting depreciation), before the deduction of capital allowances (tax depreciation), greater than zero.

¹ Any opinions expressed in this paper are the views of the author and do not necessarily reflect the views of the Revenue Commissioners or the Irish Government Economic and Evaluation Service (IGEES). I am grateful to the referees and colleagues in Revenue’s Statistics and Economic Research Branch (SERB) and Revenue Legislation Services (RLS) for comments and suggestions received. Any remaining errors are my own. Email: Newhay10@gmail.com.

² Due to the use of the CT return as the primary data source, the focus of the analysis is on a company level. Of the 119,000 companies who had no liability to CT in 2023, close to 13,000 of them were part of a corporate group. Over 60% of the 13,000 entities could be found within corporate groups in the Finance and Insurance and Administrative and Support sectors.

To understand non-liability, companies are divided into three analytically distinct groups:

- (i) Profit-making trading companies that record positive trading profits³ as per the corporation tax return⁴ but have no CT liability because these profits are fully offset by reliefs or allowances. Such companies often operate in capital-intensive sectors – notably aircraft leasing, manufacturing, and finance – where capital allowances⁵ and loss carry-forwards can reduce taxable income in the year in which they are utilised. It should be noted that capital allowances are in effect ‘tax depreciation’ and therefore often give rise to temporary timing differences between the carrying value of an asset in a company’s accounts and its tax written down value. The amount of capital allowances that can be claimed will be directly linked to the cost of the qualifying asset acquired by the company for use in its trade.
- (ii) Loss-making trading companies that are actively trading but report tax losses in the relevant year⁶. These entities, common in cyclical sectors such as construction, retail, and professional services, can carry forward these losses to offset against future trading profits, possibly giving rise to a nil CT liability in subsequent years until all such trading losses are utilised.
- (iii) Non-trading companies include holding companies, investment and property companies, and dormant companies. Non-trading entities are those that do not carry on an active trade in the year; they typically derive income from investments, rents, or group management activities or, in the case of dormant companies, are legally registered but have no significant accounting transactions and no income; and, in many cases, non-trading companies may have been established for ownership or restructuring purposes. There were roughly 5,000 companies that ceased trading in 2023, but remained registered for CT, while close to 4,000 companies in 2023 could be classified as holding companies.

This decomposition allows the paper to distinguish between companies that are nil-liable due to temporary tax relief effects and those that are nil-liable because they are structurally inactive or unprofitable. Some companies move between these states over time – profitable in one year and loss-making in another – while others remain persistently non-liable.

The analysis draws on administrative micro-data from corporation tax returns (Forms CT1) filed with Revenue, matched with employment and earnings information from Revenue’s real-time payroll reporting system.⁷ Group-level linkages and ownership indicators are derived from companies’ financial statements and registration records. The resulting dataset covers a range from 160,000 to 214,000 CT-filing companies per year over the years 2017–2023⁸, representing the entire filing population⁹ rather than a sample. The period captures pre-pandemic, the COVID-19 shock (2020–2021), and the subsequent recovery (2022–2023). These years provide a valuable test of how company tax positions evolve through crisis and rebound phases. The paper first quantifies the prevalence of nil-liable companies and their distribution by ownership (foreign, Irish-owned multinational, and domestic) and economic sector. It then examines their profitability, use of capital allowances and loss carry-forwards, and taxable

³ Trading Profits is calculated as tax adjusted profits (i.e., excluding non-tax-deductible expenses such as depreciation) before capital allowances > 0.

⁴ This is based on the profits of the trade reported by the company in their corporation tax filing (Form CT1). This is the profit per accounts, adjusted for a number of factors as required by the Taxes Consolidation Act 1997 and subsequent amendments. These factors include adding back accounting depreciation, which is not a tax-deductible expense. As such, the reader should be aware that the profit figures provided in this paper are not the same as any profit figures reported in the financial statements of these companies.

⁵ For CT tax computation purposes, accounting depreciation in the financial statements is added back to the tax adjusted profit or loss, and where the capital expenditure is incurred on a qualifying asset in use for the purposes of a trade or rental company a capital allowance is available. A capital allowance effectively allows a company to write off the cost of a qualifying asset over a period of time as a reduction against the tax adjusted profit or loss. Qualifying assets include plant and machinery, industrial buildings, and certain intangibles. A balancing allowance arises where the amount of the qualifying capital expenditure still unallowed (that is, the unused capital allowances) in respect of the qualifying asset is greater than the sale, insurance, salvage or compensation moneys received in respect of the qualifying asset. A balancing allowance is available as a deduction against the taxable profit, or where appropriate may increase the taxable loss. A balancing charge arises where the amount of the sale, insurance, salvage or compensation moneys received exceed the unused capital allowances in respect of the qualifying asset but cannot exceed the amount of allowances already claimed. A balancing charge is added to the taxable profits, or where appropriate may decrease the taxable loss.

⁶ These companies would have profit before capital allowances of less than 0 but may make adjustments to the quantum of capital allowances claimed, generating a balancing charge, which would push them into a positive position.

⁷ Real-time payroll reporting to Revenue, on which employment data is based, will be made by the person or entity who pays the employee. The reader should be aware that in group situations, this may be a single group company, who then re-charges the employment costs to the other group entities who are the actual employers. As such, in interpreting this data source, the number of employees reported by a company may be understated due to employees of that company being included in the payroll reporting of another company or may be overstated due to that company including the employees of another company in its payroll reporting. Directors of companies are included in the data.

⁸ These are classified as companies who have filed CT returns.

⁹ The focus is on the number of unique companies filed in each period (If a company files twice, this is only counted once). As a result, the numbers referenced may differ slightly from the count of returns referred to the Annual CT reports published by Revenue.

income. It explores the persistence of nil-liability status over time, identifying companies that consistently remain outside the scope of CT liability. Subsequent sections assess their labour-market contribution – employment, pay, and payroll taxes – and their investment patterns as proxied by capital-allowance claims.¹⁰ Unless otherwise stated, all tables are based on these administrative data and records.

In developing this analysis, the paper builds on previous work by the Economic and Social Research Institute (ESRI), the Irish Fiscal Advisory Council (IFAC), the Department of Finance, and Revenue’s Statistics and Economic Research Branch (SERB), all of which have highlighted the increasing concentration of CT receipts among a few large multinationals and the volatility this creates for the public finances (ESRI 2023; IFAC 2023; Department of Finance 2017 and 2022; Revenue 2024). Broader economic literature on loss carry-forwards and capital allowances shows that these provisions encourage investment over time. Incorporating these insights, this paper provides new empirical evidence on how such reliefs and losses shape Ireland’s corporate tax base, and on the extent to which companies without CT liabilities nevertheless contribute to employment and investment.

By mapping the scale and nature of nil-liable companies, the paper helps identify whether non-liability primarily reflects temporary investment incentives, cyclical losses, or a structural layer of low-productivity enterprises. The findings aim to inform future assessments of the breadth, stability, and equity of Ireland’s corporate tax system.

2. COMPANIES AND REVENUE OUTCOMES

Table 1 summarises the key characteristics of these CT-filing companies and of the large cohort that reported no corporation-tax liability.¹¹ In 2017, some 160,000¹² companies filed CT returns; by 2023 the number had grown to 214,390. Throughout this period, between 55% and 61% of all filers – roughly 98,000 to 119,000 companies each year – had no CT liability. This consistency indicates that a significant proportion of companies in Ireland report no CT liability, even as the overall corporate population has expanded by more than 50,000 entities. The number of companies refers to the number of unique filers in a year. If a company files twice within a year, this is only counted once. Companies can be liable in one year and may be non-liable for CT in another – hence companies can move in and out of this state. Later, Table 3 (see page 36) on persistency examines those that are persistently nil-liable to CT, however, the main focus of the paper will be on those who are nil-liable within a given year.

The composition of nil-liable companies by trading status has remained relatively stable. In 2017, profit-making trading companies¹³ represented 25% of nil-liable companies (24,833 companies), loss-making traders 37% (36,536 companies), and non-trading entities 38% (37,142 companies). By 2023, the distribution shifted slightly: profit-making traders accounted for 22%, loss-making traders 41%, and non-trading companies 37%. The shift towards loss-making companies after 2019 aligns with broader economic trends, particularly the impact of the COVID-19 pandemic in 2020, when both loss-making and non-trading companies increased to 38% each as trading activity was disrupted.

From an ownership perspective, the nil-liable population is dominated by Irish-owned multinational and domestic companies,¹⁴ accounting for over 90 % of all cases in each year and this split is similar in nature across profit-making, loss-making and non-trading companies. Foreign-owned companies – although only a small minority – account for a significant portion of total trading profit.¹⁵ In 2020, nil-liable companies reported combined trading profits of €24.3 billion,¹⁶ rising to €29.1 billion by 2023 as post-pandemic recovery took hold.

The employment data,¹⁷ drawn from Revenue’s PAYE Realtime records, show the economic significance of this cohort. Employments among all CT-filing companies rose from 2.19 million in 2017 to 2.89 million in 2023, while employments in nil-liable companies increased from 653,000 to 732,000 over the same period. Consequently, nil-liable companies consistently supported 25 – 30 % of total employment, with most of these employments in profit-making companies.

¹⁰ Not every form of investment will qualify for capital allowances claims.

¹¹ CT Liability refers to those who have tax due greater than 0. Companies with no or nil CT liability refers to those with a corporation tax due number of less than or equal to 0.

¹² The figures in the text are rounded; exact figures are provided in the tables.

¹³ As defined above – Profit-making trading companies refer to ones where tax adjusted profits (i.e., excluding non-tax deductible expenses such as depreciation) before capital allowances > 0.

¹⁴ A foreign-owned multinational is defined as a company that is ultimately owned abroad by a multinational group and where the overall group operates in more than one country. An Irish-owned multinational is a company that is ultimately owned by a multinational group in the Republic of Ireland and where the group operates in more than one country. A domestic company is not part of a group that operates in more than one country.

¹⁵ This refers to profits before capital allowances as defined on the CT1 form.

¹⁶ In 2022, over 90% of profit-making nil -liable CT companies earned trading profits less than €1m.

¹⁷ This analysis takes all companies who had no liability to CT and analyses the employment (jobs) associated with these companies on an annual basis. As such, the employment count is not a head (employee) count as an individual may work for more than one employer during the year.

The payroll and other taxes of this nil-liable cohort is equally significant: gross pay¹⁸ rose from €15bn in 2017 to €20bn in 2023. This employment and pay levels translate directly into substantial payroll tax contributions.¹⁹ In 2023, employees in nil-liable companies paid €4bn in PAYE income tax,²⁰ €736m in USC, and €2.5bn in PRSI,²¹ representing 22% of all PAYE IT, USC, VAT and PRSI²² paid by employees of CT-filing companies. When looking at broader payroll-related and VAT taxes, nil-liable employers consistently contributed between 26% and 29% of all mentioned taxes from 2017 to 2022, before moderating to 20% in 2023. This pattern shows that, even when these companies remain nil-liable to CT, they remain an important source of Exchequer revenue through payroll channels.

From a policy perspective, this highlights a structural feature of the tax system: a significant portion of the corporate sector may contribute little or no CT due to losses, capital allowances or sectoral characteristics, yet still plays a major role in sustaining employment, wage growth and payroll tax receipts.

Taken together, the data in Table 1 reveal a dual structure within Ireland's corporate sector. The majority of nil-liable companies are small domestic enterprises that generate limited profits or remain inactive, reflecting market churn. Alongside them is a smaller cohort of large, capital-intensive companies – often in leasing, manufacturing, and ICT – that record significant profits but adjust those profits for losses carry-forward and capital-allowance claims for qualifying capital expenditure incurred, indicate that the nil-liable population is not homogeneous. The persistence of a 55–61% nil-liable share, combined with steady employment and fluctuating trading profits, highlights the resilience of Ireland's enterprise base.

Beyond these summary statistics, the persistence of nil-liability across years also reflects underlying business dynamics, and the cyclical nature of investment in capital intensive companies. Many companies appear in the CT system enter and exit or remain registered despite low or no profits, which contributes to the consistently high nil-liable share. Administrative and structural factors – such as dormant company registrations, short-lived start-ups, and entities established for holding or restructuring purposes – inflate the population of active CT filers relative to those generating sustained taxable profits.

The age and sector breakdown of nil-liable companies in 2023 shows structural differences across non-trading, loss-making, and profit-making trading companies (Table 2). Non-trading companies (44,338) are the oldest group, with 26% over 20 years old and 31% aged 10–20 years, while only 24% are newly established. Looking to loss-making traders (48,778): 45% are under 10 years old, 31% fall between 10 and 20 years, and 24% are over 20 years. Profit-making traders (25,892) are the youngest cohort, with 54% aged 0–10 years and only 20% above 20 years. Sectoral patterns mirror these differences. Non-trading companies are concentrated in Financial and Insurance activities (12,911) – a sector that includes investment holding companies, treasury centres, and insurance intermediaries – as well as Real Estate (4,818) and Professional Services (5,111), which typically cover consultancy, accountancy, and legal companies. Loss-making traders are most numerous in Professional Activities (7,910), Construction (7,069) and Wholesale & Retail (6,909), sectors that include small contractors, retailers, and service-based companies. Profit-making traders show similar clustering, led by Wholesale & Retail (4,142) and Professional Activities (3,869), alongside Construction (3,511) and Admin & Support (2,848). Admin & Support is a sector typically dominated by Aircraft Leasing.

Overall, the data indicates that nil-liable companies span a wide range of ages and reflect the underlying structure of the Irish enterprise base. Older companies dominate the non-trading group, loss-makers are distributed across all ages, and profit-makers tend to be younger and concentrated in the service, retail, and construction sectors. This pattern is consistent across prior years.

These employment and structural characteristics provide important context for understanding the persistency patterns observed in later years. The fact that such a large share of companies report no CT liability – while still accounting for up to 30% of total employment – highlights the diversity of company types within the nil-liable group. The persistency results that follow quantify these dynamics and illustrate how often companies transition into or out of CT liability.

¹⁸ Throughout the paper, gross pay refers to the gross income recorded on payslips. It refers to income before pension contributions and other deductions are subtracted. It primarily refers to employment income but can include income from occupational pensions, which are also subject to PAYE taxation.

¹⁹ Some of these companies may have employments returned by a group remitter for PAYE.

²⁰ The income tax and USC rates, bands and credits have changed during this period. All else equal these policy changes would reduce tax receipts but increases in gross pay and employment have strongly worked to increase tax receipts in aggregate over the period.

²¹ Includes Employee and Employer Contributions.

²² Other taxes are a combination of income tax, USC and PRSI and VAT.

Table 1: CT-Filing and Nil-Liable Companies: Key Characteristics, 2017–2023

Year	CT-Filing Companies	Nil-Liable Companies	Nil-Liable Share (%)	Foreign-Owned (%)	Irish MNE and Domestic (%)	Profit-Making Trading (%)	Loss-Making Trading (%)	Non-Trading (%)	Total Trading Profit – Nil-Liable (€ bn)	Employment – All CT Companies (000)	Employment – Nil-Liable (000)	Nil-Liable Employment Share (%)	Gross Pay – Nil-Liable (€bn)	Other Taxes – Nil-Liable (€M)
2017	160,226	98,511	61	3	97	25	37	38	23.9	2,187	652.8	30	15.0	4.9
2018	165,113	98,352	60	4	96	25	38	37	25.1	2,334	685.2	29	16.6	5.7
2019	164,427	95,254	60	4	96	25	38	37	21.7	2,366	643.5	27	16.8	5.6
2020	180,357	104,963	58	7	93	24	38	38	24.3	2,337	704.7	30	17.9	6.1
2021	191,226	106,600	56	9	91	24	38	38	26.9	2,568	667.3	26	19.1	6.8
2022	201,061	112,162	56	6	94	22	40	39	25.8	2,850	747.5	26	21.5	7.6
2023	214,700	119,008	55	5	95	22	41	37	29.1	2,886	731.8	25	20.5	9.0

Table 2: Profile, Age and Sector of Companies with No CT Liability in 2023

	Age Distribution	Top Sectors (with company counts)²³	Ownership Status
Non-Trading (44,338)	• 0–5 yrs: 10,457 (24%) • 5–10 yrs: 8,292 (19%) • 10–15 yrs: 9,028 (20%) • 15–20 yrs: 4,960 (11%) • 20+ yrs: 11,745 (26%)	• Financial & Insurance: 12,911 • Real Estate: 4,818 • Professional Activities: 5,111 • Construction: 4,519 • Wholesale & Retail: 3,893	• 94% of companies: Irish Multinational and Domestic • 6% of companies: Foreign Owned Multinational
Loss-Making Trading (48,778)	• 0–5 yrs: 11,052 (22%) • 5–10 yrs: 11,075 (23%) • 10–15 yrs: 9,496 (19%) • 15–20 yrs: 5,260 (11%) • 20+ yrs: 11,895 (24%)	• Professional Activities: 7,910 • Construction: 7,069 • Wholesale & Retail: 6,909 • ICT: 4,499 • Financial Activities: 3,771	• 97% of companies: Irish Multinational and Domestic • 3% of companies: Foreign Owned Multinational
Profit-Making Trading (25,892)	• 0–5 yrs: 7,357 (28%) • 5–10 yrs: 6,704 (26%) • 10–15 yrs: 3,700 (14%) • 15–20 yrs: 3,034 (12%) • 20+ yrs: 5,097 (20%)	• Wholesale & Retail: 4,142 • Professional Activities: 3,869 • Construction: 3,511 • Admin & Support: 2,848 • ICT: 1,926	• 94% of companies: Irish Multinational and Domestic • 6% of companies: Foreign Owned Multinational

Persistence of CT Companies – Entry and Exit

The persistency table provides a comprehensive picture of how companies interact with the corporation tax system over time. Between 2017 and 2023, a total of 96,914 unique companies filed a CT return in every one of the seven years, but their tax outcomes varied substantially in persistence. Around 22,542 companies consistently had a CT liability, forming a stable core of profitable companies. In contrast, 25,325 companies – just over one quarter of all unique filers – reported no CT liability in every year, reflecting a combination of no profitability, the use of loss reliefs or capital allowances, and a significant cohort of non-trading or dormant companies. The largest group, 49,047 companies, fluctuated between nil-liable and tax-liable positions.

Of the 25,325 companies that were consistently nil-liable over the seven-year period, only 1,656 were consistently profit-making trading companies with taxable income averaging €270m over the period, while 5,027 were consistently loss-making traders and 8,211 were consistently non-trading entities. An additional 10,431 companies moved between profit and loss, reinforcing the view that much of the nil-liable population is characterised by the underlying economic conditions. Corporate structure also plays a role: nearly 4,000 were located within corporate groups and were persistently nil-liable.

Looking to the geographic and sectoral composition, 33,000 were in Dublin²⁴ and more than 11,000 in Cork, together accounting for nearly half of all unique companies that filed a CT return in every one of the seven years.

²³ The proportional distribution is similar in previous periods also.

²⁴ This is on the basis of "bailiwick", meaning, in this case, the jurisdiction or boundaries within which Revenue Sheriffs, County Registrars or their officers operate for the purposes of enforcement of tax debt and which equates geographically with "county". Companies are associated

Among the consistently non-trading companies, the dominant sectors were Finance and Insurance (3,335 companies) and Real Estate (1,358 companies) – both of which include a high number of holding companies, investment vehicles, and property-related entities. Consistently loss-making companies were most prevalent in the Professional and Scientific sector (716 companies) and Construction (770 companies), sectors.

Table 3 also highlights the dynamics of companies moving between profitability states. Each year, between 1,850 and 2,250 companies returned to profit after being loss-making. These annual transitions illustrate that a portion of the nil-liable population moves in and out of positive trading conditions. The transition probability matrix reinforces this stability. Companies tend to remain in their existing tax position – nil-liable or tax-liable – with high probabilities of 80–85% each year. Movement out of non-liability occurs for roughly 15–19% of nil-liable companies annually, while a similar share of previously tax-liable companies fall back into nil-liable status, reflecting both economic conditions and the use of loss carry-forwards and capital allowances.

With 25,325 companies persistently nil-liable for CT and a further 49,047 moving in and out of liability, more than three-quarters of all unique filers do not contribute consistently to CT revenues. At the same time, the high probability that companies remain in their existing tax position – 80–85% each year – suggests that these patterns are deeply embedded rather than temporary fluctuations. Much of this reflects the structure of the enterprise base: long-standing non-trading entities in Finance and Real Estate, thousands of small companies with recurring losses in Construction and Professional Services, and a relatively small group of consistently profitable trading companies. For policymakers, the figures underline that the CT base is supported by a relatively small and stable core of profitable companies, while a large peripheral population generates limited or no taxable income.

Profit Trading Companies

In Ireland, companies are generally required to pay a standard corporation tax rate of 12.5%²⁵ on trading income, which is income generated from carrying out an active trade.²⁶ Non-trading income, such as earnings from investments or rental activities, is taxed at a higher rate of 25%.

Table 4 shows that between 2017 and 2023, a distinct group of profit-making companies in Ireland consistently recorded no corporation tax liability, despite generating substantial trading profits. In 2017, this cohort earned €22 billion, representing 14% of total trading profits. By 2023, profits had risen to nearly €28 billion, although their share of total trading profits declined to 8%. This indicates that while these companies remained highly profitable, the overall CT cohort expanded faster than the nil-liable cohort, slightly reducing their relative contribution.

Ownership patterns reveal a strong dominance of foreign multinationals, which consistently contributed the largest portion of nil-liable profits. Their share rose from 48% in 2017 to a peak of 66% in 2020, before declining to 52% in 2023. Irish-owned multinationals played a smaller but increasingly important role, rising from 13% in 2017 to 30% in 2023, explained by increasing profits in the Financial and Insurance and Administrative and Support sectors. Domestic companies accounted for the remainder, fluctuating between 18% and 49% over the period. These trends show profit-making companies, who have no liability to CT, are concentrated in multinational companies, particularly foreign-owned, while domestic companies contribute a stable but smaller share.

The age distribution of nil-liable companies highlights a mix of mature and younger businesses driving profits. Companies aged 0–5 years represented between 8% and 14%, while companies aged 5–10 years accounted for 14–29%, and 10–15-year-old companies contributed 14–28%. Older companies, particularly those over 20 years, remained a substantial source of profits, reaching a peak of 37% in 2022. This illustrates that both long-established companies and mid-aged companies are central to the profit-making cohort who end up in a nil-liable CT position. Examining the data across years shows subtle shifts in both ownership and age composition. The impact of the COVID-19 pandemic is visible in 2020, when foreign multinationals' share of nil-liable profits jumped to 66%, and domestic companies' share fell to 20%, indicating that global multinationals were more resilient. However, by 2023, the distribution had largely stabilized, with foreign multinationals at 52% and domestic companies at 27%. Overall, the data demonstrates that a relatively small cohort of companies – dominated by foreign multinationals and including a range of company ages – accounts for a significant portion of Ireland's trading profits while remaining nil-liable to CT.

on the tax record with the county address of the head-office or branch with which contact is established for tax purposes, which may be different to the city or county addresses of other branches.

²⁵ Certain trades are "excepted trades" and are taxed at 25%. A reduced rate of 12.5% also applies to certain foreign-sourced dividends, where they are paid out of trading profits of certain qualifying territories. Dividends and other distributions paid from one Irish resident company to another are generally exempt from corporation tax.

²⁶ The reader is reminded that "profits" is taken from the corporation tax return and is profits per accounts as adjusted for items such as adding back non tax-deductible depreciation. This figure is before capital allowances, which is the way in which relief is given through the tax system for capital expenditure on certain capital assets and is therefore the equivalent of 'tax depreciation'. Under the tax code, trading income for CT purposes is calculated net of capital allowances (as they are treated as trading expenses in computing that income).

Table 3: Persistency of Corporation Tax Positions, Sector Profiles, Transitions and Probabilities (2017–2023)

Category	Variable	Counts
Total Unique CT Filers (2017–2023)	Companies	96,914
Persistency of CT Liability	Consistently CT-liable	22,542
	Consistently nil-liable	25,325
	• Consistent profit-making traders	1,656
	• Consistent loss-making traders	5,027
	• Consistent non-trading companies	8,211
	• Fluctuated between profit & loss	10,431
	Fluctuated between liable & nil-liable	49,047
Group Structures	Unique Companies in corporate groups	≈15,000 (across 3,000 groups)
	Consistently nil-liable & in groups	≈4,000 (across 1,500 groups)
Geographic Distribution	Dublin	33,056
	Cork	11,182
	Remaining counties	52,676
Sector Profile (Consistent Non-Trading)	Finance & Insurance	3,335
	Real Estate	1,358
	Professional & Scientific	733
	Construction	638
Sector Profile (Consistent Loss-Making)	Finance & Insurance	1,030
	Professional & Scientific	716
	Construction	770
	Real Estate	437
Loss → Profit Transitions	2018	2,121
	2019	2,167
	2020	2,150
	2021	2,255
	2022	1,858
	2023	1,901
Transition Probabilities (Nil ↔ Liable)²⁷	2017–2018 Nil→Nil	82.14%
	2017–2018 Tax→Tax	83.78%
	2018–2019 Nil→Nil	83.69%
	2018–2019 Tax→Tax	84.29%
	2019–2020 Nil→Nil	83.35%
	2019–2020 Tax→Tax	81.81%
	2020–2021 Nil→Nil	80.98%
	2020–2021 Tax→Tax	85.32%
	2021–2022 Nil→Nil	83.99%
	2021–2022 Tax→Tax	83.24%
	2022–2023 Nil→Nil	85.37%
	2022–2023 Tax→Tax	82.62%

²⁷ Probabilities are all expressed as a share of companies who were nil-liable for CT in 2017

Table 4: Trading Profits of All CT Companies and Profit-Making Companies with No CT Liability, 2017–2023

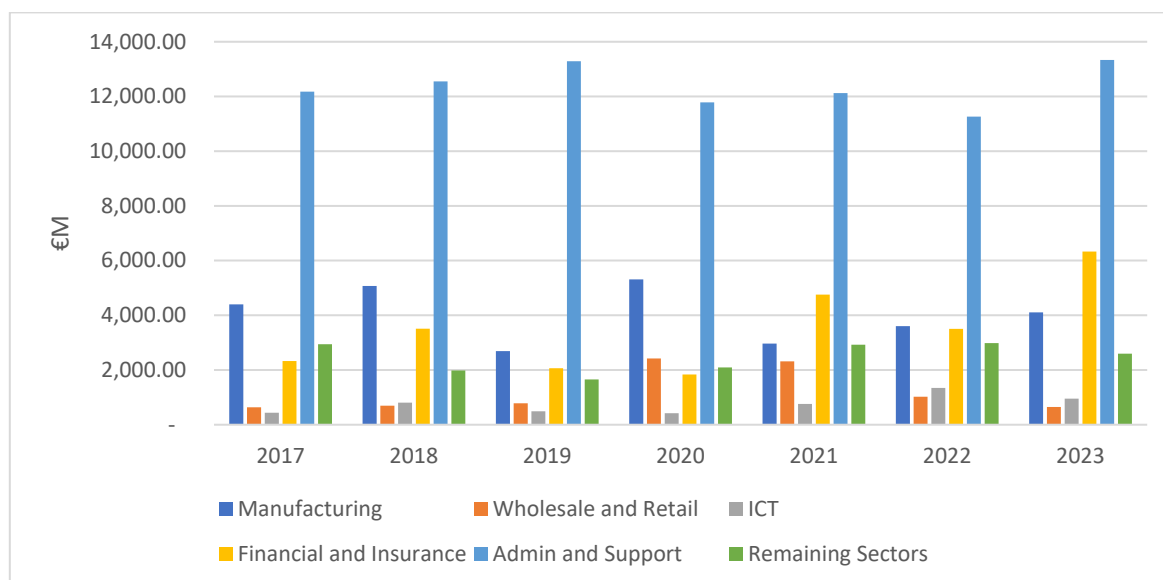
Year	Total Trading Profits: All CT companies (€M)	Profit-Making Companies Trading Profits: No CT Liability (€M)	% of Total	Foreign Multinational: Trading Profits (€M /%)	Irish Multinational: Trading Profits (€M /%)	Domestic Trading Profits: (€M /%)	0–5 yrs (€M /%)	5–10 yrs (€M /%)	10–15 yrs (€M /%)	15–20 yrs (€M /%)	20+ yrs (€M /%)
2017	167,090	22,920	14%	10,714/48%	2,697/12%	9,509/43%	4,564/ 20%	5,246 /23%	4,273 /19%	4,600/20%	4,237/18%
2018	190,890	24,626	13%	12,773/52%	2,678/11%	9,173/37%	3,180 /13%	6,818 /28%	4,070 /17%	5,158 /21%	5,397/22%
2019	203,815	20,972	11%	9,149/44%	2,025/10%	9,796/47%	3,068 /15%	5,430/26%	2,875/14%	5,408 /26%	4,190/20%
2020	199,261	23,867	12%	15,737/66%	3,433/14%	4,697/20%	2,012 / 8%	5,801/24%	6,576/28%	4,456 /19%	5,020/21%
2021	256,887	25,847	10%	16,920/65%	2,704/10%	6,222/24%	4,963 / 19%	7,368/29%	3,786/15%	3,551 /14%	6,179/24%
2022	317,450	23,728	8%	13,549/57%	3,449/15%	6,730/28%	2,194 / 9%	3,275/14%	3,013/13%	6,351 /27%	8,894/37%
2023	309,050	27,969	8%	14,543/52%	5,873/21%	7,551/27%	3,906 / 14%	7,785/28%	5,000 /18%	3,538 /13%	7,738/28%

Figure 1 highlights trading profits across major sectors from 2017 to 2023. Administrative and Support Services consistently generate the highest profits by a wide margin. This sector – strongly influenced by aircraft leasing – remains above €10 billion in every year shown, peaking around 2019 before dipping slightly in 2020 and then rising again toward 2023.

Manufacturing is the second-largest contributor to trading profits, showing steady and robust performance over the period. Profits remain in the €5–6 billion range for most years, with a noticeable dip in 2022 followed by recovery in 2023. This stability reflects the strength of manufacturing in Ireland, particularly pharmaceuticals and computer hardware, which continued to generate substantial profits even during periods of economic disruption. Meanwhile, Financial and Insurance activities show an upward trend, growing from around €3 billion in 2017 to over €6 billion by 2023.

By contrast, sectors such as Wholesale and Retail, ICT, and the Remaining Sectors group show more modest levels of trading profit. Wholesale and Retail exhibits moderate fluctuations, with growth in 2020 and 2021 but lower levels in other years. ICT profits remain comparatively small throughout the period, as many companies in the sector are small scale technology and software companies. The Remaining Sectors category grows gradually over time but remains significantly below the major profit-generating sectors. Overall, the graph highlights the concentration of profitable companies, who have no liability to CT, in a few industries with other sectors contributing steadily but at much lower levels.

Figure 1: Trade Profit Earned by Profit-Making Trading Companies with No CT Liability



Loss-Making and Non-Trading Companies

Loss-making companies as per the corporation tax return²⁸ (i.e. companies with tax adjusted profits before capital allowances less than zero), may need to make an adjustment for balancing charges. A balancing charge adjusts for capital allowances previously claimed on the cost of an asset when that asset is sold or otherwise disposed of for more than its tax written down value, ensuring that a company does not receive more allowances than the cost incurred on the asset by the company. These balancing charges may increase taxable profits and where appropriate may decrease the taxable loss. Balancing charges have fluctuated significantly across the period, ranging from €251 million in 2020 to almost €1.7 billion in 2022. In practice, almost 2,000 companies in the Administrative and Support Services sector – dominated by aircraft leasing – explain a large proportion of the balancing charges on the CT1 form in recent years.

Profits earned by companies carrying on an excepted trade remain relatively modest throughout the period, never exceeding €373 million. This profit can arise due to activities such as the extraction of mineral resources.

²⁸ Trading profits is trading profits as per the CT1 – Profits before Capital allowances < 0.

The “Other Income and Gains” category²⁹ is far more substantial, ranging from €1.6 billion in 2018 to €7.2 billion in 2021 (Table 5). More than 50% of this income is generated by non-trading companies within the finance and insurance sector, highlighting the prominence of investment returns, foreign dividends, and realised gains on financial assets.

Table 5: Loss-Making and Non-Trading Companies with No CT Liability: Selected Income Measures, 2017–2023

Year	Loss-Making Companies: No CT Liability: Balancing Charges (€M)	Non-Trade Companies: No CT Liability: Excepted Trading profit (€M)	Loss-Making and Non-Trading Companies: No CT Liability: Other Income and Gains (€M)
2017	703	299	3,161
2018	413	142	1,594
2019	696	119	2,695
2020	251	134	4,674
2021	720	287	7,221
2022	1,691	373	3,957
2023	957	185	4,747

How to Get From Trading Profit to Taxable Income

Combining information from profit-making companies in Table 4 with information on balancing charges from the loss-making and excepted profits from non-trading cohort in Table 5, we arrive at a condensed Table 6 showing how profit, loss-making and non-trading companies combined end up in a nil-liable position. Table 6 shows that companies with no CT liability generate substantial levels of trading profit each year, with trading profits ranging from €21.8 billion in 2019 to €29.1 billion in 2023. Despite this sizeable profit base, the vast majority is offset by deductions and allowances. Total deductions closely track trading profits – €20.1 billion in 2019, €24.0 billion in 2021, and climbing to €27.3 billion in 2023 – indicating that most of the trading profit is reduced before taxable income is calculated. The alignment between trade profits and deductions highlights how the structure of tax reliefs, particularly capital allowances, which are the way in which the tax system provides relief for investment in certain capital assets³⁰ and losses forward,³¹ effectively determines final tax outcomes.

Capital allowances are the single largest deduction in most years. They reached €16.0 billion in 2021, the highest in the period, and remained substantial at €12.5 billion in 2023. This pattern reflects ongoing large-scale investment in assets such as aircraft, manufacturing equipment and other plant and machinery. The figures for trade losses forward utilised, which is made up of losses carried forward³² from a previous accounting period, drops to €4.7 billion in 2020, but rising sharply to €11.8 billion in 2023. This increase suggests that a large pool of previously accumulated losses became usable as profitability increased, consistent with the policy principle that trading losses can be offset in future profitable periods against profits from the same trade.

Other income and gains are made up of certain foreign dividend income, rental income³³ as well as chargeable gains, vary considerably reaching €7.7 billion in 2021 and stabilising at €5.9 billion in 2023. Much of this income is attributable to non-trading companies in sectors such as finance and insurance. Other deductions which include

²⁹ This is composed of foreign dividend income, rental income and other income.

³⁰ This applies where that capital investment is used to generate future income. Normal principles of commercial accounting allocate capital investment, but not all, over accounting periods depending on the accounting policy adopted within the confines of the accounting framework. The tax system seeks to do something similar within the confines of the rules on capital allowances.

³¹ Trade losses forward will include any unused capital allowances on plant and machinery used for the purpose of the trade (but do not include capital allowances on specified intangible assets). Current year trading losses can also be offset against current year trading profits and those of the preceding year. However, the “amount” of losses carried back is significantly lower than the amount of losses forward utilised and this paper therefore does not consider the impact of those current year trading losses.

³² These losses carried forward recognises that business have peaks and troughs in profitability over the life of a trade and therefore relief for losses in prior years is allowed in future years where the trade is profitable.

³³ Non-resident corporate landlords became subject to Irish CT on Irish rental income from 2022, whereas previously it would have been subject to income tax.

group relief, excess rental allowances,³⁴ relief under section 247³⁵ and expenses of management,³⁶ remain smaller but steady ranging between €1.3 billion and €1.9 billion. After accounting for all these factors, taxable income falls to a fraction of trading profits, ranging between €2.2 billion in 2018 and €9.1 billion in 2021.

The tax ultimately due before credits reflects this reduced base, varying from €320 million in 2018 to €1.35 billion in 2021. However, policy-driven reliefs – such as the R&D tax credit and relief for losses on a value basis – fully eliminate the liability each year. Credits exceed the gross tax due in every year, for example €1.85 billion in credits against €961 million in gross tax in 2023, resulting in a nil-liable CT position. The table therefore demonstrates not only how deductions reduce taxable income but also how tax credits complete the transition from positive taxable income to elimination of final tax liability. This highlights the importance of understanding both sides of the corporate tax base – allowances that reduce income and credits that reduce liability.

Table 6: Profit, Deductions, Income and Tax Outcomes, 2017–2023 (€ million)

(€ Million)	2017	2018	2019	2020	2021	2022	2023
Trading Profits³⁷	23,923	25,181	21,786	24,251	26,853	25,792	29,112
Total Deductions³⁸	-20,244	-23,534	-20,103	-21,784	-24,030	-22,947	-27,254
– <i>Capital Allowances</i>	-9,055	-13,937	-11,590	-14,124	-16,027	-12,703	-12,543
– <i>Trade Losses Forward</i>	-8,327	-7,416	-6,053	-4,694	-5,897	-7,462	-11,764
– <i>Current Year Losses</i>	-231	-137	-115	-88	-237	-837	-229
Income & Gains	+3,773	+1,966	+3,330	+5,094	+7,672	+4,441	+5,905
Other Deductions	-3,413	-1,428	-1,301	-1,524	-1,349	-1,587	-1,926
Taxable Income	4,039	2,185	3,713	6,038	9,146	5,698	5,837
– <i>Taxable Income @ 12.5%</i>	3,101	1,817	3,424	3,194	7,464	5,096	3,985
– <i>Taxable Income @ 25%</i>	938	368	288	2,843	1,681	601	1,852
– <i>Taxable Income @ 33%</i>	0.2	0.7	0.2	0.1	–	–	–
Gross Tax Due	622	320	500	1,110	1,354	787	961
Reliefs / Credits / Refunds³⁹	1,020	781	985	1,683	2,180	1,983	1,854
Tax Paid	-398	-461	-485	-573	-826	-1,196	-893

Capital Allowances

Capital allowances – effectively tax depreciation – are the mechanism through which businesses obtain relief for the cost of acquiring qualifying capital assets. Rather than allowing the full deduction upfront, these deductions spread the tax relief, associated with the cost, over several years rather than giving relief in the year the asset is acquired. For example, plant and machinery typically qualify for allowances of 12.5% per year over eight years, while industrial buildings are ordinarily written off at 4% per year over 25 years. Specified intangible assets⁴⁰

³⁴ Excess rental allowances arise where a company's rental capital allowances for a property exceed the company's rental income for that property, the excess allowances can be used in the first instance against income arising from other rental properties of the company, and then against the current and prior year profits of the company, or the current year property rental income of group companies. Any remaining excess may be carried forward by the company and offset against that company's rental income in future periods.

³⁵ This is a provision under which a company may obtain relief as a charge on income for interest on loans. The relief applies where the company uses the funds borrowed to acquire shares in or lend money to certain related companies.

³⁶ Investment companies can deduct current year management expenses and/or excess management expenses carried forward from earlier periods in computing total profits. Alternatively, management expenses can be surrendered to other group companies under group relief provisions.

³⁷ This includes balancing charges from loss-making companies and excepted profits from the non-trading cohort.

³⁸ This is made up of capital allowances, trade losses carried forward, current year losses, as well as Trade charges and group relief.

³⁹ Unfortunately, the data does not allow for a further split of this into R&D.

⁴⁰ Claims for capital allowances on specified 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 specified intangible assets can only be deducted from trading income that is

may qualify for relief either at the amortisation rate used in a company's accounts or, alternatively, on a straight-line basis over 15 years.

Table 7 breaks down capital allowances used by sector, showing the dominance of the Administrative and Support sector. This sector accounted for over 60% of capital allowances used over the period in question. The Manufacturing sector varied in dominance over the years, while the peak in capital allowances used by remaining sectors in 2021 and 2022 may relate to the Finance & Insurance sector as well as the Wholesale & Retail sector. In 2023, over €6bn of the €12bn capital allowances used can be explained by Foreign-owned multinationals, with Irish-owned companies accounting for the remainder.⁴¹

Table 7: Breakdown of Capital Allowances used by Economic Sector (€ Million)

	2017	2018	2019	2020	2021	2022	2023
Administrative and Support	7,329	8,599	8,972	8,405	8,747	8,008	7,396
Manufacturing	794	1,928	1,330	2,305	1,397	1,626	2,332
Remaining Sectors	932	3,410	1,288	3,413	5,883	3,068	2,814
Total	9,055	13,937	11,590	14,123	16,027	12,702	12,542

Trading Losses Forward

Companies that incur a trading loss in one year are permitted to carry that loss forward to offset against profits from the same trade arising in future years, with these losses being offset against the first available profits until they are used up. Trading losses forward will include any unused capital allowances on plant and machinery from prior years (but do not include capital allowances on specified intangible assets). There is no time limit for carrying forward these trading losses.⁴² As Table 6 shows that €11bn of losses carried forward were used by profit-making trading companies in 2023, underscoring the significance of accumulated historical losses in determining current-year tax liabilities. Looking to ownership, over €3bn of these losses could be explained by Foreign-owned multinationals in 2023, with the remaining €8bn dominated by Irish-owned companies.

The Administrative and Support Services sectors (45%), which is dominated by aircraft leasing companies, as well as the Finance and Insurance sector (42%) accounted for the majority of all trade losses used by profit-making trading companies in 2023. In the Financial and Insurance sector, banks often carry forward historical losses, especially those incurred during the Great Recession, while aircraft leasing companies often generate fluctuating profits and losses depending on market conditions. Figure 2 below shows a time series of losses forward in the Financial and Insurance sector over time and gives an indication of how the sector is performing. After a dip in 2020 associated with COVID-19, the sector recovered with losses forward used of €4.5bn in 2023. This continued utilisation demonstrates how legacy losses can influence corporate tax receipts many years after the losses were originally generated, while the persistence of these historical losses highlights the long-term fiscal impact of economic downturns.⁴³

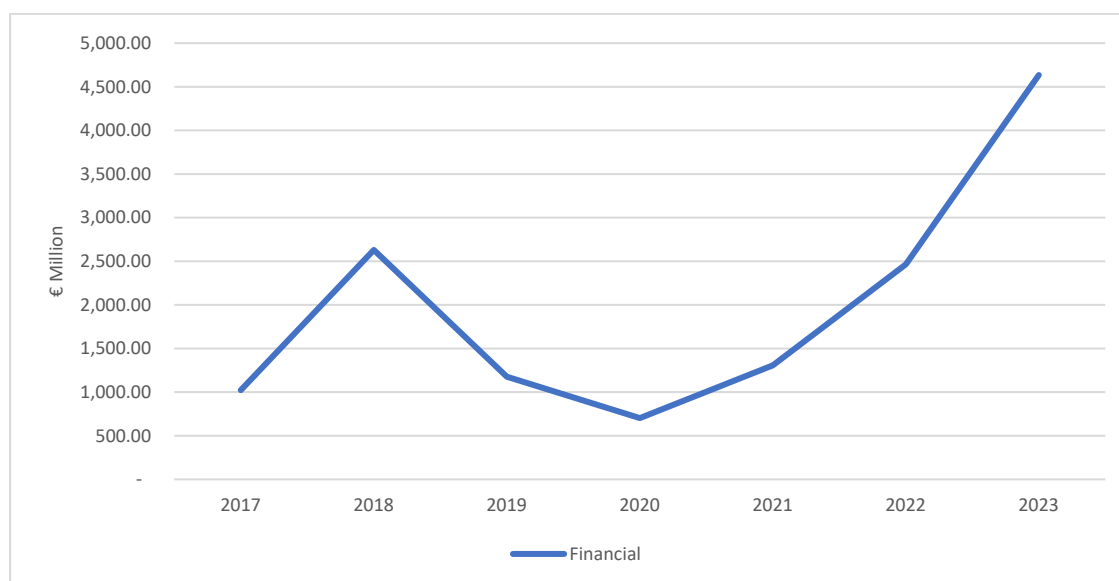
directly linked to the use of these specific assets. In addition, capital allowances and interest deductions relating to the acquisition of specified intangible assets is limited to 80% of the trading profits of the IP trade for specified intangible assets acquired on or after 11 October 2017. Where some or all of the capital allowances otherwise available for an accounting period are unallowed, due to either insufficiency of relevant trading income or because of the application of the 80 per cent cap, the excess allowances will be carried forward and added to any allowances which are available for offset against trading income of the relevant trade for the next accounting period, and so on for each succeeding accounting period.

⁴¹ The amount of capital allowances in respect of intangible assets reported as unused in the whole economy on 2023 returns by companies and available for carry forward (including amounts carried forward from earlier periods) into 2024 is €102 billion.

⁴² The above provisions also apply to companies carrying out an excepted trade. Those companies can offset a trading loss against their total profits for the same period in which the loss arose and their total profits of the immediately preceding accounting period.

⁴³ The amount of losses forward available to be carried forward into 2024 is €260bn. This is for the economy as a whole.

Figure 2: Losses Forward Used: Finance and Insurance sector



3. EMPLOYMENT AND LABOUR MARKET CONTRIBUTION

Throughout this section, the term Employments is used, as individuals can have multiple employments across different companies during the year and the focus of the paper is at the company level. Real-time payroll reporting to Revenue, on which employment data is based, will be made by the person or entity who pays the employee (employer). In group situations, this may be a single group company, who then re-charges the employment costs to the other group entities who are the actual employers. As such, in interpreting the data for specific cohorts, the number of employees reported by a company may be understated due to employees of that company being included in the PMOD return of another company or may be overstated due to that company including the employees of another company in its PMOD return. Directors of companies are included in the data.

Table 8 shows median pay,⁴⁴ employment, and gross pay among companies with no corporation tax (CT) liability from 2017 to 2023, segmented into Profit-Making Trading Companies, Loss-Making Trading Companies, and Non-Trading Companies. Across this period, median pay consistently shows that profit-making trading companies pay close to the minimum wage, rising from €18,337 in 2017 to €22,444 in 2023. Loss-making trading companies⁴⁵ follow a similar trajectory, with pay increasing from €17,216 to €20,365, while non-trading companies consistently report lower median pay, though their median increased notably in 2021 to €18,694. The sharp declines in median pay for all company types in 2020 reflect the disruption caused by the COVID-19 pandemic.

Employment trends reveal that profit-making trading companies account for the largest shares of employment in most years, though their share declined slightly in 2020 and again in 2023, reflecting 48.6% of total employment in 2023. In contrast, loss-making trading companies have steadily expanded, employing 43.0% of total workers in 2023, surpassing the non-trading cohort, which consistently accounts for the smallest share of employment at around 8–10%. Total employment among companies with no CT liability grew from 652,813 in 2017 to 731,382 in 2023, representing a 12% increase over the period.

Gross pay follows a similar pattern, with profit-making trading companies contributing the largest share of total payroll, accounting for approximately 56–61% of total gross pay among nil-liable companies in most years. Loss-making trading companies' share of gross pay grew steadily, reaching 37.0% in 2023, while non-trading companies contributed less than 10% of total gross pay each year. The total gross pay across all companies with no CT liability rose from €15 billion in 2017 to €20.5 billion in 2023, indicating steady growth in compensation across the sector. Overall, the data highlights that companies with no CT liability play a significant role in employment and payroll distribution, with profit-making trading companies leading in pay and total compensation, while loss-making trading companies have grown in both employment and gross pay. Non-trading companies remain a smaller cohort in both employment and payroll contributions.

⁴⁴ It should be noted that the number of hours worked is not available in the payroll submissions to Revenue, but it is likely that the data include many employees who worked part-time hours and/or on a temporary basis.

⁴⁵ These 'Employments' may not be full time E.g., the directors who are directors of many companies.

Table 8: Gross Pay and Employment in Companies with No CT Liability, 2017–2023

Year	Median Pay: Profit-Making Company Nil-Liable	Median Pay: Loss-Making Company Nil-Liable	Median Pay: Non-Trading Company Nil-Liable	Median Pay: All	Employment: Profit-Making Company Nil-Liable	Employment: Loss-Making Company Nil-Liable	Employment: Non-Trading Company Nil-Liable	Employment: Total Nil-Liable	Gross Pay: Profit-Making Company Nil-Liable €M	Gross Pay: Loss-Making Company Nil-Liable €M	Gross Pay: Non-Trading Company Nil-Liable €M	Gross Pay: Total €M
2017	18,337	17,216	14,091	19,147	354,627 (54.3%)	231,945 (35.5%)	68,747 (10.5%)	652,813	8,570 (57.1%)	5,063 (33.7%)	1,213 (8.1%)	15,010
2018	18,911	17,996	15,000	19,842	376,850 (55.0%)	239,594 (35.0%)	68,711 (10.0%)	685,155	9,773 (58.5%)	5,344 (32.0%)	1,574 (9.4%)	16,691
2019	19,696	18,934	15,686	20,700	352,539 (54.8%)	223,616 (34.8%)	67,341 (10.5%)	643,496	9,826 (58.5%)	5,442 (32.4%)	1,538 (9.2%)	16,805
2020	15,328	13,159	14,397	16,385	321,816 (45.7%)	279,391 (39.6%)	103,509 (14.7%)	704,716	8,779 (49.0%)	6,496 (36.2%)	2,653 (14.8%)	17,928
2021	19,263	19,499	18,694	20,287	374,070 (56.0%)	229,675 (34.4%)	63,550 (9.5%)	667,295	11,612 (60.7%)	6,002 (31.4%)	1,524 (8.0%)	19,139
2022	21,898	20,160	16,818	22,021	380,568 (50.9%)	298,581 (39.9%)	68,326 (9.1%)	747,475	12,256 (56.9%)	7,718 (35.8%)	1,577 (7.3%)	21,551
2023	22,444	20,365	16,848	22,868	355,461 (48.6%)	314,483 (43.0%)	61,438 (8.4%)	731,382	11,474 (55.9%)	7,597 (37.0%)	1,441 (7.0%)	20,513

Table 9 summarises the 2023 employment profile of nil-liable companies by trading status, ownership, sector and company size. Among profit-making trading companies, domestic companies accounted for the largest share of employment at 65%, with foreign-owned multinationals contributing 23% and Irish-owned multinationals 13%. Employment was concentrated in Wholesale & Retail (56,796), Professional, Scientific & Technical Activities (44,146), Accommodation & Food (43,982), Manufacturing (34,975), and Administrative & Support (34,205). While the Administrative and Support sector is typically dominated by Aircraft Leasing companies, the employment in the sector can largely be explained by recruitment and consulting companies, which also operate within the cohort. Overall, most of the employment was within small and micro companies, which made up 50% of the workforce, while medium and large companies contributed 28%, and only 2% of companies reported no employment.

For loss-making trading companies, domestic companies again dominated employment, accounting for over 79%, while foreign-owned and Irish-owned multinationals each represented 11% of total employment. The sectoral distribution was led by Accommodation & Food (57,243) and Wholesale & Retail (46,041), followed by Professional, Scientific & Technical Activities (29,051) and Manufacturing (23,214). Nearly half of loss-making companies (48%) had no employees, while the small and micro segment accounted for 51% of employment.

Among non-trading companies, employment totalled 61,438, with domestic companies representing over 70% of total employment and foreign-owned multinationals 22%. Employment was concentrated in Accommodation & Food (12,309), Information and Communication (ICT) (10,391), Financial & Insurance Activities (5,796), and Professional, Scientific & Technical Activities (5,506). A significant majority of these companies – approximately 85% – had no employees, reflecting the prevalence of holding companies, property management, and other investment-oriented enterprises.

Across all three company types, the data highlights the sustained importance of domestic companies in the Irish labour market. Foreign-owned multinationals play a significant role among profit-making and non-trading companies, contributing between 20% and 23% of total employment, while Irish-owned multinationals have a smaller but notable presence, especially in trading companies. Looking at it by economic sector, employment remains concentrated in Accommodation & Food, Wholesale & Retail, Manufacturing, and Professional & Technical Services, with domestic companies accounting for the bulk of workforce participation in these areas.

Overall, the 2023 employment profile small and micro-sized companies represent a substantial portion of employment, particularly in loss-making and profit-making trading companies. Non-trading companies continue to employ relatively few people, reflecting their roles as investment or holding entities rather than active operational businesses.

A split of median pay by profit-making trading companies and loss-making and non-trading companies, who had no liability to CT is shown in Table 10. The ICT sector leads across all groupings with a median pay of €39,000 among profit-making trading companies and €34,000 among loss-making and non-trading companies. This was followed by the Finance and Insurance sector as well as the Professional and Scientific sector, exceeding €30,000 a year. An exception to this were non trading companies in the Finance and Insurance sector. The Manufacturing sector recorded the lowest median pay among the four sectors at under €25,000 a year. As is expected, median pays are consistently lower across the loss-making and non-Trading companies compared to their profit-making counterparts.

Table 11 shows the distribution of pay per employment among profit-making, loss-making and non-Trading companies in 2023. Looking to the profit-making trading companies shows that the top 10% of workers earned more than €60,000 per year, while the top 25% of employments earned more than €35,000 per year. The median pay at €20,000 per year showed that half of employments earned less than this while the other 50% earned more.

Table 9: Employment Characteristics of Companies with No CT Liability, 2023

Category	Total Employment 2023	Ownership Status 2023	Employment by Sector 2023	Employment Composition 2023
Non-Trading Companies	61,438	• 76% Domestic • 3% Irish Owned Multinational • 22% Foreign Owned Multinational	• Accommodation & Food: 12,309 • Information & Communication (ICT): 10,391 • Financial & Insurance: 5,796 • Professional, Scientific & Technical: 5,506	• No Employment: 37,683 (85%) • Remaining: 6,655 (15%)
Loss-Making Trading Companies	314,483	• 79% Domestic • 11% Irish Owned Multinational • 11% Foreign Owned Multinational	• Accommodation & Food: 57,243 • Wholesale & Retail: 46,041 • Professional, Scientific & Technical: 29,051 • Manufacturing: 23,214	• No Employment: 23,164 (48%) • Small and Micro⁴⁶: 24,703 (51%) • Remaining (medium/large): 911 (1%)
Profit-Making Trading Companies	355,461	• 65% Domestic • 13% Irish Owned Multinational • 23% Foreign Owned Multinational	• Wholesale & Retail: 56,796 • Manufacturing: 34,975 • Accommodation & Food: 43,982 • Professional, Scientific & Technical: 44,146 • Administrative & Support: 34,205	• No Employment: 7,163 (2%) • Small and Micro: 17,751 (50%) • Remaining (medium/large): 978 (28%)

Table 10: Median Pay among companies with no CT liability, by Economic Sector, 2023

Economic Sector	Profit-Making Trading Companies	Loss-Making Trading Companies	Non-Trading Companies
ICT	€39,013	€34,568	€34,523
Financial and Insurance	€36,000	€32,947	€17,500
Professional Scientific and Technical Activities	€37,447	€31,144	€33,395
Manufacturing	€23,247	€22,507	€14,728

⁴⁶ Micro (<10 persons employed) Small (10-49 persons employed) Medium (50-249 persons employed) and Large (>250 persons employed) – This follows the CSO definition of firm size from: <https://www.cso.ie/en/releasesandpublications/ep/pbii/businessinireland2020/smallandmediumenterprises/>. SME refers to the combination of the small, medium and micro categories. In the case of micro companies for the purpose of this analysis, it includes companies with between 1 and 10 persons employed.

Table 11: Distribution of Pay per Employment, 2023

Percentile	Median Pay (€): Profit-Making Companies	Median Pay (€): Loss-Making Companies	Median Pay (€): Non Trading Companies
90th (Top 10%)	€62,694	€60,000	€72,540
75th (Upper 25%)	€36,741	€35,418	€38,874
50th (Median - Middle 50%)	€22,444	€20,365	€16,848
25th (Lower 25%)	€13,101	€11,049	€7,613
10th (Bottom 10%)	€7,391	€5,539	€2,802

4. CAPITAL ALLOWANCES AND INVESTMENT ACTIVITY

Companies that have no liability for corporation tax can still be notable investors. This section uses the information provided by capital allowances claimed on the tax return to give an indication of the overall underlying investment occurring in the economy by companies that have a NIL liability for corporation tax. The claim figure can provide valuable economic insight on, broadly speaking, investment patterns in the economy by different asset class and company type. The numbers referenced in this subsection will differ from the €12bn used capital allowance figure referenced in Table 7. Not all claims will be used as, for instance, they may exceed the level of trading profit reported by the company. As such, the claim figure will be higher than the used figure.

Figure 3 illustrates the trends in Plant & Machinery⁴⁷ and Intangible Capital Allowances claimed from 2018 to 2023, highlighting the distinction between claims made by all companies and those made specifically by companies, who had no liability for Corporation tax.

The first chart shows a strong increase in overall amounts available to be claimed for intangible capital allowances before any restrictions starting from €50bn in 2019 to nearly €147bn in 2023.⁴⁸ However, amounts available to claim by companies who had no liability to Corporation tax, remained more volatile, fluctuating between €1bn and €20bn annually.

The second chart shows a steady rise in total capital allowances for plant and machinery from 2018 to 2020, peaking at approximately €50 billion, followed by a slight dip in 2021, a rebound in 2022 before falling again in 2023.

Companies, who had no liability to Corporation tax, had a similar time series pattern and consistently claimed about €20bn in capital allowances each year. This reflects consistent claims of allowances in sectors like aircraft leasing and manufacturing. Removing Administrative and Support Services, as a proxy for aircraft leasing, indicates that the level of plant and machinery capital allowance claims was substantially lower for nil-liable companies yet still 13% percent of total claims in 2023. This “business investment” share is notably lower than the share of employment for these companies.

⁴⁷ Regarding the leasing of machinery or plant, where a leasing business carried on in conjunction with other activities (for example, a banking business), the business is limited in how it can offset capital allowances derived from the leased machinery and plant – with such allowances only being available for offset against the leasing and/or “lease adjacent” activities (at a very high level this refers to the typical admin and support activities carried on by leasing businesses) in that company or the wider leasing group. The degree to which offset is available depends on a number of factors. These rules are in place to prevent the use of excess leasing allowances against activities other than those carried on by leasing businesses.

⁴⁸ The value of capital allowances available to claim for intangible assets before any restrictions was €147 billion in 2023. The amount of capital allowances in respect of intangible assets reported as unused on 2022 returns by companies and carried forward (including amounts carried forward from earlier periods) into 2023 was €80 billion. The equivalent amount reported as unused on the 2023 returns and available for carry forward into the 2024 returns is €102 billion.

Figure 3: Comparison of Capital Allowances Claimed by Asset Type

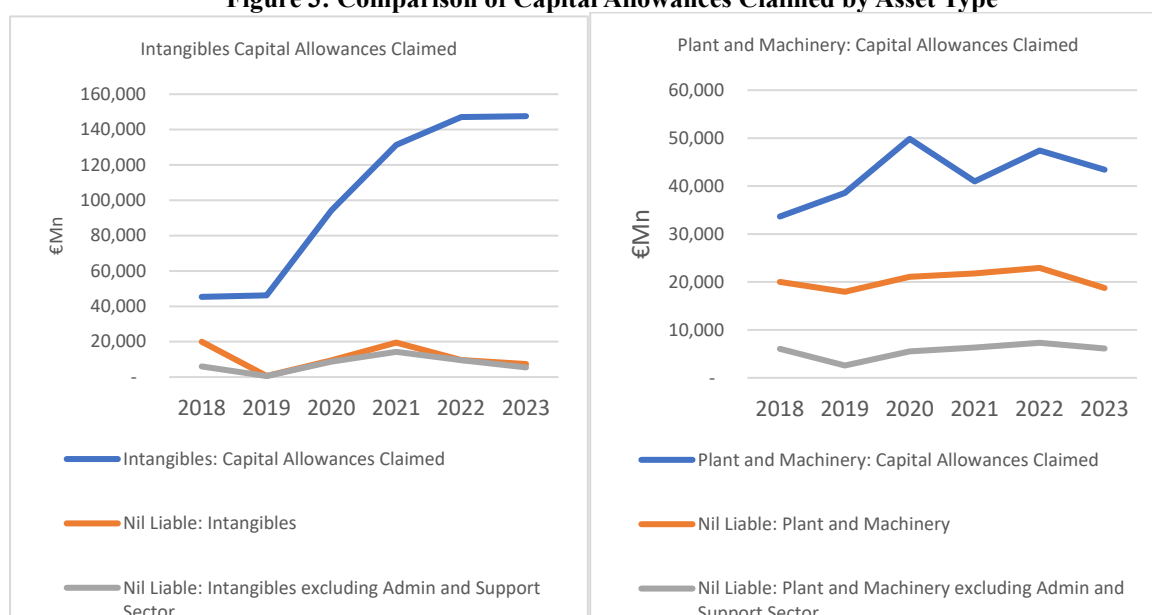


Table 12 provides the 2023 sectoral breakdown of intangible and plant-and-machinery capital allowances claimed by nil-liable companies. In 2023, companies who had no liability to CT, claimed a total of €18bn in Plant & Machinery capital allowances and €7bn in Intangible capital allowances. Of the €7bn of intangible capital allowances claimed, over €5bn can be explained by the Manufacturing sector. Looking to Plant and Machinery capital allowances claims shows the dominance of the Admin and Support sector accounting for over 60% of the claims. The remaining sectors 49 claimed less than 20% if the allowances. Over 50% of the capital allowances claimed by nil-liable companies across both intangible and plant and machinery can be attributed to the foreign sector.

Table 12: Breakdown of Capital Allowances Claimed for Nil-Liable Companies: 2023

Overall Intangible Allowances Claimed Nil-Liable: 2023: €M	7,332		Overall Plant and Machinery Allowances Claimed Nil-Liable: 2023: €M	18,745
Manufacturing	5,098		Admin and Support Services	12,616
Administrative and Support	645		Manufacturing	2,393
Other	1,588		Finance and Insurance	1,082
			Professional and Technical Activities	837
			Other	1,817

5. CONCLUSION

This paper shows that between 55 and 61 per cent of companies from 2017 to 2023 have no corporation tax liability. Using comprehensive administrative data, the analysis shows that nil-liability arises from a combination of cyclical losses, substantial capital-allowance claims in capital-intensive sectors, and a cohort of non-trading or low-profit companies.

The evidence indicates that a significant proportion of trading companies, particularly in sectors such as aircraft leasing, manufacturing, and finance, utilise capital allowances and accumulated losses to offset trading profits. In

⁴⁹ Remaining sectors being all sectors other than Admin and Support Services, Manufacturing, and ICT. The increase in intangible capital allowances claimed in 2021 can be attributed to some software entities in the Finance and Insurance sector.

2023 alone, €29 billion in profits was matched by €27 billion in deductions, including €12.5 billion in capital allowances and €11.8 billion of losses carried forward. These findings underline the impact capital allowances and loss carry-forwards can have on taxable income.

At the same time, the data show that nil-liable companies play a substantial role in the wider economy. Across the period studied, they consistently accounted for one-quarter to one-third of all employments in CT-filing companies, contributing €20.5 billion in gross pay and over €7 billion in payroll taxes in 2023. Profit-making traders account for roughly half of all employment within nil-liable companies, while even loss-making traders employ large numbers across sectors such as accommodation, retail, manufacturing and professional services. These patterns illustrate that a low CT liability does not imply limited economic activity: for large parts of the domestic corporate base, nil-liability coexists with significant labour-market participation.

The persistency results highlight that roughly 25,000 companies were consistently nil-liable from 2017 to 2023, including many non-trading entities and small domestic companies. High transition probabilities (80–85 per cent) for both liable and nil-liable states suggest that year-to-year volatility does little to broaden the effective tax base. Overall, the empirical evidence shows that Ireland's nil-liable companies cannot be understood as a homogeneous group. Rather, they reflect the diversity of the enterprise base – ranging from large multinationals undertaking major capital investment, to cyclical domestic businesses, to long-standing holding entities. Recognising this diversity is essential for designing corporate tax policy that supports productive investment while safeguarding the stability and inclusiveness of the tax base.

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FIRST VOTE OF THANKS PROPOSED BY NESSA NÍ CHASAIDE, MAYNOOTH UNIVERSITY

The paper provides a highly valuable contribution through its analysis of the significant and understudied occurrence of nil-corporate tax liability companies in Ireland (between 55-60% of companies) over the period 2017-2023. These companies include young, older, foreign and domestically owned companies operating before, during and after the COVID pandemic. The paper is particularly informative due to its breakdown in the analysis of nil-liability companies into three different cohorts - companies in trading profit, loss making companies and non-trading companies.

There are at least three major takeaways from the paper. Firstly, while, attention is often focused upon the concentration of high corporation tax payors in the Irish tax system, this paper points to a second, very significant and understudied concentration in the tax system - that of companies paying no corporation tax. Secondly, the paper highlights persistence within cohort of companies over the time period studied. Thirdly, the impact of transactions relating to aircraft leasing are, again, a troubling feature of Irish national statistics. Recall that aircraft were a partial driver of Ireland's GDP spike in 2015.

I would highlight at least four policy concerns which arise. Firstly, the paper shows that a very significant number of companies persistently report nil corporate tax liability (55–60% of Irish companies between 2017 and 2023). Coupled with the concentration of high corporate tax payors, the implication of the paper draws our attention to the importance of attending to a) the dynamics among Ireland's consistent and proportionate tax payors upon which the future of the Irish tax system depends and b) the need to review certain Irish tax rules and their applications which lead to nil-liability i.e. the rules governing loss carry-forwards, capital allowances, and the presence of non-trading firms.

Secondly, the paper indicates that part of the persistence of nil-liability companies is due to the impact of long term carrying forward of losses. While the Comptroller and Auditor General has flagged required action in this area, the paper shows little change in the high persistence of losses carried forward. The Comptroller and Auditor General has indicated that persistent losses amount to a potential of €30 billion in future corporate tax receipt losses to the exchequer, based on 2021 figures.¹ This indicates an embedded political acceptance of losses carried forward in the Irish tax system.

Third, the persistence in nil-liability relates to the high presence of financial services activity in Ireland whereby Ireland fulfils a conduit role among companies within the same corporate group. This occurs for a range of reasons but crucially includes global tax minimisation.

Fourth, the paper indicates that capital allowances and accumulated losses offset trading profits in the aircraft leasing sector in particular. Ireland is a national success story in aircraft leasing. However, this sector requires critical appraisal. In addition to its negative contribution toward global heating, aircraft leasing in Ireland, despite its high value, boasts a relatively low level of employment creation, has caused distortions in Ireland's national accounts and, as this paper shows, is a prominent sector in the nil-corporate tax liability cohort of companies.

Overall, the paper illustrates how more detailed analysis of existing corporate tax data such as this can provide an important entry point for identifying company activity associated with varied corporate tax payment outcomes. The publication of this data by Revenue is therefore extremely welcome and hopefully will be repeated. Further research in this area would benefit from greater exploitation of internationally comparable data and from combining existing data and research capacities within Revenue, the Central Statistics Office and the Central Bank of Ireland. New methodologies of analysis, which link data with studies of firm and sector behaviour would support this.² This could also be coupled with analysis of other company datasets that provide indications of business activities.³ A more robust approach would provide insight into patterns of company activities and their linkages with planning toward reductions in corporate tax payment obligations either globally and/or in Ireland.

SECOND VOTE OF THANKS PROPOSED BY CONOR PRESCOTT, CENTRAL STATISTICS OFFICE

I would like to express my sincere thanks to Yvonne Hayden for an insightful paper focused on an interesting cohort of the corporate sector. At first it can seem alarming that a significant portion of companies in Ireland pay zero corporation tax. In many respects this is simply the reality of a normal functioning economy where enterprise churn and low margins will always exist in certain sectors. But what is notable in these results is the presence of large profit-making enterprises that use benefits of the tax code to also join this cohort of 'nil-liables'. What this paper shows is that this "nil liable" cohort is not homogeneous - contributions to domestic investment and employment vary significantly across the distinct trading groups within it. Exploring some of these sub-groups can shed light on whether corporation tax policy is achieving its goal of raising exchequer revenue and encouraging economic activity while also remaining fair in the sense that tax paid by an enterprise can be viewed as payment to reflect the benefits conferred by the state on the enterprise itself. Below, I will touch on two of these groups whose large profits, yet zero tax liability, raises additional questions about alignment with this goal.

Large Presence of Nil-Liable Aircraft Leasing Companies (ALCs)

The paper shows that ALCs account for the majority of capital allowances claimed on tangible fixed assets (€7.3bn in 2023). They also account for nearly half of all trade losses carried forward to further reduce taxable profits (~€6bn in 2023). Although categorised as trade losses carried forward, these are unused capital allowances on aircraft that companies can use to offset taxable profits in future periods. This is because annual capital allowances are granted at the rate of 12.5% irrespective of the actual life of the aircraft, while section 110 status ensures taxable profits are kept low through favourable tax-deductibles (namely interest expenses). This feature of the tax code has allowed some ALCs to end up with a zero-tax liability.

With respect to the contribution of ALCs to the domestic economy, payroll data tells us there are about 3000 people directly employed in the sector. Notwithstanding spillover effects from increased activity in supporting industries such as legal, accounting, and support services, the sector does not contribute significantly to domestic employment. With most expenditure abroad (e.g. USA and France), the domestic economic footprint from investment is also sparse. On the face of it, the weak connection between the success of the ALC industry in Ireland and its contribution to the domestic economy runs counter to the revenue raising objectives of corporate

¹ Comptroller and Auditor General, 2022 *Corporation Tax Losses* in Report on the Accounts of the Public Services 2022

² See suggestions from Osborne-Kinch, J., Mehigan, C., & Woods, M. (2020). Understanding the presence of MNEs in Ireland as an end user. *IFC Bulletins chapters*, 52.

³ E.g. Reurink, A., & Garcia-Bernardo, J. (2021). Competing for capitals: the great fragmentation of the firm and varieties of FDI attraction profiles in the European Union. *Review of International Political Economy*, 28(5), 1274-1307.

tax policy. However, the success of the ALC industry could be viewed as part of a wider industrial policy to promote Ireland as a destination of choice for foreign direct investment. With respect to national accounting, the low domestic footprint of ALC's, as shown in this paper, is further evidence for the importance of stripping out factor income and depreciation on aircraft leasing in de-globalised indicators of the Irish economy (e.g. GNI*).

Historical Losses in the Financial Sector

Another striking result in this paper is the level at which profiting-making companies in the financial & insurance sector have been able to reduce their taxable profits to zero using historical trade losses carried forward. Specifically, very large losses incurred by some banks during the 2008 financial crisis are still being used years later to arrive at a nil-liable tax position. Allowing banks, whose losses were effectively absorbed by the state during the 2008 government bailout, to eliminate their tax liability appears to be an overgenerous feature of the corporate tax system. The sheer losses accrued during this time will ensure these financial corporations will likely not have to pay any corporation tax for many years to come. The absence of a time limit on carrying forward trade losses should be reviewed if corporate tax policy is to remain fair and commensurate to the benefits provided to these banks by the state. As evidenced in this paper and indeed in official statistics, financial intermediation profits have grown substantially in recent years due to factors such as a lack of competition in the Irish market and the interest rate environment determining margins on lending and borrowing. The absence of any corporation tax liability in some of the main banks could be seen as further weakening their incentive to compete for customers and offer more attractive products to increase profits.

Conclusion

The focus on nil-liables in this paper gives a glimpse into the activity of certain industries and their contribution to the economy. The key outcome is that this group is not homogenous. Some sectors with a large presence of nil-liables such as accommodation and food services play crucial roles in the economy as a source of employment. By contrast, the behaviour of other sectors, such as those discussed above, warrants further analysis of the tax code. More broadly, this paper shows the depth of insight available in corporation tax data as a means of analysing the effectiveness of tax policy and the performance of the Irish economy at a sectoral level. Thank you again to the author for writing this paper and thank you to the society for the opportunity to be a discussant.

Seventy Years of Irish Fiscal Policy: 1954-2024

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(read before the Society, 18th February 2026)

Abstract: This paper analyses Irish fiscal policy over the last 70 years, considering how appropriate the fiscal stance was each year, given the state of the economic cycle. It finds that fiscal policy was generally pro-cyclical, aggravating rather than dampening fluctuations in economic activity. This was damaging to the long-term interests of the population. In two periods, the 1980s and 2009-2014, governments had little room to operate countercyclical fiscal policy. Instead, prolonged periods of austerity were needed to restore order to the public finances. The lesson from these two episodes was that inappropriate fiscal policy, as well as other policy failures, can be very costly for the economy. Also, when serious fiscal action is required to ensure government solvency, painful fiscal adjustment is better implemented speedily, rather than dragged out over many years.

Keywords: fiscal policy, public finance

JELs:E62, N14

1. INTRODUCTION

For most of the 70 years covered in this paper, the EU rules on fiscal policy had yet to be developed, and Irish fiscal policy was entirely the responsibility of Irish governments and the Oireachtas. Initially, within the EU the choices individual governments made on fiscal policy were unconstrained by EU law. However, in anticipation of the start of Economic and Monetary Union (EMU), in 1997 the EU agreed the Stability and Growth Pact (SGP). It was designed to strengthen the monitoring and coordination of national fiscal and economic policies to enforce the deficit and debt limits established by the Maastricht Treaty. In designing the SGP the key focus was on preventing any member of the EMU from becoming insolvent, which could endanger other member states. It was not designed to ensure individual countries adopted fiscal policies appropriate for their domestic economic circumstances.

Even with EU fiscal rules, the primary responsibility for fiscal policy remains with national governments. In practice, the EU rules have not prevented Irish governments from making unwise choices on fiscal policy in the past, nor have they constrained Irish governments from pursuing fiscal policies that they have felt appropriate.

In particular, the EU fiscal rules do not deal with the important role of fiscal policy, envisaged by Keynes in the 1930s, in managing cyclical fluctuations in the economy. Instead of encouraging countries to use fiscal policy to stimulate activity when output is below trend, and to moderate activity when an economy is growing above trend, the intention of the SGP and its successors remains to protect countries, and the EMU, from long-term insolvency.

While managing an economy to maintain solvency is essential, it is the minimal requirement for fiscal policy. It is appropriate for national governments, including the Irish government, to choose their own fiscal rules, consistent with the overarching EU rules. In Ireland's case the government introduced a rule in 2021 to cap increases in combined current and capital spending to 5% a year. However, this Irish rule has not been observed, and it is also poorly aligned with the role of encouraging counter-cyclical fiscal policy.

¹ The author would like to thank anonymous referees, Thomas Conefrey, Alan de Bromhead and staff in IFAC for very helpful comments on an earlier draft of the paper. The paper is also significantly enriched by the comments of Eddie Casey and Patrick Honohan, published in this Journal. The author alone remains responsible for the contents of this paper.

This paper concentrates on the last 70 years of fiscal policy in Ireland and considers the extent to which domestic fiscal policy has actually been used to moderate shocks and fluctuations in economic activity, and the extent to which fiscal policy has aggravated such fluctuations. Account is taken of the fact that over two sustained periods, the 1980s and 2008-2014, the issue of national solvency, of necessity, dominated policy-makers' considerations.

This paper uses a version of a methodology implemented by Kearney et al., 2000, and Kearney, 2012, to analyse budgetary policy between 1976 and 2012. It looks at fiscal policy in Ireland over the much longer period from 1954 to 2024, considering whether it was appropriate to the needs of the economy each year, given the state of the economic cycle. Obviously, there is a degree of hindsight involved, as the information necessary for targeting budgetary policy each year was, of necessity, more limited than it is many years after the event. Nonetheless, in many cases, even with the limited information available to policy makers at the time, the stance of budgetary policy was inappropriate for the then needs of the economy. In some cases, budgetary policy exerted a deflationary impulse that was inappropriate, and in others there was a degree of profligacy, pumping money into an economy already at capacity.

The approach taken in this paper is to compare the actual budgetary outcome each year with a “neutral” baseline where tax and expenditure policy are held unchanged. To the extent that the budget deficit was greater than the “neutral” deficit, fiscal policy was adding to demand, and where the deficit was lower (or the surplus higher) the effect of budgetary policy was to cool the economy. This paper does not consider the distributional effects of fiscal policy.

One might expect that if budgetary policy, averaged over time, were broadly neutral, there would not be a major change in the debt to national income ratio. However, a range of other factors can affect the debt stock, such as the need for a bank bail-out in 2010 and 2011. Nonetheless, the sum of the fiscal interventions over the seventy years is small, with stimulatory budgets averaging slightly less than deflationary budgets. As a result, the debt burden relative to national income in 2024 was not very much higher than it was seventy years earlier in 1954.

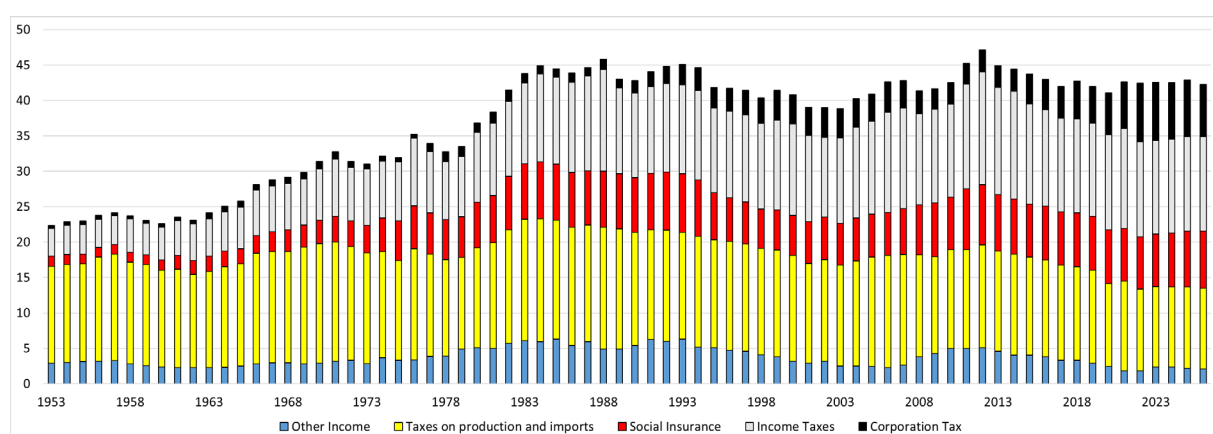
Section 2 of this paper describes the development of the public finances over the period 1954-2024. The methodology used to analyse the fiscal stance each year is set out in Section 3. The data used in the analysis are briefly discussed in Section 4. The results of the analysis are contained in Section 5 and Section 6 concludes.

2. PUBLIC FINANCES

Public Expenditure and Revenue

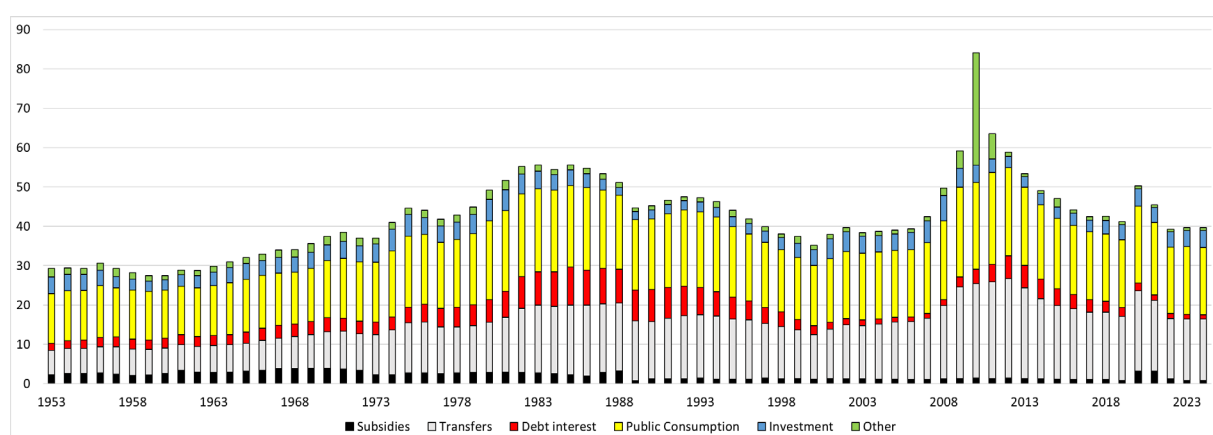
Over the last seventy years the role of the public sector in the Irish economy and wider society has greatly expanded. This is illustrated in Figures 1 and 2, which show government revenue and expenditure as a share of national income.

Figure 1: Government Revenue as a Share of National Income (GNI*), %



Source: CSO National Accounts

Figure 2: Government Expenditure as a Share of National Income (GNI*), %



Source: CSO National Accounts

Public expenditure in the early 1950s accounted for around 30% of national income, with revenue only accounting for 25% (Figures 1 and 2). Thus, the government sector was borrowing over 5% of national income to fund services. The debt to national income ratio rose from around 45% in 1953 to over 60% by 1959. Over the 70 years since 1953 public expenditure has risen to account for around 40% of national income today. However, along the way there were wide fluctuations in this share.

Until the early 1960s government revenue was under 25% of national income², with the bulk of the revenue coming from indirect taxes (Figure 1). Direct taxation, including income tax, accounted for under 5% of national income. From the early 1960s through to the early 1970s revenue grew to account for a third of national income, with most of the increased revenue coming from direct taxation – income tax and social insurance.

From the mid-1960s to the early 1970s there was a substantial expansion in the role of the state in the economy. There were significant policy changes, resulting in a substantial increase in expenditure on education and health, all affecting public consumption. Public expenditure rose from around 30% of national income to around 40%. Transfers, which had been around 7% of national income in 1965, rose to 9% in 1972 and 13% in 1975. The rapid increase in transfers between 1972 and 1975 reflected a significant change in policy by the then coalition government.

By the time Ireland joined the EU in 1973, government revenue amounted to 30% of national income, with the bulk of that revenue still coming from indirect taxation. However, by 1980 the share of national income accounted for by total revenue had risen to 36%, and over half of the revenue came from direct taxation, with indirect taxation declining in importance,

The negative impact of unwise fiscal policies of the 1977-1981 period saw the economy facing a major fiscal crisis in the early 1980s. While public expenditure accounted for around 40% of national income in 1977 (Figure 2), over the subsequent 5 years it rose to 55% in 1982, reflecting a further increase in transfers, and also a substantial increase in public consumption as a share of national income. However, the increased share of expenditure in national income was not mirrored by an increase in revenue. As a result, the national debt climbed rapidly, causing debt interest as a share of national income to rise by around 3 percentage points, despite the negative real rate of interest for much of the period.

The high debt level of the 1980s was combined with high real rates of interest from 1983 onwards. This saw large debt interest payments requiring a very large primary surplus to begin restoring balance to the public finances. In the mid-1980s, a time of very slow growth in the economy, public expenditure peaked at around 55% of national income. Debt interest payments reached 9.6% of national income in 1985, due to the rising debt and high real interest rates.

Initially the response to the public finance crisis had been to reduce borrowing by raising taxation – to a peak of 46% of national income in 1988. While some of the increased revenue was met by raising indirect tax rates, the bulk of additional revenue came from increased direct taxation, including the introduction of very high marginal rates of taxation on higher incomes. From 1987 the focus of fiscal adjustment shifted to reducing expenditure.

² The phrase “national income” is used throughout this paper to indicate GNI*, or before 1995, GNP.

Tough fiscal action spread over the decade, saw public expenditure fall back to 45% in 1990. As a result of measures to tackle the fiscal crisis, public consumption was reduced from 21% in 1985 to 18% of national income in 1989. Today it is around 17%, rather similar to that in other EU countries.

With the rapid growth in the 1990s, order was restored to the public finances and revenue's share of national income fell to around 40% by 2000. An ever increasing proportion of revenue came from direct taxation, including corporation tax. Reflecting the deadweight loss involved in the very high marginal rates of income tax in the 1980s (Honohan and Irvine, 1987), marginal rates were greatly reduced, still leaving income tax as a key source of government revenue.

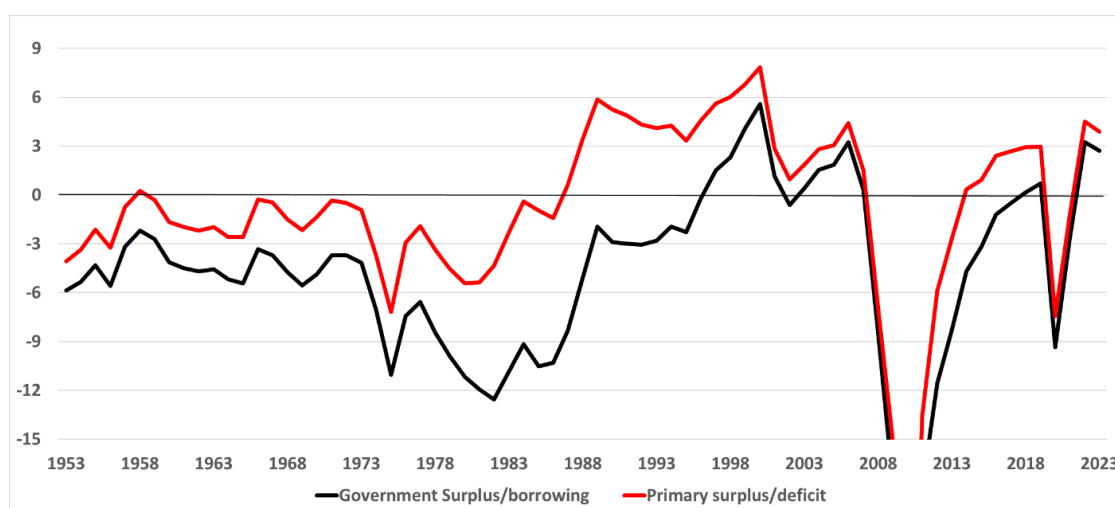
Between 1990 and 2000 the share of public expenditure in national income fell from 45% to 35%. Over half of the reduction in the share was due to a very large fall in debt interest payments, as borrowing was brought under control, while the economy was growing rapidly. After 2000 public expenditure began to creep back up to 43% in 2007, with much of the increase due to a rise in transfers.

The financial crisis of 2008-2013 again saw public expenditure average over 60% of national income, when the bank bailout is included. While public expenditure fell rapidly as a share of national income after 2013, the pandemic saw it peaking again at over 50% in 2020. Today it is back to 39%, lower than the average for the EU of around 43%. Revenue as a share of national income peaked again at 47% in 2012. Today it is back down to 43% - around the average for the EU. However, if corporation tax is excluded, most of which is paid by foreign owned companies, government revenue today only accounts for around 35% of national income, lower than in most other EU countries. In 2024 around two thirds of government revenue came from direct taxation, including corporation tax.

Fiscal Balance and Debt

Government borrowing in the mid-1950s averaged over 5% of national income, with a primary deficit of over 3% (Figure 3). The national debt rose from 45% of national income in 1953 to just under 60% of national income by 1959 (Figure 4), reflecting the continuing primary deficit. In the 1950s the deteriorating public finance situation saw a significant risk premium paid on Irish government borrowing compared to the UK (Figure 5).³ It peaked at 1% in 1956, reflecting the economic problems faced by the economy that year. Between 1953 and 1959 real interest rates averaged 2.7% a year based on the GNP/GNI* deflator.

Figure 3: General Government Surplus as Percentage of National Income, %



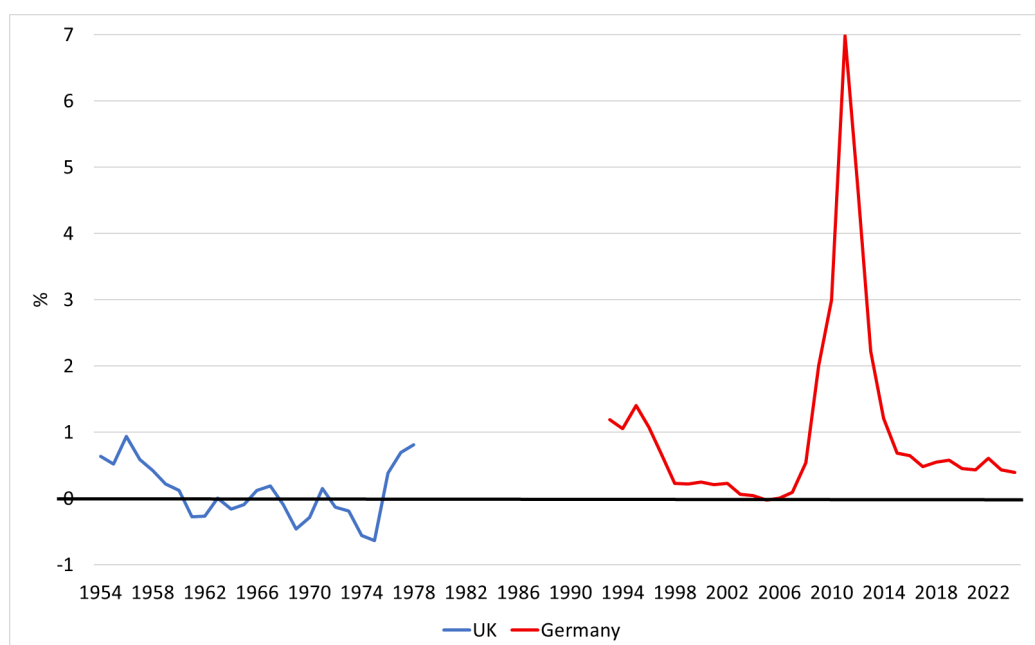
Source: CSO National Accounts

While government borrowing averaged 4.5% of national income over the period 1960 to 1972 (Figure 4), the primary deficit was quite low over much of the period, due to the growth in nominal national income and relatively low real interest rates (averaging close to zero). This meant that the debt to national income ratio in 1973 was back under 50% of national income (Figure 5). The risk premium on borrowing over the 1960s relative to the UK was effectively zero.

³ With a fixed exchange rate from 1922 to 1978, the risk premium is calculated as the difference between the yield on Irish government borrowing based on bonds with a maturity of 10-15 years compared to UK borrowing at similar maturity (FitzGerald and Kenny, 2018).

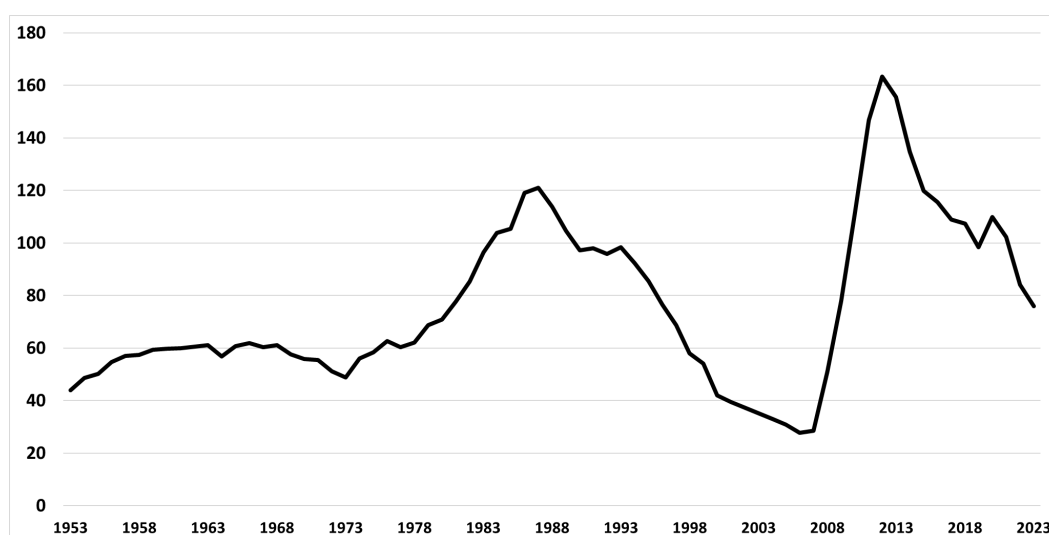
The economic difficulties of the 1970s, triggered by the oil price crisis at the end of 1973, saw surging inflation as well as a dramatic rise in government borrowing, returning the debt to national income ratio to 60% by 1977. Despite these economic difficulties, the Irish government, for a period, was borrowing at slightly lower rates than the UK government. However, from 1977, the risk premium increased, reflecting both the profligate economic programme of the new government, elected in 1977, and also the prospect of a break in the fixed parity with sterling.

Figure 4: Risk Premium on Irish Government Borrowing Relative to UK and Germany



Source: FitzGerald and Kenny, 2018

Figure 5: National Debt, % of National Income (GNI*)



Sources: CSO National Accounts and FitzGerald and Kenny, 2018

By 1980 the debt to national income ratio had reached 71% and the government deficit amounted to 12% of national income. It remained above 10% until 1987. This meant that the debt ratio rose rapidly, peaking at 120% in 1987. A significant factor in the continuing high borrowing was the elevated real interest rate. While real interest rates had been negative for the 1970s, they averaged +5.8% between 1981 and 1990. As a result of fiscal action, the government primary balance showed a small surplus in 1987. Strong measures reduced government borrowing to under 3% by 1989, reversing the upward trend in the debt burden.

Honohan and Conroy, 1994, provide detailed analysis of the rise in the risk premium on Irish bonds denominated in Irish pounds in the 1980s. They indicate that perceived exchange risk was an important factor in this change. However, they also show that the realised change in the exchange rate was less than expected, so that there were significant excess returns from investing in Irish bonds relative to German bonds.

FitzGerald and Kenny, 2018, show that the difference between the interest rate on Irish government and German government borrowing in DMs between 1981 and 1987 averaged significantly less than 1%. This seems surprising given the very significant problems in the public finances and the exchange risk that attached to Irish borrowing in DMs. With the benefit of hindsight, the government paid a high price by largely relying on borrowing in Irish pounds.

Between 1988 and 2007 government borrowing never exceeded 3% of national income and surpluses were recorded most years between 1997 and 2007. At the same time, the economy saw an exceptional period of growth. As a consequence, the debt burden fell from 96% of national income in 1992 to 29% in 2007. Also, the premium on Irish government borrowing compared to Germany averaged around 0.4% over that period (Figure 4).⁴

As a result of the financial collapse, beginning in 2008, government borrowing rose to unprecedented levels. Between 2009 and 2011 the cost of bailing out the banking system saw government borrowing peak at a truly exceptional 42% of national income in 2010. The crisis saw financial markets lose confidence in the Irish government's ability to repay its mounting debts. The risk premium on Irish government debt peaked at around 7% in 2011 and the government had to rely on support from the EU and the IMF in 2011- referred to as the "bail-out".

Really tough fiscal tightening and an economic recovery saw borrowing fall back to 3% in 2015 with a small surplus by 2018. Also, the ballooning debt during the crisis had a much more limited long-term impact on the economy than in the 1980s because of the exceptionally low interest rates experienced in subsequent years. While the pandemic temporarily derailed things, with borrowing in 2020 of 9% of national income, the public finances were back in surplus by 2022. Throughout the period from 2015 the exceptional growth in corporation tax revenue played a crucial role in turning the government's deficit into a surplus.

The financial crisis saw the national debt reach a peak in 2012 of 166% of national income. However, as a result of the prolonged economic recovery since 2013, and the recent bout of inflation, the debt burden fell to 68% in 2024. When government liquid financial assets are taken into account, the net debt at the end of 2024 was 49% of national income.

3. METHODOLOGY

A number of methods have been proposed to define a neutral fiscal policy, where the government is neither adding nor subtracting from demand in the economy. Such a neutral benchmark can then be used to measure the extent to which fiscal policy in an individual year is pro or counter cyclical.

Blanchard, 1990, suggested a methodology that avoided the need to define potential output by relating the budget balance to the level of unemployment in the economy. However, such an approach would not have been very useful in Ireland over the last 70 years, given the very open nature of the labour market, and how it has evolved over time.

Instead, this paper adopts the basic methodology used in Kearney *et al.*, 2000 and Kearney 2012. This aims to define the fiscal policy stance each year that would have had a neutral impact on demand in the economy. In the case of taxation, it is assumed that the average rates of taxes on personal income and indirect taxation (relative to their bases) remain unchanged from the previous year. No adjustment is made for fluctuations in corporation tax. Over the last 15 years it has grown dramatically in importance as a source of revenue.

In the case of Kearney *et al.*, 2000, they used the HERMES model of the economy to estimate the full economic effects of what they defined as discretionary fiscal policy changes. Using the macroeconomic model, roughly a third of the cost to the government sector of a discretionary fiscal policy injection was offset by increased tax revenue or reduced expenditure due to the induced higher level of economic activity. However, this varied depending on the nature of the fiscal instruments used.⁵ In using a model of the economy they were also able to measure the extent to which fiscal policy actually kept output closer to its potential.

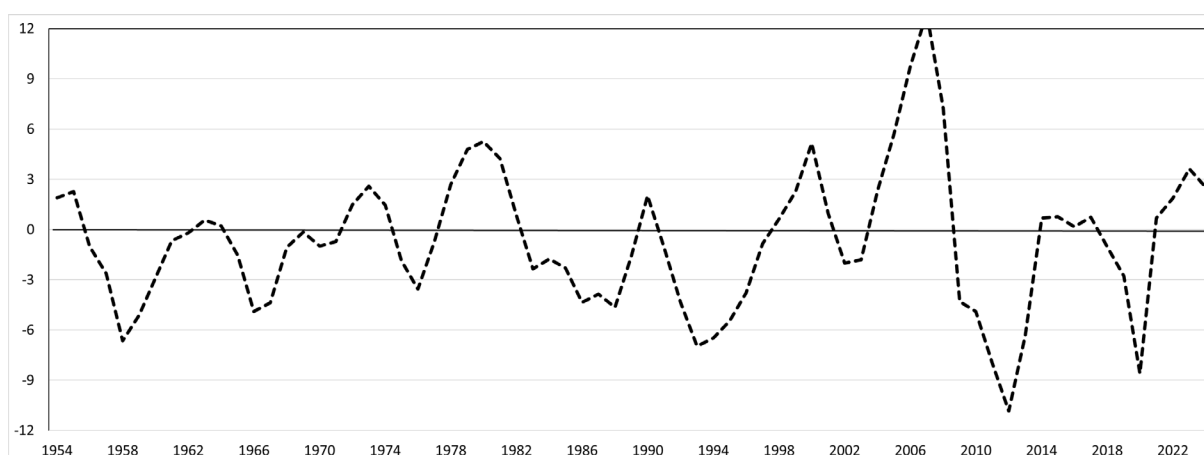
⁴ Between 1991 and 1998 there was exchange risk pertaining to Irish government borrowing in Irish pounds when compared to German DMs. There were realignments between the IR£ and the DM in 1993 and 1998.

⁵ However, there are wide standard errors around such numbers.

Table 1: Indexation Rules Defining a Neutral Budget

Taxes	Rule
Personal income taxes	Average tax rate relative to base held unchanged every year ⁶
PRSI	Average tax rate relative to base held unchanged every year
Indirect taxes	Average tax rate relative to base held unchanged every year ⁷
Corporation tax	Treated as exogenous
Expenditure	
Transfers	Increased in line with CPI and numbers eligible
Pensions	Population aged 65+
Child-related payments	Population aged 15 and under
Unemployment	
Subsidies	Indexed to value of personal consumption
Public consumption	Wage rates and average long-run GNI* growth
Public investment	Aggregate investment deflator ⁸

This paper does not use such a macro-economic model. Instead, it considers whether the fiscal stance was pro or counter-cyclical, estimating the size of the direct fiscal impulse each year relative to national income. Thus, this paper does not capture the feedback effects from activist fiscal policy interventions. Table 1 sets out how policy neutrality each year is defined. These rules are applied to the outturn for the previous year and the outturn for the public finances for the current year is then compared to this neutral benchmark.

Figure 6: Deviation of Output and Output Growth from Trend

Ideally potential output would be modelled independently as a function of capital and labour inputs, including human capital, and then the level of actual output compared to potential. However, measuring potential output poses significant challenges in the Irish case (Murphy et al., 2018 and Casey, 2019). Instead, the potential output of the economy is proxied by an eleven year moving average of real GNI* centred on the current year.⁹ Figure 6 shows the ratio of actual national income to this definition of potential output. When actual output or national income is above potential (positive in Figure 6) it would be appropriate to implement a deflationary fiscal policy – taking money out of the economy. When national income is below potential a stimulatory fiscal policy would be appropriate. It is against this benchmark that each year's fiscal policy is judged.

⁶ This does not mean that tax bands are held unchanged. With inflation, to keep the average rate unchanged tax bands need to be increased and / or changes made to the actual tax rates.

⁷ In the case of indirect taxation the base is taken to be personal consumption and investment in housing. Purchases of new dwellings pay VAT and such sales constituted a significant share of indirect tax revenue in the period 2002-2007. Prior to 1975 customs duties are also included in indirect taxes. Because much of the revenue from these duties came from imports of oil and tobacco, they were similar to excise duties in terms of their incidence.

⁸ It might be more appropriate to assume a volume increase in public investment, possibly in line with real national income. However, even this might not keep the stock of public infrastructure relative to national income unchanged.

⁹ Using this filter, the periods when the economy was either well below potential or above potential are identified in line with standard works on the economic history of the period.

4. DATA

The data used in this paper come from the National Accounts rather than the government's traditional Exchequer accounts. The National Accounts concentrate on transactions between government and the rest of the economy whereas the Exchequer accounts involve many cases of transfers within the government sector, making interpretation of what is happening difficult.¹⁰

The National Accounts data for the public finances, using the current definitions, are available in detail back to 2000, and in more summary form back to 1995. Before that the CSO Historical National Accounts data are used back to 1970. These data use slightly different definitions than are used today. The individual series are linked at 1995 to give continuous series back to 1970. Similarly, earlier vintages of the national accounts from 1953 to 1970 are linked to the series from 1970 to give continuous series for the individual items of government revenue and expenditure from 1953 to 2024.¹¹

The figure for government borrowing is also linked back to 1953, rather than being derived as the difference between revenue and expenditure in the linked series.¹² This is because of some mismatches in individual linked series, which see some divergence between the linked revenue and expenditure series before 1995. This divergence arises because of some definitional differences between the latest data and those before 1995.

Throughout the paper, the series used for national income is the adjusted national income figure shown in the national accounts (GNI*) from 1995 to 2024, for simplicity referred to as national income. This is linked to the GNI series from the historical national accounts back to 1970. In turn this series is linked to the CSO's data for GNP back to 1953, from *National Income and Expenditure*. This allows comparisons to be made with the tax and revenue figures in other EU members where GDP is used as the denominator. While the use of Net National Income for comparison purposes across countries would avoid the need for this special national income series for Ireland, as yet NNI is not used widely in other EU countries.

5. FISCAL STANCE 1954-2024

The methodology set out above is applied to the data from 1954 to 2024 to derive the fiscal stance in each individual year over that period.¹³ Using the rules set out earlier, the indexed numbers for revenue and expenditure, based on the outturn for the previous year, are then compared to the actual outturn each year. The difference between the government surplus / borrowing from these two sets of numbers is then taken to represent the fiscal impulse for that year. If fiscal policy is taking money out of the economy the measure of fiscal stance is negative.

The primary focus of this paper is to estimate the fiscal stance each year and consider whether it was pro-cyclical or counter-cyclical in nature, given the state of the economy. However, in considering how appropriate the fiscal stance was to the needs of the economy in an individual year, account must also be taken of the long-term sustainability of the public finances.

As discussed earlier, for a period in the 1980s, and again between 2009-2013, there was very serious concern about the ability of the government to borrow to cover its very large deficit. This was reflected in the very high real interest rates that the government faced, which added to the financial pressures. As a result, emergency measures had to be taken, which involved tightening fiscal policy at a time when the economy was already underperforming, with output well below potential. The necessity for such severe fiscal tightening arose from failures of fiscal and regulatory policy in the run up to the crises.

In the case of the 1980s crisis, successive governments had allowed borrowing to continue on an unsustainable path for a prolonged period (Honohan, 1992). In the case of the financial crisis from 2008-2013, serious errors in regulation of banking combined with imprudent fiscal policy to produce a public finance crisis where the government could not finance on open markets its huge borrowing requirement, much of it needed to bail out the banking system. This required a period of austerity, despite output in the economy being well below its potential.

Summary Results

On average, the fiscal stance adopted by governments over the period 1954-72 was procyclical. The years when output was below potential and fiscal policy was stimulatory appear in the upper left quadrant of Figure 7, while the years when fiscal policy was deflationary and output was above trend appear in the lower right quadrant. As can be seen from the trend line, more often than not fiscal policy was procyclical. Breaking the period of 70 years into three different periods does not change this conclusion nor does omitting the years of fiscal crisis 1981-89 and 2009-14.

¹⁰ The Exchequer accounts leave out major areas of expenditure, such as from the social insurance fund.

¹¹ The CSO's first set of national accounts data for the government sector are for 1953.

¹² Even in the 1950s and early 1960s, there is not a very big difference between the linked series for borrowing and borrowing derived by subtracting linked government expenditure from linked government revenue from linked government expenditure.

¹³ Because the neutral fiscal stance is defined relative to the revenue and expenditure in the previous year the first year of the data are used to define the fiscal stance in 1954.

Averaging over the full period from 1954 to 2024, fiscal policy was mildly stimulatory (Table 2), reflecting a gradual increase in expenditure, partly offset by an increase in taxation.

The national debt rose from 44% of national income in 1953 to around 60% of national income in 1960, it remained at that level for much of the 1960s. When taken as a whole, the period 1954-72 saw a very mildly stimulatory fiscal policy, with a rise in expenditure partly offset by an increase in taxation. The period 1973-80 saw a more stimulatory fiscal policy.

Figure 7: Fiscal Stance v Deviation of Actual from Potential Output

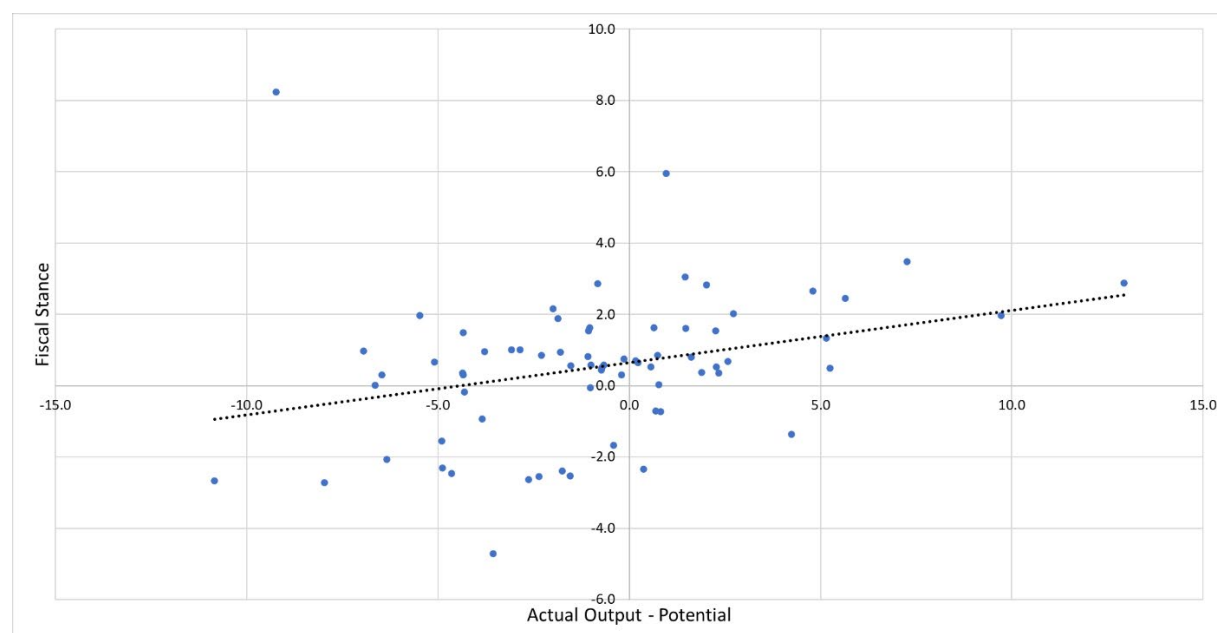


Table 2: Average Size of Fiscal Intervention, % of GNI*

	1954-72	1973-80	1981-91	1992-02	2003-08	2009-15	2016-24	1954-24
Overall	0.3	0.8	-0.7	1.9	2.0	-1.5	1.0	0.5
Revenue	-0.4	-0.3	-0.5	0.1	0.2	-0.5	0.0	-0.2
Expenditure	0.7	1.1	-0.2	1.8	1.8	-0.9	1.0	0.7
Real interest rate¹⁴	2.2	-1.2	4.8	3.0	1.6	5.1	-1.9	2.1

The 1980s was a decade of on-off austerity, tackling a rising debt burden. After the severe tightening of fiscal policy in the 1980s, the Celtic Tiger years from 1992 to 2002 saw a very expansionary fiscal policy, with the debt burden falling because of the rapid growth in the underlying economy. 2003 to 2008 were the bubble years when the economy was growing well beyond its long-term capacity, fuelled by a very stimulatory fiscal policy. This contributed to the financial crisis, beginning in 2008.

The period from 2009 to 2015 was one of serious austerity, due to the massive rise in the debt resulting from the financial crisis. In turn, real interest rates reached levels last seen in the crisis years of the 1980s. The recovery period from 2016 to 2024 saw fiscal policy that was, on average, mildly stimulatory, accompanied by much lower real interest rates.

While over the 70 years fiscal policy was, on average, stimulatory, the fact that the debt burden in 2024 was not very different from 1954¹⁵ reflects the surge in corporation tax revenue over the last decade.

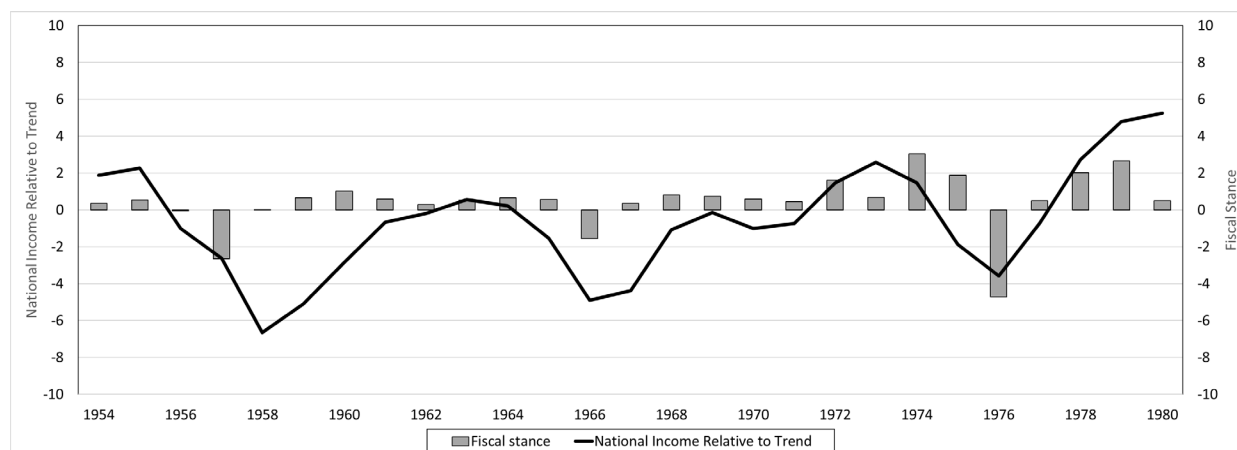
¹⁴ Yield on government bonds with 10 year maturity less rate of inflation in the consumption deflator.

¹⁵ In 1953 it was 44% of national income. The net debt was 49% of national income in 2024.

Detailed Consideration of Fiscal Policy

This consideration of the fiscal stance over broad periods, shown in Table 2, masks very different behaviour in individual years. To fully understand the role of fiscal policy it is appropriate to consider its stance relative to the needs of the economy at an annual level. Figure 8 shows the fiscal stance each year from 1954 to 1978 (a period when the Irish pound was linked directly to the UK£). It also shows the deviation of actual real national income from potential.

Figure 8: Fiscal Stance (% of GNI*) and Economic Growth Relative to Trend, %, 1954-78



1954-1971

The Irish economy performed very poorly between 1956 and the early 1960s, with real national income falling to 6% below potential in 1958. This underperformance was also accompanied by very high emigration, which peaked in 1958 at 2% of the population. The reasons for the major economic difficulties have been discussed in Honohan and Ó Gráda, 1998, Daly, 2006 and Ó Gráda and O'Rourke, 2022. In particular, Honohan and Ó Gráda show how what was perceived as a balance of payments crisis in 1955-1956, was largely due to the mistaken government policy of trying to keep interest rates well below UK rates, an impossible task with a fixed exchange rate.

As the reasons for the crisis were not understood by the government of the time, a severe tightening in fiscal policy was implemented in 1957 to try and reduce the balance of payments deficit. The Budget for 1957 stands out as the most contractionary of the 20 years to the mid-1970s. It involved severe cuts in expenditure and increases in indirect taxation aimed at reducing demand, and hence imports. This happened when the economy was already seriously underperforming, and when a counter-cyclical fiscal policy would have been appropriate. 1957 was also an election year, and the outgoing government was punished for this unwise fiscal tightening by losing the election (and subsequent three elections).

Over the years to 1965, fiscal policy was mildly stimulatory, as was appropriate, given the large excess capacity in the economy at the time. In 1966 the government implemented a deflationary budget, with a big increase in indirect taxation through the introduction of a turnover tax – a precursor of VAT. (An election had taken place the previous year.) The deflationary fiscal policy was implemented in a year when output was below potential. As the debt level was stable at around 60% and the primary deficit was almost zero, a neutral fiscal policy that year would have been more appropriate. However, a bank strike that year, that was not anticipated when the Budget for the year was announced, was a factor in the poor economic performance (Kenny and Stuart, 2025).

The real interest rate on long-term government borrowing also surged over 3% that year, which complicated the situation for the government. This increase in real rates did not reflect an increase in the risk premium on Irish government borrowing as Irish bond rates tracked UK rates very closely. It may, instead, have reflected concerns about UK economic policy, which ended in a devaluation in sterling in 1967.

In the 1970s a number of mistakes were made in fiscal policy which saw debt levels rising and growing concerns about the sustainability of the public finances.¹⁶ In 1972, when the economy was already growing vigorously, the government introduced a stimulatory budget. The stimulus amounted to around 1.5% of GNI*, which was strongly procyclical. This policy choice was probably guided by the impending election in 1973. It presaged a series of policy mistakes over subsequent years.

¹⁶ The negative real rate of interest over much of the decade provided some relief.

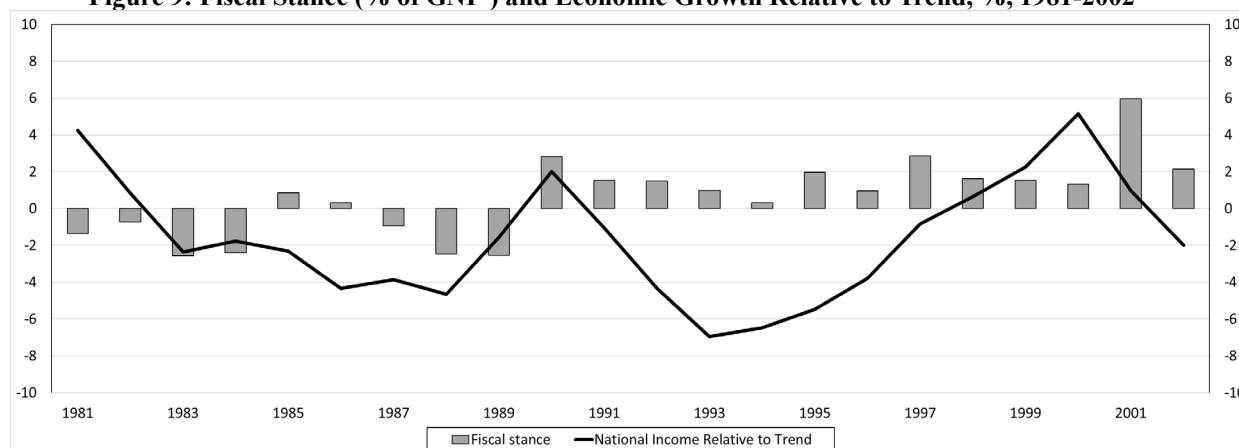
1973-1980

When the oil crisis hit in 1973, in many countries policy-makers reacted as if this was a temporary shock. However, it represented a permanent supply-side shock, affecting potential output. Initially, in 1974 the government introduced a very substantial stimulus, trying to protect households from the effects of higher inflation prompted by the very large jump in oil prices. Given the permanent effects of the shock, it was not sustainable for the government to use fiscal policy to permanently offset the costs for the population. One of the policy instruments used was very ineffective – consumer subsidies. Once introduced they proved difficult to eliminate and their impact was not targeted at those worst affected by the supply-side shock.

In 1975 there was a further significant stimulus provided in the Budget. However, while the debt to national income ratio was still just under 60%, it had risen 10 percentage points over the previous two years, and this provoked a major change in policy in 1976. The 1976 Budget was the toughest of the last 70 years, taking almost 5% of national income out of the economy. The deflationary Budget was implemented through significant discretionary increases in direct and indirect taxation, and cuts in expenditure. Government capital investment was cut by almost a quarter. This was a strongly pro-cyclical budget, which resulted in the economy continuing to perform well below capacity that year. Absent these cutbacks the economy might have grown closer to 4% or 5%. Instead, it grew by 2%. Not surprisingly, the government lost the election in the summer of 1977.

After the severe cuts of 1976, the economy bounced back and grew by an average of 5% a year over the period 1977-79. This took actual output above what might be considered potential output in 1978 and 1979.¹⁷ Fiscal policy was again strongly pro-cyclical in 1978 and 1979 (Figure 6), consistent with commitments made by the government in the 1977 election. As a result of this stimulatory fiscal policy, government borrowing, which had been just under 8% of national income in 1977 rose to 13% by 1981, with a primary deficit (excluding debt interest) of almost 7%. This deficit was clearly not sustainable. It had only proved possible to continue borrowing to fund public services because real interest rates were negative up to 1982.

Figure 9: Fiscal Stance (% of GNI*) and Economic Growth Relative to Trend, %, 1981-2002



1981-1991

While the Budgets of 1981 and 1982 began to tackle the public finance crisis, they were inadequate to stabilise the budgetary situation. The wider public found it hard to accept the need for drastic measures and there were three elections over the course of 1981-2. The governments elected in the election in 1981 and in the first 1982 election did not have a secure majority that would have facilitated them in taking the necessary remedial action, even if they had chosen to do so.

After the ineffective budgets of 1981 and 1982, and after a fresh election late in 1982, finally appropriate action was taken to address the crisis in 1983 and 1984, with the Budgets for the two years taking over 2% of national income out of the economy each year, mainly by raising taxation (Figure 9). Despite the fact that output was well below potential, this was necessary to slow the rapid rise in the debt. However, even after this tough action, in 1984 government borrowing was still 9.5% of national income, though the primary deficit had been reduced to

¹⁷ The Government's exceptionally optimistic view was that potential output would grow at 7% a year, falling to 5% over the coming decade. There was no research evidence to support such an assumption.

under 1%. The difference between the actual and the primary deficit, national debt interest, reflected elevated real interest rates, highlighting the challenge for the government.

The 1985 and 1986 Budgets did nothing to redress the situation, though there was further limited action to reduce borrowing in 1987. It was only in 1988 and 1989 that major further action was taken to cut borrowing, primarily by reducing expenditure, taking over 2% of national income out of the economy in each of these two years. The result was that government borrowing had fallen to under 2% of national income in 1989, though the debt to national income ratio in 1990 was still only just under 100%.

It took most of the decade of the 1980s to deal with the fiscal crisis, which had already been apparent at the beginning of the decade. It was very painful, involving many Budgets which were, of necessity, strongly procyclical. Over the 1980s, the cumulative tightening of fiscal policy, needed to return the public finances to a sustainable path amounted to 9% of national income. In turn, the deflationary impact of these cuts resulted in a decade of low growth. This represented a high price paid for the fiscal profligacy of the late 1970s. One other lesson was that it would have been better to have implemented the tough fiscal policy measures more rapidly. Doing it in two bursts – 1983-4 and 1987-89 prolonged the economic pain and long-term cost.

External factors helped the economy turn around in 1989, despite the continuing negative impact of fiscal policy in that year. Growth in the economy in 1989 and 1990 averaged 6% a year, recovering some of the lost ground of the 1980s. However, German unification saw a huge fiscal stimulus in Germany in 1990-1992, with resulting inflation in that country. The Bundesbank, to counter this burst of inflation, raised interest rates, and kept them elevated till the mid-1990s to bring domestic inflation back under control. In turn, through the European Monetary System, the high German interest rates were transmitted to Ireland, seriously affecting the economic recovery as the Irish economy, and the public sector in particular, was still highly indebted, Bradley *et al.*, 1991. As Barrell, *et al.*, 1996 show, there was a similar negative impact on growth in the early 1990s for the rest of EU arising from the inflationary shock of German unification, the Bundesbank's response, and the link between exchange rates through the EMS.

1992-2002

From the early 1990s till the onset of the financial crisis in 2008, the issue of debt sustainability no longer determined the stance of fiscal policy. The economy was still operating far below potential in 1992. A rapid recovery in the economy was delayed till 1994, partly because of the effects of German unification, and the resulting high interest rates. Over the period 1994 to 2000 growth in national income averaged 7.8% a year, a remarkable performance, referred to as the Celtic Tiger years.

It took nearly a decade of this very rapid growth to close the gap between actual output and the economy's potential output. Given the wide gap between actual and potential output, as was appropriate between 1992 and 2002 budgets were mildly stimulatory (Figure 9). The 1997 budget was particularly stimulatory, probably reflecting the fact that it was an election year.

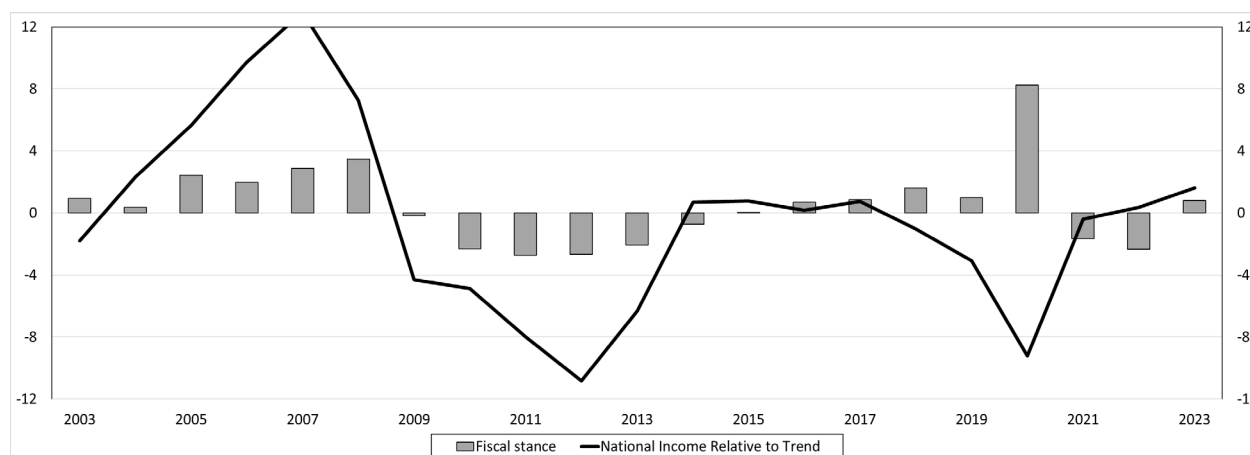
Over the course of the 1990s government borrowing averaged under 1% of national income. When combined with the very rapid growth in the economy this saw the debt to national income ratio fall from just under 100% in 1990 to around 55% in 1999.

As a result of external developments affecting the high tech. sector in Ireland in 2001 and 2002, output growth fell below potential. To counter this a very large fiscal stimulus was applied in 2001, split between tax cuts and increases in expenditure. As was appropriate for an economy that had been growing rapidly over the previous decade, the increase in public investment in 2001 was particularly notable. This expansionary Budget also occurred in the year before the 2002 election.

2003-2008

From 2003 onwards there was a growing gap between actual output and potential output, with the economy operating above capacity (Figure 10). By 2007, the positive gap between actual and potential output reached an exceptional level, reflecting a financial bubble in the economy. Despite this, fiscal policy in 2005-2008 was very stimulatory. It would have been much better to have implemented a significant tightening of fiscal policy in those years, which would have reduced the risks to the economy from the unsustainable boom, a boom that was particularly affecting housing and the wider property market.

Figure 10: Fiscal Stance (% of GNI*) and Economic Growth Relative to Trend, %, 2003-23



The dangers of this procyclical policy had been identified in a range of papers in the run up to the crisis (FitzGerald *et al.*, 2005, Barrett, Kearney and McCarthy, 2007 and Kelly, 2007). However, 2007 was an election year and, instead of operating a countercyclical fiscal policy to take the heat out of the economy, especially the property market, the 2007 Budget added a further stimulus. This was repeated again in the very stimulatory Budget for 2008. This sustained inappropriate stimulus made a major contribution to the future financial crisis. It also frittered away the resources of the government sector which should, instead, have been saved to deal with the inevitable eventual slowdown.

Finland and Sweden, which had suffered from a financial crisis in 1989-1990, had learned from the experience. As a result, in the boom years 2006-2007 they ran large government surpluses, slowing growth in their economies, and conserving government resources to deal with a likely future slowdown. In 2007 Finland ran a government surplus of over 5% of GDP and Sweden ran a surplus of 3.4% of GDP. Unfortunately, Ireland had not learned from the experience of these countries, and their earlier financial crises.

While inappropriate fiscal policy played an important part in the build up to the subsequent financial crisis from 2009-2015, the failure of banking regulation was even more serious (Honohan, 2019). The domestic financial system had extended huge amounts of credit to the household sector to buy dwellings. In turn this fuelled a boom in the construction sector and a dramatic rise in house prices. With a big tax take from the construction boom, in turn this flattered the public finances.

2008-2015

The financial crisis, which began in 2008, engulfed the economy, and the massive financing needed to bail out the banking system saw the government having to seek EU and IMF assistance in late 2010. As a result, a period of austerity, with major cuts in expenditure and increases in taxation, was inevitable. This was a repetition of the experience of the 1980s when the dominant task of fiscal policy was to return the public finances to a sustainable path.

While the government sought to tackle the large hole in the public finances in the 2009 Budget, its overall impact proved much less deflationary than anticipated (or necessary) because of an unexpected fall in inflation. This meant that there was a substantial increase in real transfer payments, which had been calibrated for a much higher inflation rate. The major cut in expenditure was through a 40% reduction in the previously high level of government investment.

While the 2009 budget was less contractionary than anticipated or appropriate, the 2010-2013 budgets cumulatively took over 9% out of the economy, one third of it through increases in taxation and two thirds through expenditure cuts. This contrasted with the 1980s when two thirds of the adjustment was made through increasing taxes and a third from expenditure cuts.

The experience of tackling the fiscal crisis in the 1980s informed the approach to the financial crisis between 2008 and 2014. Instead of spreading the necessary tough fiscal measures over many years, they were concentrated in the four Budgets covering 2010-2013.

2016-24

By 2015 the economy was growing rapidly, making up some of the ground lost during the crisis years. As was appropriate, fiscal policy was mildly stimulatory from 2016 onwards as output was close to or below its potential level. By the end of 2019 the government had a small surplus and the debt to national income ratio was below 100%. When liquid assets were taken into account, the net debt was closer to 80% of national income.

As with all other developed economies, the pandemic necessitated an exceptional fiscal injection into the economy in 2020. Government action to insulate the economy from the large negative output shock in that year was not hampered by concerns about the sustainability of the public finances. The fiscal injection in 2020 was the largest ever undertaken over the 70 years examined in this paper, and it helped insulate the economy and society as a whole from the full effects of the collapse in economic activity. As the economy recovered in 2021 and 2022 fiscal policy turned contractionary as there was a withdrawal of some of the special supports for businesses and households.

Finally, fiscal policy in 2023 was stimulatory, but broadly neutral in 2024. However, given that the economy was already operating above capacity, a tightening of fiscal policy would have been more appropriate for 2023 and 2024 (IFAC, 2024). Since 2015, what are considered to be large windfall gains of corporation tax revenue have greatly eased the debt burden and helped return the public finances very rapidly to sustainability. As the economy is already operating at or above capacity, some of these windfall gains are being saved, reducing the net debt ratio even more rapidly. This saw the government running a surplus of around 3% of national income.¹⁸

The “windfall gains” from corporation tax also affect the interpretation of the public finances. With a substantial surplus in 2023 and 2024, there have been some advocates for a more relaxed fiscal stance. However, with the economy operating above capacity, as reflected by significant inflation in the property market, fiscal tightening would have been appropriate.

Macroeconomic Implications

In this paper the fiscal stance has been measured in terms of the headline fiscal numbers. However, when the government applies a fiscal stimulus, as intended it affects the wider economy. Employment, output and consumption are all stimulated. In turn, tax revenue is enhanced and expenditure on unemployment transfers falls. Thus, the net cost of a stimulus is significantly less than the headline numbers. Similarly, when the Budget implements deflationary measures, there are knock-on effects on the fiscal numbers. The increase in tax revenue is less than the headline numbers, and expenditure reductions are partly offset by higher unemployment related transfers. Every year the Budget publication includes an estimate of this net impact of the Budget on the public finances, as well as the gross changes.

While this paper has assessed the suitability of fiscal policy for the needs of the economy over the last 70 years, in the absence of a macro-economic model it is not possible to estimate the full effects of that fiscal policy. Evidence from Bergin et al., 2013 and Bergin et al. 2017 suggests that in the 2000s the multiplier effects on national income of changes in fiscal instruments ranged from 0.7 (changes in direct taxation) to 1.3 (public consumption).¹⁹ Given the varied composition of individual budgets over the years, a rough estimate is that for a headline stimulus of around 1% of national income the ultimate impact on real national income would also be around 1%. Also, roughly a third of the cost of a stimulus (or a fiscal tightening) is offset by revenue buoyancy arising from the altered growth in the economy. However, depending on the fiscal measures, the full economic effects may take a number of years to come through.

Where fiscal policy involves major public investment, depending on the nature of that investment it may expand the potential output of the economy in the medium term. Assessing these supply side effects is even more complicated than for the demand side measures, and requires a model that is able to take account of the supply side of the economy (FitzGerald and Morgenroth, 2006). As cutbacks in public investment were an important instrument for tightening fiscal policy, for example in 1976, the 1980s and, most recently, between 2009 and 2014, failure to take account of the long-term damage such cutbacks may cause must be seen as another aspect of unwise fiscal policy.

6. CONCLUSIONS

The analysis in this paper suggests that over the last seventy years budgetary policy has more often than not operated in a procyclical fashion, increasing economic instability. In the broad periods 1954-79 and 1990-2007, when governments had the scope to implement a counter-cyclical fiscal policy, they only did so in around half of the Budgets. However, since 2014 fiscal policy has operated in a more appropriate counter-cyclical manner around 70% of the time. The 2023 and 2024 Budgets were an exception.

¹⁸ Excluding receipts from what in national accounting terms is considered a fine, paid by Apple.

¹⁹ The standard errors around these numbers are very high. Varthalitis, 2019, suggests somewhat lower multipliers.

There were two periods when the desirability of implementing a counter-cyclical fiscal policy was dominated by the necessity of restoring stability to the public finances. In the period 1980-1990 successive governments were faced with the task of controlling borrowing, which had reached an unsustainable level. Again between 2010 and 2014 draconian fiscal measures were essential to deal with the crisis. In both cases the fiscal tightening needed to ensure debt sustainability happened when output was below potential.

When the two crises periods, 1980-1989 and 2008-2014, are compared, it is clear that, when tough fiscal action was needed to restore stability to the public finances, it was best done rapidly. In the 1980s tough action was taken in 1983 and 1984, but that was not sufficient to solve the problems. Further major cuts were needed in 1988 and 1989 to complete the task. The result of this stop-go approach to policy was a decade of lost growth.

By contrast, the financial crisis period saw four consecutive years of major fiscal tightening (2010-2014), which restored order to the public finances, allowing the economy to recover vigorously from 2015. The action to tackle the pandemic-induced economic collapse in 2020 was a textbook case of counter-cyclical fiscal policy. A major stimulus was implemented when it was needed in 2020, and in 2021 and 2022 fiscal policy was tightened to restore the public finances to their sustainable long-term trajectory.

In 1956-7 and again in the years 1973-76 inappropriate fiscal policy responses were implemented because of a poor understanding of the underlying economic problems. In 1956-7 the government clearly did not understand that it was inappropriate monetary policy that was the major factor causing a balance of payments problem. In the 1973-75 period the government did not realise that the oil crisis had long-term effects on potential output, and applied too strong a stimulus. They then overreacted in 1976, with an excessively deflationary budget.

Two cases where unwise fiscal policies were implemented, ignoring external advice of the potential dangers, were the stimulatory policy adopted in 1978 and 1979 and again in the 2003-2007 period. In both cases it was apparent to independent observers that the policies being implemented posed dangers for the economy. In the 1977-78 period the government relied on a manifesto commitment, that potential output in the economy would grow very rapidly despite all the evidence to the contrary.²⁰ This greatly aggravated the fiscal crisis of the early 1980s, necessitating a decade of tough fiscal policy.

The most serious policy mistake in the 2003-2007 period was the failure to regulate the banking system, to prevent it taking on excessive risk. However, the stimulatory fiscal policy adopted over that period added greatly to property price inflation. As discussed earlier, there was extensive criticism of the dangers that this policy posed for the economy, but this advice was ignored. An appropriate deflationary fiscal policy over that period would have avoided some of the consequences of the recession from 2009-14.

As discussed earlier, over the 71 years from 1953 to 2024 there was a shift from reliance on indirect taxation to fund government services to direct taxation. In 1976, and again over the period 1983-1987, when implementing a tightening of fiscal policy there were substantial discretionary increases in taxes on income. As Honohan and Irvine, 1987, showed, the very high marginal rates of personal taxation implemented in the mid-1980s were particularly damaging. This research influenced future direct tax policy, and also it saw increased reliance on expenditure cuts in subsequent fiscal adjustments.

More recent research also showed that, because labour supply is very elastic in Ireland, much of the incidence of these taxes fell on employers. Employees have had the possibility of migrating to seek better after tax returns elsewhere, an option that was often exercised over the past 70 years (Curtis and FitzGerald, 1996, Duffy *et al.*, 2005, Bergin and Kearney, 2007 and Bergin *et al.*, 2013). The result was that major increases in taxes on incomes had a deleterious effect on competitiveness, and hence on potential output.

This was recognised in a change in policy in 1989 when taxes on income were cut, while simultaneously there were cuts in expenditure as part of the tough fiscal policy. This also informed the decision to rely more on cuts in expenditure than increases in direct taxation in the major fiscal adjustment between 2010-2014.

While evidence from elsewhere shows that using fiscal policy to ameliorate wide fluctuations in economic activity is beneficial, it would require a sophisticated model to quantify the effects of the generally procyclical fiscal policies adopted in Ireland over the last seventy years. However, the experience of the fiscal crises of the 1980s and, again of the 2009-2013 period, shows how inappropriate fiscal policies can have major adverse effects on economic welfare.

²⁰ Serious criticism of the Government's fiscal policy was offered by Paddy Geary in *Magill* in April 1978 and, again, in a paper to a Dublin Economics Workshop symposium in 1980.

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FIRST VOTE OF THANKS PROPOSED BY EDDIE CASEY, OECD AND UNIVERSITY COLLEGE DUBLIN

I propose a vote of thanks to John FitzGerald. The paper is excellent, and I agree with its findings. The findings chime with my own research over the past decade. The paper examines the history of Irish fiscal policy and it tackles this subject using a unique approach. I commend him for the additional insights this perspective provides. The paper brings new clarity to our national fiscal identity. It diagnoses a chronic condition in our economy: the habit of amplifying booms and deepening busts. This paper maps that habit out clearly and provides a long-term view of our fiscal mistakes.

Is it robust?

Are the findings robust? Yes. When I first read an earlier draft, I examined the numbers closely. There was a suggestion early on that the fiscal stance might be broadly neutral. I scraped the data from the paper, plotted the numbers, and highlighted the procyclical pattern, which I am delighted to see is now included as the scatter plot figure in the paper.

These results tell a clear story. Irish fiscal policy is undeniably procyclical. The charts show a clear pattern that when it matters — as in, when the gap between actual and trend output is at its widest — Irish fiscal policy leans towards being procyclical. Governments consolidate when the economy shrinks, cutting spending or raising taxes in bad times. They expand again when the economy grows, spending windfalls during booms.

This approach harms the underlying economy. It goes against basic Keynesian economic principles that a government should save money during a boom and spend those savings during a recession. The data from the past seventy years confirms this.

Moreover, while I might have some quibbles with the exact indexation techniques used in the paper, I am reassured that it does not make a material difference. Indeed, the results are unchanged when I use a completely separate approach. I estimate the output gap using a multivariate Kalman filter. I then measure the change in the structural balance, also defined differently and using semi-elasticities from Carroll (2019), against this output gap. This method removes temporary economic noise and is a common way to reveal the true underlying fiscal stance. The conclusion remains more or less identical. Irish policy is strictly procyclical.

Is it a problem?

Is this historical pattern a problem? Yes. It creates a dangerous fiscal trap. Recent research for Europe (Commission, 2025) highlights this trap: procyclical policy in good times breeds it in bad times. If a state spends its surplus today, it eventually cuts it tomorrow in similar magnitudes. By contrast, past countercyclicality reinforces current countercyclicality. A history of saving creates future fiscal space. The data also shows a political dimension. Governments tend to run looser fiscal policy during election years, most notably in developing countries.

This makes Ireland a double outlier. It is a developed economy in a currency union. Yet it acts like a developing economy with a floating exchange rate. Mendes and Pennings (2025) highlight this anomaly. Countries with fixed exchange rates normally save their windfalls. They use fiscal policy to stabilise their economies. Ireland ignores this discipline, spending windfalls swiftly.

Talvi and Végh (2005) explain the trigger for this behaviour, pointing to volatile tax revenues in developing economies. Booms generate disproportionately large surpluses. The surpluses become visible to the public. Voters see large surpluses. They demand immediate returns. Economists have referred to this as “starving the leviathan” (Alesina and Tabellini, 2005). Voters do not trust the government. They fear the state will waste the surplus and so they force the government to spend it now. This creates a political equilibrium of bad policy.

Personally, I am not convinced this is how the Irish dynamics work. I tend to think there is a slightly more benevolent dimension at play in Ireland. Policymakers see an opportunity to give money back to taxpayers and to improve their own political capital and seize that opportunity.

But there is a cost, which Maravalle and Claeys (2012) spell out nicely. Procyclical spending distorts the wider economy. It creates volatile cycles in public and private investment. It drives boom and bust cycles deeper. We suffer longer contractions and we lose structural capacity. This is notable in construction: Ireland’s construction workers emigrated en masse after the financial crisis (Conefrey and McIndoe-Calder, 2018), with a fall in the number employed by two-thirds. Firms went bankrupt, investment by the sector in research remained low along with the uptake of new technologies. Related to this, the state’s ability to manage and deliver on new housing and major projects as the economy recovered was eroded.

What can we do?

How do we fix this? The literature on episodes where debt has been successfully reduced suggests two things. First, successful debt reduction tends to rely heavily on cyclical recoveries rather than belt-tightening. This is certainly true of Ireland's recent experience. The net debt-to-GNI* ratio has fallen some 80 percentage points from its 127% of GNI* peak in 2012 while unemployment has fallen from nearly 16% to below 5%. Fiscal policy, as borne out by multiple reports from the Irish Fiscal Council, has been far from restrained.

Second, debt reduction episodes that do involve belt-tightening tend to focus very much on spending cuts. An unfortunate tendency is that Governments often cut infrastructure projects deeply as it is a path of least resistance. This harms our long-term growth potential and compounds the erosion of capacity.

We can learn from this evidence. In particular, we can show some humility about our understanding of recent events. Perhaps the debt reduction recently observed in Ireland is more cyclical than structural, and therefore less about tight fiscal policy than it is about a favourable economic backdrop. Moreover, we should aim to avoid repeating the recent loss of capacity once more, while recognising that it takes time to build that capacity.

There are growing pressures facing Ireland's budget. The Commission on Taxation and Welfare (2022) noted these trends clearly. The Commission said it was convinced of the need for tax increases. However, we do not have to rely solely on revenues. We can also look at spending.

The OECD recommends comprehensive spending reviews as a key tool. In this sense, Canada offers a good model, with their efforts having seen significant results. They split their recent reviews into two phases. First, they targeted 3% savings on administrative costs. Then, they sought up to 15% savings on broader programmes.

Ireland can adopt this approach in a countercyclical sense. It can conduct comprehensive reviews of spending during economic good times and it can focus these reviews on broad areas where future pressures are most pronounced and where spending is already high by international standards.

In particular, we can explore where value is not being achieved in broad areas, such as healthcare. This is something that the cycle of spending reviews has not tackled sufficiently, though recent work by the Irish Government Economic and Evaluation Service has the potential to develop further and tackle this area comprehensively (Shine and Hennessy, 2024). As Conroy and Timoney (2025) show, Ireland currently spends large amounts relative to our young population. A mandated review could force the system to generate better data. But it needs cross-party support to work. Preparing Ireland's public services for an ageing population should start today.

We also have new institutional tools. We have established two new sovereign wealth funds. Funds that help Ireland break its procyclical habit. They can act as a structural fix to our standard fiscal response, giving us the ability to capture windfalls safely and transform them into permanent revenue streams. The Future Ireland Fund and the Infrastructure, Climate and Nature Fund represent clear progress. We must defend these funds against short-term political pressures and direct more risky receipts, like corporation tax, to them.

I thank the author for this vital research. It diagnoses the Irish economy well. It challenges us to make the next seventy years better.

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SECOND VOTE OF THANKS PROPOSED BY PATRICK HONOHAN, TRINITY COLLEGE DUBLIN

John has provided a valuable service in extending the analysis of the degree to which government fiscal deficits have been procyclical in Ireland. There is excellent statistical material for the analysis of budgets year-by-year. And the paper is filled out with a sweeping overview of the way politics and economic disturbances interacted to militate against the countercyclicality of fiscal policy often seen as the hallmark of Keynesian macroeconomics. All in all, a model of the themes and topics appropriate to the Society.

The data reviewed now covers seven decades, and the pattern of procyclicality, already noted for a shorter period in the earlier work by Ide Kearney and others, is confirmed. Looking at the data, by my count there are 51 years of positive fiscal impulse more or less equally divided between years with above trend GNI* and those below trend. The overall tendency to have recourse to deficit financing is in evidence.

With a few years of zero impulse, we are left with seventeen years of negative fiscal impulse, of which thirteen are years when the economy was operating below trend. Most of these thirteen occur during the fiscal crisis of the 1980s or the banking and property crisis post 2008. Procyclicality in fiscal policy in those years are excused by John on the grounds of solvency concerns having left the Government with no choice. There are also the tough procyclical budgets of 1956-7, 1966 and 1976; these were also years in which what one might call “Treasury concerns” were to the fore, with budget speeches referring to a “grave risk of ... shortage of capital” (Lynch 1966); or “simply not possible or acceptable” borrowing prospects (Ryan 1976). (In the case of Sweetman’s 1956 budget, the objective was to avoid a current fiscal deficit in the context of a balance of payments crisis).

There are only four countercyclical negative impulse years: one is for 2014. In that year the post-GFC recovery is still in progress, but the 9-year moving average trend line of GNI* has been crossed; probably this is an illustration of the weakness of this moving average as a reference curve (the economy was still surely below potential (unemployment was 12%).

All of the rest are positive impulse years. One is especially notable: the huge 6% of GNI* positive impulse of 2001, recorded by John as procyclical. This was the year when Charlie McCreevy memorably said: “When you have it, you spend it. The mistake is to try to spend it when you haven’t got it” – a quote which is essentially the rejection of Keynesian demand management policy and which, I suggest, arguably applies to the general approach of Irish governments over most of the seven decades.

Let me turn to methodological issues. In the open economy that is Ireland, Keynesian multipliers can be small. Recent work by Varthalitis (2019) suggests a multiplier of less than 0.2 for the public wage bill and just a little larger for transfers. A sustained increase in government investment does better, but the multiplier is still only 0.6. Though these estimates can be challenged, leakage through the balance of payments is clearly large, arguably limiting the effectiveness of the fiscal deficit as a stabilization tool. Specific fiscal measures to deal with downturns work better when they are targeted to specific issues, as were, however imperfectly, most of the pandemic measures of 2020 or the energy subsidies of 2022.

Although spending, revenue and debt are all documented in John’s paper, his focus is mainly on the General Government Surplus/Deficit and its primary (non-interest) component, and more specifically on the “fiscal stance”. This “fiscal stance” is defined by the degree to which the deficit has been affected each year by discretionary policy decisions of that year to changed tax rates or to changes in government spending that differ from what would have occurred if each of the main government spending lines had grown in proportion to (a) wages and trend growth (for public consumption), (b) CPI and numbers unemployed/over 65 (for unemployment/pension payments) and so forth.

Thus, the paper essentially looks at how each year’s policy decisions has *moderated* the automatic stabilizers that were built into tax and spend regime of the previous year. The fiscal stance measure asks: “What’s new?”

I note several implications of this definition of fiscal stance:

- (i) A year for which the measured fiscal stance is zero is not necessarily a year in which the deficit is zero.
- (ii) A year of procyclical fiscal stance may still be a deficit year if the fiscal stance/impulse is less than the automatic stabilizer.
- (iii) One year’s easing of the fiscal stance could generate growing deficits in subsequent years even if those are years of zero stance – in this sense bygones are taken as bygones.

The measure is thus at its best in examining budgetary decisions year by year. While also useful for longer term analysis, it does not supersede such measures as the primary deficit and the debt ratio.

John's data contains an extraordinary sequence of years from 1990 to 2008 inclusive during which a positive stance is recorded in every year. (And GNI* was above trend for half of these years). Yet, the debt ratio was exceptionally low by the end of that two decade period. Of course, there were other imbalances in the Irish economy by the end of that period. Partly this sequence of positive fiscal stances was enabled by the associated deals on wage restraint and tax reduction, generating improved competitiveness which (combined with the strong international environment) allowed the economy to grow rapidly.

The continuation of fiscal ease after 1998 was, as implied by this analysis, inappropriately expansionary despite the falling debt ratio. Defenders of the Government might plead that the two-sided 9-year moving average trend GNI* path was not known at the time, but any plausible measure of potential output at that time would surely have given the same answer.

Of course, there is more to the macro impact of the budget than is captured in the surplus. Tax and spending programmes create incentives for private investment and other spending, and for borrowing. So, the fiscal stance variable cannot be an unambiguous guide for policy.

Nevertheless, any future analysis of Irish budgets will need to take John's measure into account and keep updating and refining it. For this reason, I am delighted to second the vote of thanks.

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Boston or Berlin? How Does Ireland's Tax and Spending Compare?

Niall Conroy*

Irish Fiscal Advisory Council

(read before the Society, 2nd April 2026)

Abstract: Fiscal policy is often described as a simple choice between a high-tax, high-spending model and a low-tax, low-spending one. This is true to a point. But the size of government is also shaped by factors such as demographics and economic growth. This paper examines Ireland's tax and government spending in comparison with other high-income European countries, accounting for these factors. While Ireland appears to operate a low-tax, low-spend model, this is largely explained by its relatively young population and strong economy. A younger population means the government currently spends less on pensions and healthcare than it would otherwise. Population ageing will increase spending in these areas and move Irish spending closer to European norms. Strong economic growth also lowers spending relative to national income. On the revenue side, Ireland collects less than its European peers, mainly due to comparatively low social contribution payments by employers and employees.

Keywords: Scope of Government, National Government Expenditures, Taxation, Subsidies and Revenue, Fiscal Policy, Demographic Trends

JELs: E62, H2, H5, H11, J11

1. INTRODUCTION

Is Ireland a high-tax and high-spend country like many in Europe?¹ Or is it more like other high-income countries outside Europe, which tend to have smaller governments? It's often thought that countries can choose between being high-tax, high-spend or low-tax, low-spend when it comes to fiscal policy. While this is partly true, other factors – like a country's demographics and economic growth – also play a key role in shaping tax and spending levels at any given time.

This paper looks at the size of government in Ireland compared to other countries, taking these factors into account. At first glance, Ireland appears to be a low-tax, low-spend country relative to other high-income European countries. However, this is mainly due to Ireland's relatively young population and strong economic growth. Ireland has a relatively young population, with fewer people aged 65 and over. A younger population means the government currently spends less on pensions and healthcare than it otherwise would. As Ireland's population ages, spending in these areas is expected to rise. This demographic shift will gradually bring Ireland's government spending more in line with levels seen in other European countries.

Ireland's strong economy also helps explain why its government is currently spending less as a proportion of its national income than other European countries. After adjusting for these two factors, Ireland spends 3.3% of national income less than other European countries (€1,800 per person). One area where Ireland is already a relatively high spender is healthcare. As the population ages, this is likely to rise further, making Ireland even more of an outlier. Ireland collects a lower level of government revenue than most other high-income European countries. This is equivalent to 4.7% of national income, or €2,600 per person. When excess corporation tax is excluded, the gap increases to 8.6% of national income, equivalent to €4,700 per person. This is mostly due to social contributions. Both employers and employees pay fewer social contributions than in most European countries. At the same time, Ireland collects a very high level of corporation tax. This is partly due to the large number of multinationals based in Ireland.

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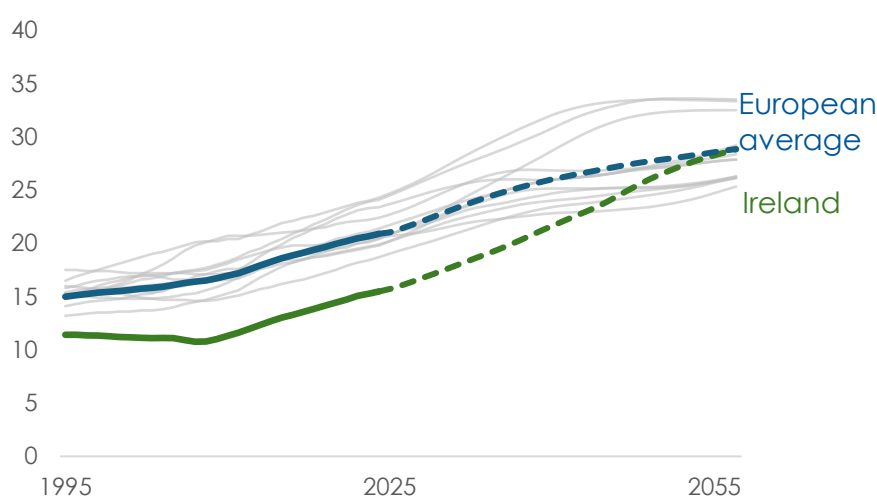
¹ The title of this paper alludes to a quote from Mary Harney (the then Minister for Enterprise, Trade and Employment), when she was asked what direction Ireland was going. She replied that Ireland was "Geographically (...) closer to Berlin than Boston, spiritually we are probably a lot closer to Boston than Berlin". See Fischer (2014) for further context around this quote.

Looking ahead, Ireland faces major spending pressures from both an ageing population and climate change. The recently introduced savings funds are a step in the right direction and can help offset some of these future costs. However, these funds alone will not be able to cover all future spending pressures. As a result, additional revenue will need to be raised, or some existing spending will need to be reallocated. The more the government saves today, the smaller the fiscal adjustments required in the decades to come.

2. DEMOGRAPHY IS DESTINY?

Before looking at government spending and revenue as a share of national income, it's important to consider demographics. This section compares Ireland's population age structure to that of other high-income European countries.² First, we look at those aged 65 and over. This group is typically retired and more likely to receive pension payments. They also tend to use healthcare services more regularly.³ Ireland currently has a much smaller share of older people compared to other countries (Figure 1).

**Figure 1: Ireland's Population is Ageing and Will Converge to European Norms:
Percentage of the Population Aged 65 or Over**



Sources: CSO, Eurostat and European Commission (2024).

Notes: Dashed lines indicate projections. Irish projections come from the M2 scenario of the CSO (2024) population projections. For other countries, projections from the European Commission Ageing Report are used. High-income European countries shown are Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Portugal, Spain and Sweden.

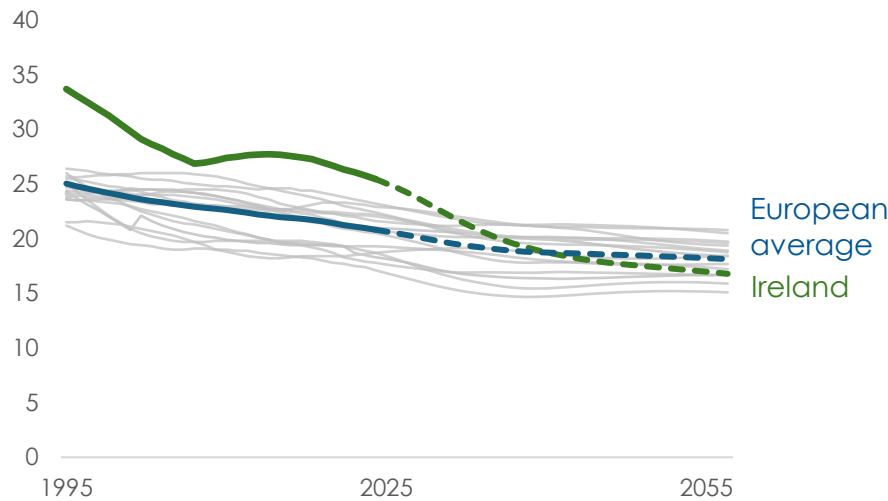
However, this is expected to change. According to CSO projections (2024), the share of people aged 65 and over will reach 20% by 2035 and continue rising. By 2050, Ireland's age profile is expected to match the European average. In fact, the share of over-65s in Ireland by 2050 is projected to be higher than in any high-income European country today. This shift will increase demand for pensions and healthcare.

Ireland has an unusually large share of its population aged 19 and under. These people are mostly in full-time education and not yet in the workforce. They drive demand for education services and child-related social protection spending. Ireland has a higher share of young people than other high-income European countries. However, this is expected to decline over time and eventually align with European norms (Figure 2).

² If you compare Ireland's demographics to high-income countries outside of Europe, a similar pattern emerges, with Ireland having a much younger population.

³ See Rennemark (2009) for a discussion of the link between old age and healthcare utilisation.

**Figure 2: Ireland’s Population is Remarkably Young, For Now:
Percentage Of The Population Aged 19 Or Under**



Sources: CSO, Eurostat and European Commission (2024)

Notes: Dashed lines indicate projections. Irish projections come from the M2 scenario of the CSO (2024) population projections. For other countries, projections from the European Commission Ageing Report are used. High-income European countries shown are Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Portugal, Spain and Sweden.

3. ACCOUNTING FOR DEMOGRAPHY IN PUBLIC SPENDING

Because demographics can strongly influence spending, we would like to adjust observed government spending for demographics.⁴ We follow the approach used by Redmond (2012), to make this adjustment.⁵ In our case, we want to estimate what Ireland’s spending would look like if its population had the same age profile as other high-income European countries. This involves adjusting spending in areas that are most sensitive to age – such as pensions, healthcare, education and child-related social protection. For example, when examining spending on pensions or healthcare, our adjustment parameter takes the form:

Adjusted Irish pensions spending =

$$\text{Irish pensions spending} * \frac{\text{European share of population aged 65+}}{\text{Irish share of population aged 65+}}$$

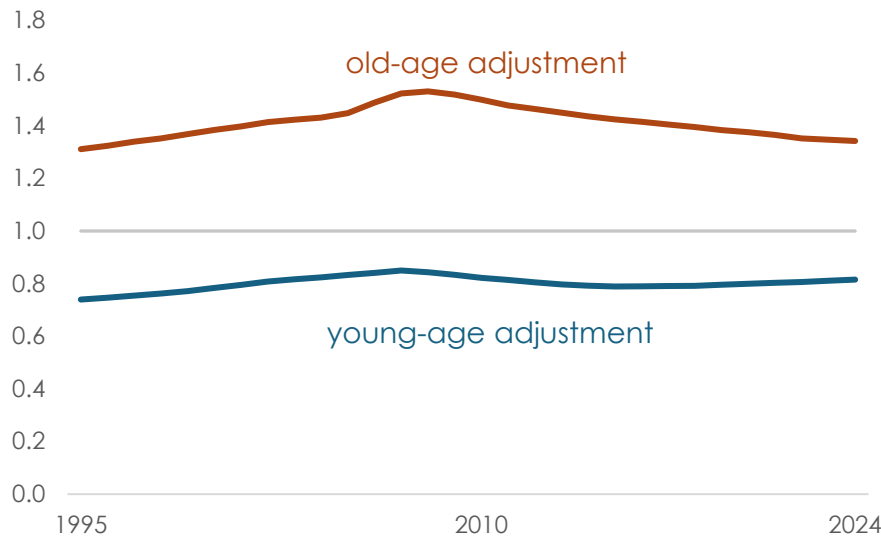
In this case, “adjusted Irish pension spending” estimates what Irish government spending on pensions would be if it had the same age profile as other high-income European countries. We focus on four key areas most affected by demographics: education, child and family social protection, healthcare, and old-age social protection.

For education and child-related social protection, we use the population aged 19 and under as the main driver of demand. For healthcare and old-age social protection, we use the population aged 65 and over. While these populations are not the sole users of these services, they give the best proxy for population driving spending in these areas. The adjustment factors used to scale Irish government spending up or down are shown below. For example, the old-age adjustment factor in 2024 is 1.34. This means that if Ireland had the same age structure as other European countries, spending on pensions or healthcare would likely be 34% higher. In contrast, the young-age adjustment factor is 0.82. This suggests that if Ireland had a similar share of young people as other European countries, education spending would likely be 18% lower (Figure 3).

⁴ The practice of adjusting the population is very common in health and medical research. The WHO publish a “standard” demographic structure of the population which allows other countries to compare to. See Ahmad et al. (2001) for details on the WHO population standard.

⁵ This methodology has subsequently been used by Meaney, Oyewole and Bedogni (2018).

**Figure 3: Old-Age Spending Needs to be Adjusted Upwards to Account for Demographics:
Adjustment Factor for Old or Young Age-Related Spending**



Notes: Each line shows the ratio of the European share of the population in that age category to the Irish share of the population in that age category. A number above one means you should adjust Irish spending upward in that area to compare to other countries. Conversely, a number below one means you should adjust Irish spending in that area downwards to compare to other countries.

One limitation of this approach is that it implicitly assumes a broadly similar relationship between population age-structure and age-related expenditure across countries. In practice, however, institutional features are likely responsible for some of the cross-country variation. Health spending levels depend not only on the age structure of the population but also on the organisation of each healthcare system, the balance between public and private sector roles, and eligibility rules for free or subsidised care. Likewise, pension expenditure may be influenced by differences in statutory retirement ages, contribution histories, replacement rates, and the relative roles of public and occupational schemes. Two countries with identical demographic structures may therefore exhibit different levels of age-related spending because their systems translate demographic pressures into budgetary costs in different ways.

As a result, the demographic adjustment should therefore be interpreted as capturing much of the predictable, age-related cost pressures, while recognising that some residual variation between Ireland and its peers may arise from differences in pension and healthcare system design. An exploration of the differing designs of these systems is beyond the scope of this paper. For healthcare, there is evidence that the utilisation of healthcare, complexity of cases and hence the costs of providing healthcare increase in a non-linear fashion with age. As a result, simply using the fraction of the population aged 65 and over may not fully reflect the impact of demographics on healthcare spending.⁶

4. EXAMINING GOVERNMENT SPENDING AREAS THAT ARE SENSITIVE TO DEMOGRAPHICS

Given that demographics impacts on different areas of spending, we examine specific parts of government spending separately. Although government departments and functions vary across countries, we can still make meaningful comparisons. We do this using COFOG (Classification of the Functions of Government) data, which applies a consistent method for categorising spending across countries. To facilitate cross-country comparisons, we examine general government spending relative to national income.⁷ For Ireland, we use modified gross national income (GNI*), while for other countries, we use GDP.⁸

Pensions Spending

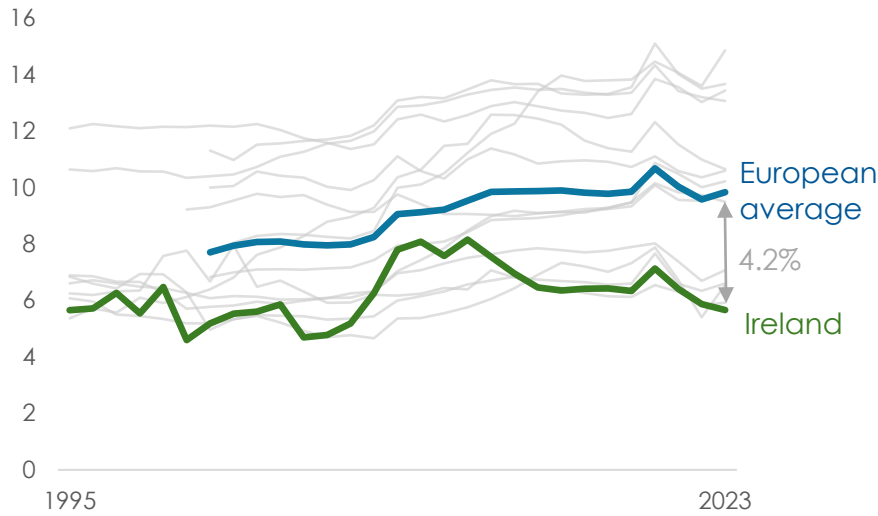
First, we examine old-age social protection spending as a share of national income. This includes pensions paid to citizens who meet qualifying criteria such as age and lifetime social contributions. It also covers pensions paid to retired public sector workers. Before adjusting for demographics, Ireland consistently spends less in this area than other high-income European countries (Figure 4).

⁶ For example, using the population aged 75 and over would imply an old-age adjustment factor of 1.5. As a result, we should consider the adjustment applied to health spending to be a lower bound.

⁷ For a historical perspective on government revenue and spending in Ireland, see FitzGerald (forthcoming).

⁸ For all countries, we exclude the costs of recapitalising banks in the aftermath of the Great Financial Crisis. To do this we use the dataset compiled by Villar Burke (2017).

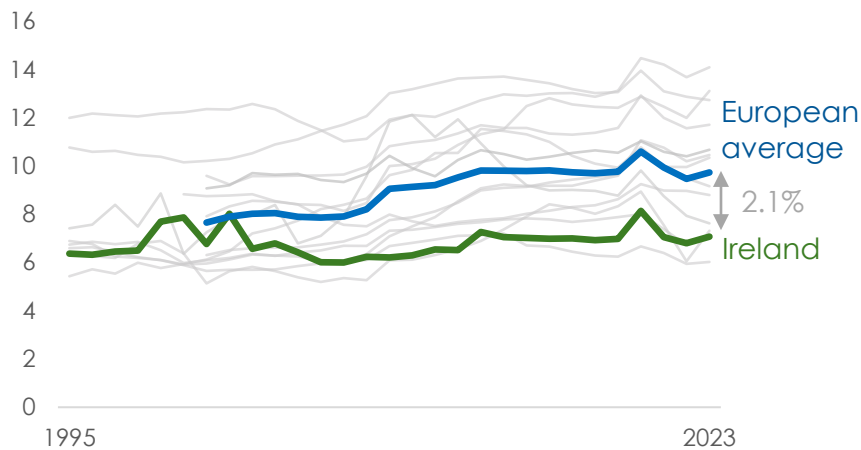
Figure 4: Ireland Spends Less on Old-Age Social Protection Due to Having Fewer Older People: General Government Spending On Old-Age Social Protection Payments, Percentage Of National Income



Notes: GNI* used for national income in Ireland, GDP for other countries. Countries used are Austria, Belgium, Denmark, Finland, France, Italy, Ireland, Netherlands, Norway, Portugal Spain, Sweden, and Switzerland.

When we adjust old-age spending for demographics, Ireland's spending is much closer to the average in high-income European countries. About half of the gap can be explained by Ireland's smaller share of older people.

Figure 5: After Adjusting For Demographics, Ireland's Spending On Old-Age Social Protection Is Closer To Average Levels: General Government Spending On Old-Age Social Protection Payments, Adjusted For Demographics Percentage Of National Income



Notes: GNI* used for national income in Ireland, GDP for other countries. Countries used are Austria, Belgium, Denmark, Finland, France, Italy, Ireland, Netherlands, Norway, Portugal Spain, Sweden, and Switzerland.

Even after adjusting for demographics, Ireland still spends significantly less on old-age social protection – 2.1% of national income below the European average in 2023 (Figure 5). Several factors may explain this gap. The retirement age or other eligibility criteria could play an important role.⁹ The easier it is to qualify for old-age social protection, the higher the level of spending you would expect. The number of retired public sector workers also matters. Countries with larger public sectors in previous decades tend to have higher pension costs today.

Finally, the relative generosity of pension payments across countries would play an important role. Eurostat (2024) data suggest that Irish pension payments per recipient are low compared to other high-income European countries

⁹ The Pensions adequacy report (2024) suggests the pension age in most European countries is slightly lower than in Ireland (66). However, many countries have multiple retirement ages for the main statutory pension scheme. This typically depends on factors such as the length of time someone has been making contributions, the benefit level they are receiving and the number of children they have.

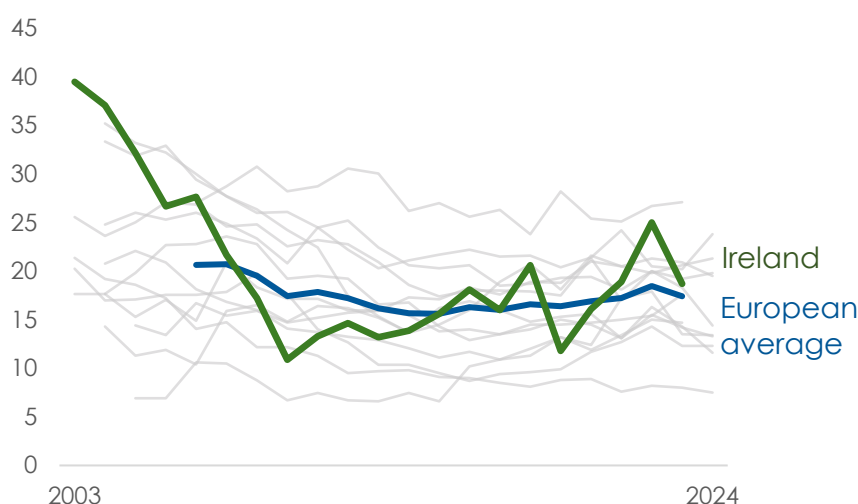
after adjusting for prices.¹⁰ The 2024 Pensions Adequacy Report (European Commission, 2024) highlights that Ireland is unusual in not having pension payments linked to any formal indexation rule. Almost all countries in Europe have a formal rule linking payments to changes in prices and/or wages. While spending levels are important, it's also essential to consider the outcomes and effectiveness of that spending.

Old-Age Social Protection Outcomes

One way to assess how well the social protection system supports older people is by examining the at-risk-of-poverty or social exclusion rate.¹¹ Of course, many other factors also influence this, such as past employment patterns and private pension coverage. Roantree, Maitre and Russell (2024) show how the at-risk-of-poverty rate among older people in Ireland fell sharply in the early 2000s. This was largely due to a 50% real increase in the maximum State Pension during that decade, while median disposable income rose by 28%. The at-risk-of-poverty rate among those aged over 65 in Ireland is now close to European average levels.

More generally, Roantree (2025) shows the key role taxes and transfer play in Ireland in redistributing income. Market income inequality in Ireland has been relatively consistent in Ireland since the late 80's. Taxes and transfers have played a greater role and have reduced income inequality in Ireland over this period.^{12,13} We can see that the fall in old-age poverty that Ireland experienced in the early 2000's was unique in Europe. Since then, poverty rates among older people have remained in line with other high-income European countries (Figure 6).

Figure 6: Poverty Rates of the Old-Age Population Have Fallen in Ireland: Percentage of those Aged 65 or Over At Risk of Poverty or Social Exclusion



Source: Eurostat and authors calculations.

Notes: Those at risk of poverty or social exclusion are those who meet one or more of the three criteria. First, those at risk of poverty, which is those with an equivalised disposable income (after social transfers) below 60% of the national median. Second, those experiencing severe material deprivation. Formally, this means experiencing an enforced lack of at least 7 out of 13 deprivation items. Thirdly, those living in very low work intensity households. However, this is not applicable in this instance, as those aged 65 and above are assumed to be retired.

Health Spending

Healthcare is the other area heavily influenced by the size of the old-age population. Older people typically need more healthcare due to their complex and costly medical needs.¹⁴ Given Ireland's relatively young population, one might expect Ireland's healthcare spending to be low compared to other European countries (Figure 7).

¹⁰ In 2021, of the 14 high-income European countries examined, Ireland ranked 12th for pension payments per recipient after adjusting for prices. In nominal terms, Ireland ranked 6th of 14 countries.

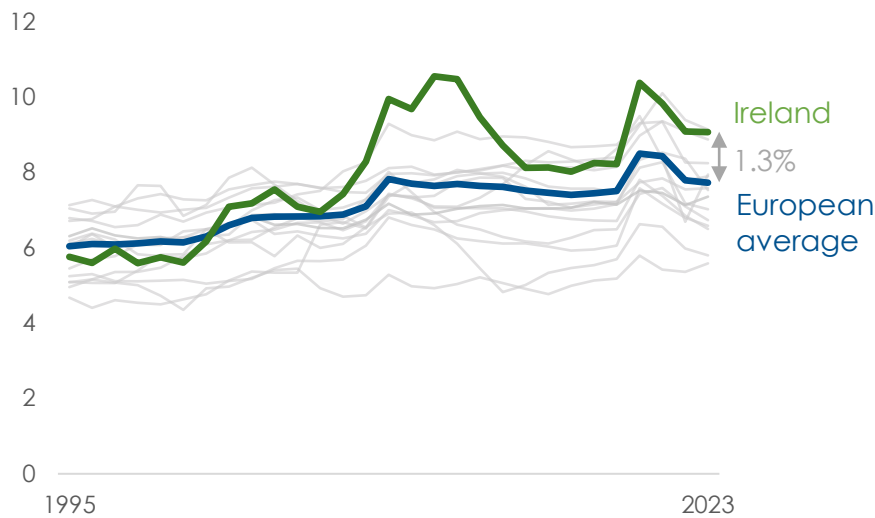
¹¹ This measure captures three concepts. First, those at risk of poverty. That is, those with an equivalised disposable income (after social transfers) below 60% of the national median. Second, those experiencing severe material deprivation. Formally, this means experiencing an enforced lack of at least 7 out of 13 deprivation items. Thirdly, those living in very low work intensity households. However, this does not apply to those aged over 65, who are assumed to be retired.

¹² As Thewissen *et al.* (2018) show, this is relatively unusual, most advanced economies have seen income inequality rise over this period.

¹³ In 2019, Ireland had the fourth highest market income inequality in the Europe (EU27 plus Norway, Switzerland and Serbia). After taxes and transfers, Ireland was thirteenth for income inequality. This suggests a stronger role for redistribution via taxes and transfers in Ireland (Roantree, 2025).

¹⁴ See Soley-Bori *et al.* (2020)

**Figure 7: Health Spending in Ireland is amongst the Highest in Europe:
General Government Spending on Healthcare, Percentage of National Income**



Notes: GNI* is used for national income in Ireland, GDP for other countries. Countries shown are Austria, Belgium, Denmark, Finland, France, Italy, Ireland, Netherlands, Norway, Portugal, Spain and Sweden.

However, government spending on healthcare in Ireland is among the highest in the OECD, as shown by Casey and Carroll (2021).¹⁵ Wren and Fitzpatrick (2020) suggest that high general wage levels in Ireland contribute to the high cost of healthcare.¹⁶ In addition, healthcare has a high elasticity of demand, meaning that demand for healthcare tends to grow even faster than income. Sicari and Sutherland (2022) point to Ireland's heavy reliance on hospital care as a major driver of high healthcare costs.

After adjusting for demographics, Ireland stands out even more as a high healthcare spender.¹⁷ By this measure, Ireland ranks as the highest health spender in every year examined (Figure 8). Using headline figures, Irish health spending is almost €4 billion higher than an average high-income European country of similar size. After adjusting for demographics, this gap widens to almost €13 billion.¹⁸

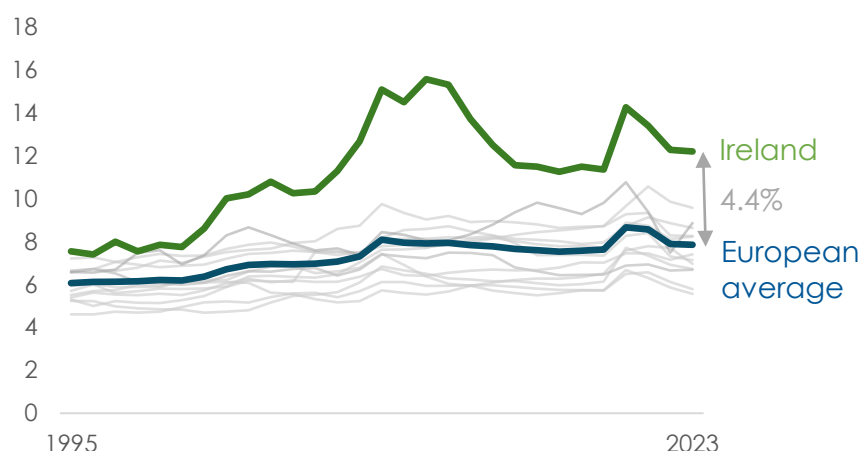
¹⁵ Comparability of health spending across countries can be tricky due to differences in classification and measurement issues. This is particularly acute when using the system of health accounts data, where long-term care can be attributed to health or social care in different cases. While this dataset is very rich, different countries take different approaches as to what spending is classified as health spending as opposed to social care spending. By contrast, COFOG data uses a consistent classification of all types of spending (including health) across all countries. As a result, we use COFOG data as it allows us to make like for like comparisons across countries.

¹⁶ Wren and Fitzpatrick (2020) find that health costs are high in Ireland, even after accounting for differences in how social care expenditure is allocated across countries. Some long-term care spending is classified as health spending in Ireland, which is classified as social spending in many other OECD countries. Wren and Fitzpatrick (2020) show that Ireland's ranking for public spending in the EU15 drops from 5th to 6th when combined with social spending on health.

¹⁷ For example, in 2023, we take health spending as a share of national income (9.1% of GNI*). This is then multiplied by the demographic adjustment factor of 1.35, giving spending of 12.2% of GNI*.

¹⁸ The €3.9 billion figure is based on Irish health spending being 1.3% of national income higher than in other high-income European countries. This is based on 2023 nominal GNI*. The €13 billion figure is based on health spending being 4.5% of national income higher than in other high-income European countries.

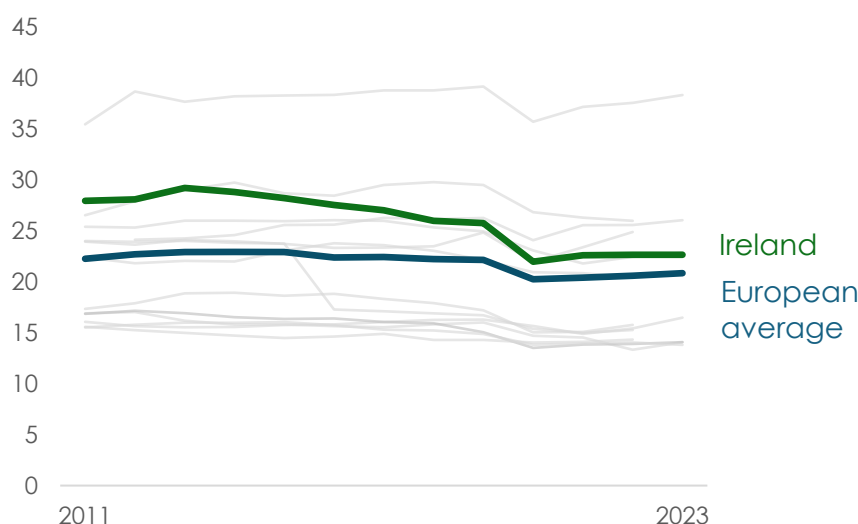
**Figure 8: Ireland's Health Spending is Exceptionally High Given its Young Population:
General Government Spending on Healthcare, Adjusted For Demographics
(Percentage Of National Income)**



Notes: GNI* used for national income in Ireland, GDP for other countries. Countries shown are Austria, Belgium, Denmark, Finland, France, Italy, Ireland, Netherlands, Norway, Portugal, Spain and Sweden.

Eurostat provides a broad breakdown of government healthcare expenditure. According to this data, Ireland's spending on medical products and general hospital services is close to the average for high-income European countries. However, spending on outpatient services in Ireland is significantly higher than in other countries.¹⁹ It is important to note that this data reflects government spending on healthcare. Out-of-pocket expenses and private health insurance also play significant roles in financing healthcare in Europe. Using the system of health accounts, we can compare the relative roles of the private and public funding across countries. In Ireland, about 25% of healthcare costs are financed by out-of-pocket payments and private health insurance. The remaining 75% is funded by the State. Private sector funding plays a slightly larger role in Ireland than elsewhere (Figure 9).

**Figure 9: The Private Sector Now Accounts for a Quarter of Health Costs in Ireland:
Percentage of Healthcare Costs Covered by Out-Of-Pocket Expenses or Private Health Insurance**



Source: Eurostat, system of health accounts. In order to calculate the high-income average for 2023, countries with missing data in 2023 are assumed to be unchanged from 2022.

Health spending in Ireland has risen considerably in recent years. Shine and Hennessy (2024) compared spending growth with activity levels in acute hospitals.²⁰ Between 2016 and 2022, there was a 3.8% increase in activity in

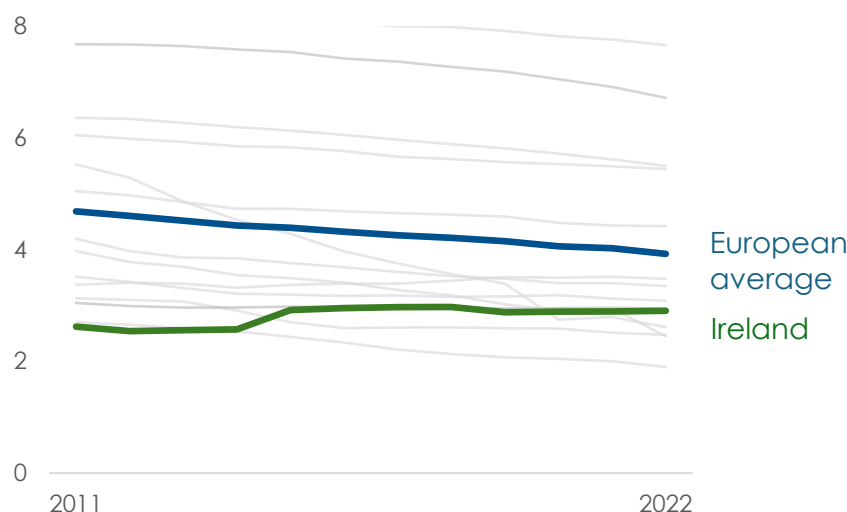
¹⁹ There are potential inconsistencies between classification of spending in different service areas. As a result, we encourage caution when interpreting these results.

²⁰ Acute hospitals account for about one third of healthcare spending in Ireland.

acute hospitals.²¹ In contrast, inflation-adjusted spending rose by 45% and staffing grew by 29%.²² This suggests that the cost of delivering health services has increased substantially faster than general prices since 2016.²³ Improving productivity in the health sector will be key to meeting increased demand for services in the coming years.

Another potential explanation for high healthcare costs in Ireland is a lack of infrastructure. Conroy and Timoney (2024) found that healthcare infrastructure in Ireland is 50% lower than in other high-income European countries. This is reflected in Ireland's low hospital bed capacity (Figure 10).

Figure 10: Irish Hospital Bed Capacity Remains Low: Hospital Beds Per Thousand of Population



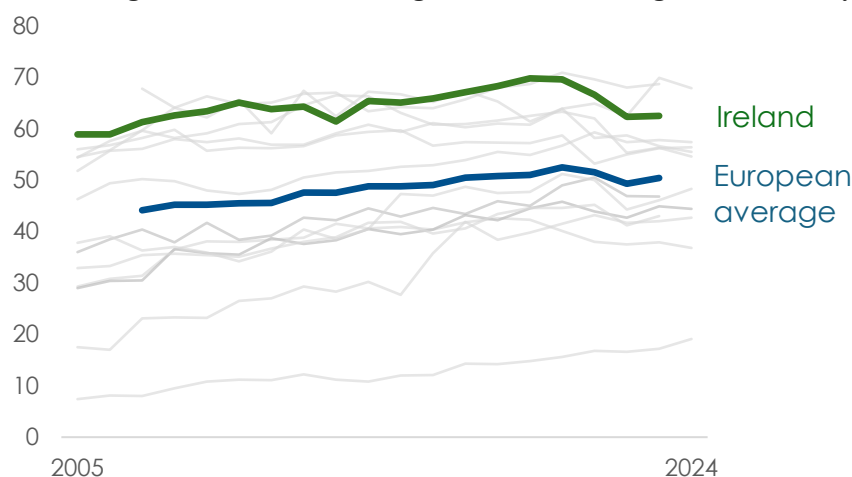
Sources: Eurostat.

Notes: Hospital bed capacity here includes both public and private facilities.

Health Outcomes

Healthcare expenditure is just one aspect to consider. It's also important to consider the health outcomes achieved from this investment. Overall, Ireland performs well on health outcomes compared to other EU countries (OECD, 2024b).²⁴ Self-reported health is notably higher than the average of other high-income European countries (Figure 11). This is the case in all age categories. While self-reported health has some limitations (it can be impacted by cultural factors or norms), it remains a useful indicator of overall population health.

Figure 11: Ireland has High Self-Reported Health: Percentage of Those Aged 65 or Over Describing Themselves as Being in Good or Very Good Health



Source: Eurostat, authors calculations

²¹ This is after adjusting for complexity of treatment and the relative costs of different types of care. Covid-19 may have had an impact on activity in 2022. Brick, Kakoulidou and Humes (2025) suggest activity increased in 2023 and 2024.

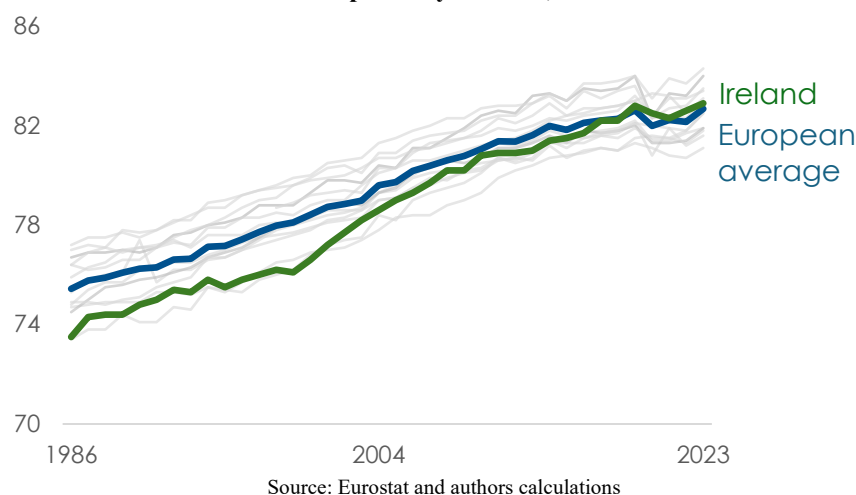
²² Nominal spending has increased by 68%.

²³ While activity has risen by 3.8%, there could have been improvements to the health system apart from increased activity, such as improvements to patient and staff experience.

²⁴ The prevalence of cardiovascular disease is well below average. However, cancer rates are still relatively high in Ireland.

Life expectancy has improved significantly in Ireland (Figure 12). Having been well below average in the 80s and 90s, Ireland has converged to high-income European levels of life expectancy.²⁵ Ireland also performs strongly on healthy years of life expectancy – both at birth and at age 65.

Figure 12: Life Expectancy in Ireland has Improved: Catching up to other High-Income Countries
Life Expectancy at Birth, Years



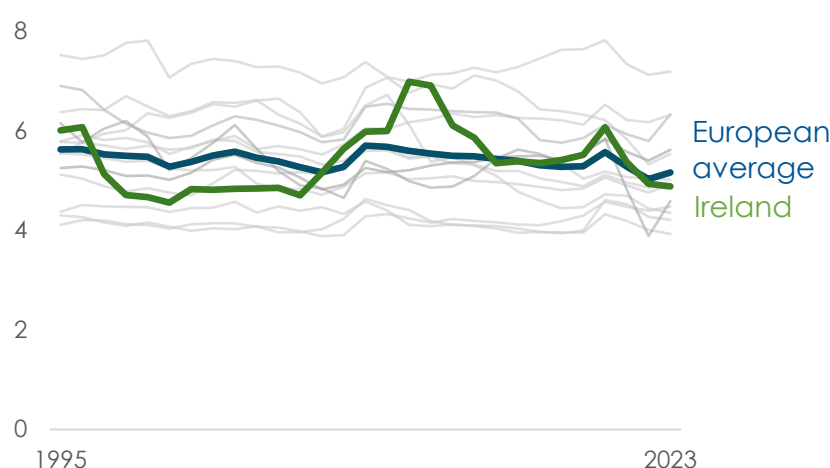
Source: Eurostat and authors calculations

Overall, health spending in Ireland is very high, but it does achieve relatively good health outcomes. This raises a key question: could similar outcomes be achieved with a lower level of spending? Sicari and Sutherland (2022) estimate that health spending in Ireland from 2004-2019 was less efficient than in most high-income countries. Their findings suggested that other countries achieve similar outcomes while spending about 15% less than is the case in Ireland. If Ireland was to do this, it would require improvements in productivity and the efficiency of delivering care. Shifting more care from hospitals to community settings – like primary care centres and step-down facilities – could help reduce costs. Recent IMF (2025) analysis also indicates that further gains in healthcare efficiency are possible.

Educating Spending

Demographics are also expected to play a significant role in education spending. The more young people in a country, the higher the level of education spending one would expect.²⁶ This demographic effect is the opposite of what is seen with health or old-age social protection. Ireland has historically had a much higher proportion of its population aged 19 or under. However, this is expected to change in the coming decades as Ireland's population ages (Section 2).

Figure 13: Education Spending in Ireland is Close to European Average Levels:
General Government Spending On Education, Percentage Of National Income



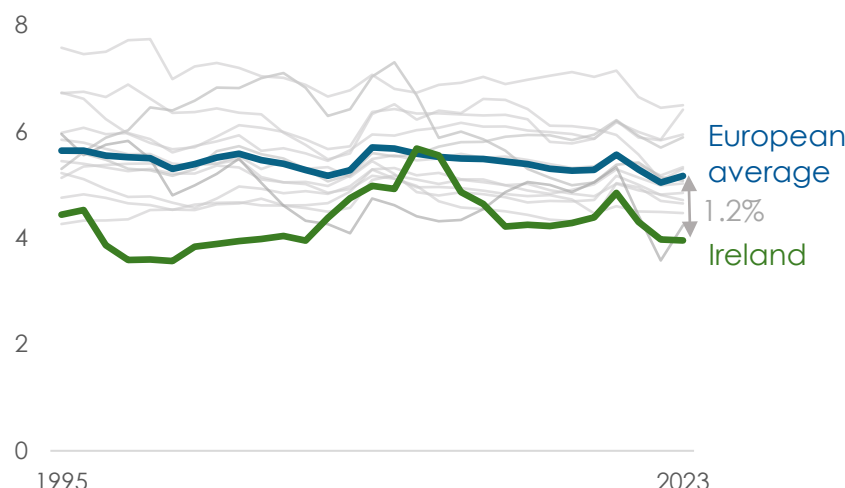
Notes: GNI* used for national income in Ireland, GDP for other countries.

²⁵ See Eighan *et al.* (2020), they find that age adjusted mortality rates had fallen in Ireland, particularly respiratory and circulatory diseases.

²⁶ Naturally there are complexities as to how education services are funded. For example, secondary schools are funded through a variety of grants and sources. These include (but are not limited to) capitation grants, the School Services Support Fund, schoolbook grants and DEIS (Delivering Equality of Opportunity in Schools) grants. See Carroll, McCoy and Ye (2024) for an overview of funding of second level education in Ireland.

Given Ireland's unique demographics, one might anticipate higher levels of education spending to meet the substantial demand. Education spending in Ireland has generally been around average (Figure 13). After adjusting for demographics, Ireland's education spending is below European average levels (Figure 14).²⁷

Figure 14: Given its Demographics, Ireland is a Low Spender On Education: General Government Spending On Education, Adjusted For Demographics (Percentage Of National Income)



Notes: GNI* used for national income in Ireland, GDP for other countries.

The COFOG database provides a breakdown of education spending across primary, secondary, and tertiary levels of education. In Ireland, a consistent pattern emerges education spending at each level is at or just above the average of other countries. When these figures are adjusted for demographics, Ireland's spending is well below average in each category.

The data discussed here represent government spending on education, but this does not encompass all the costs associated with providing education services. In many countries, the private sector plays a significant role in education, which reduces the costs borne by the government.²⁸

OECD (2024a) data for 2021 highlights the extent of private expenditure on education, from primary to tertiary levels. European countries generally have lower private sector spending compared to high-income countries elsewhere. Ireland is one of the higher private spenders on education in Europe, with private expenditure at 0.8% of national income, compared to an average of 0.5% elsewhere. If private spending were lower, government spending on education in Ireland might be slightly higher.

Education Outcomes

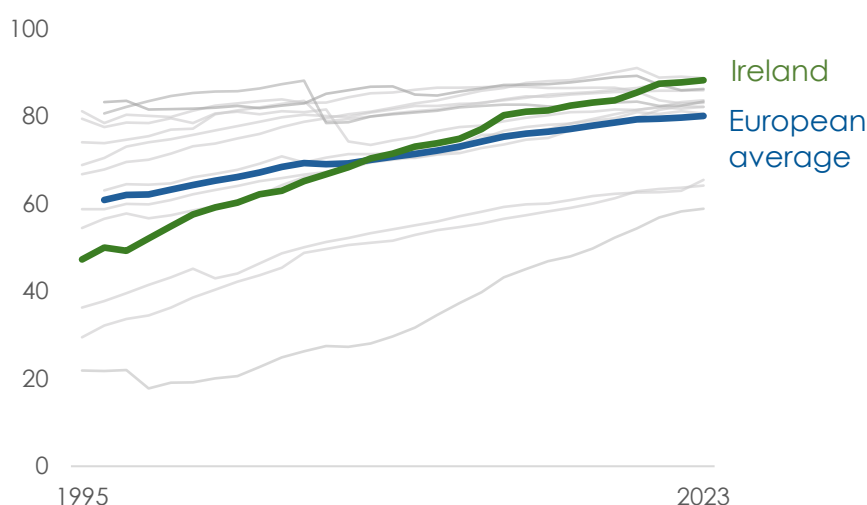
In terms of outcomes, one way to measure the performance is the percentage of the population with high levels of education. As a first step, we can compare the percentage of the population with at least a second-level education. In the mid-90's Ireland had a relatively low share of the population with at least second-level education. This has changed rapidly, with Ireland catching up and surpassing other European countries (Figure 15). Only Finland now has higher levels of educational attainment in Europe.²⁹

²⁷ Ordinarily, one would expect education spending to fall as a share of national income as the population ages. However, the impact of falling demand for education services in Ireland may be smaller than one would expect, as there are already a number of unfilled teaching posts due to teacher shortages. As a result, the impact of a falling number of children may result in lower pupil teacher ratios, rather than lower spending on educators.

²⁸ Currently in Ireland, the state makes a contribution to the salaries of teachers and special needs assistants in fee-charging schools. This is done on the basis of one teacher per 23 pupils. In the Free Education Scheme, there is an average of one teacher per 19 pupils (see Irish Times, 2024). In addition, private tuition fees are exempt from VAT.

²⁹ This refers to the population aged 25-64 in the country. Ireland has experienced strong inward migration in recent years, which has typically been highly skilled. If one examines the educational attainment of Irish citizens living in Ireland, it is slightly lower than that of all residents. However, this would not materially alter Ireland's relative position in the chart above.

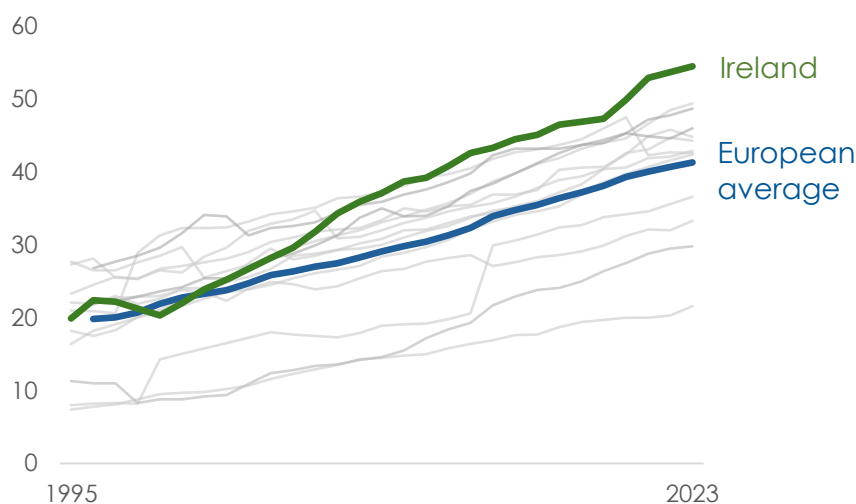
Figure 15: Ireland Now has A Highly Educated Population, Having Been Well Behind in the 90s: Percentage of Population Aged 25-64 with Secondary or Tertiary Education



Notes: The levels of education referred to here are levels 3-8 of the International Standard Classification of Education (ISCED 2011). High-income European countries here are Belgium, Denmark, Germany, Ireland, Spain, France, Italy, Netherlands, Austria, Portugal, Finland, Sweden, Norway and Switzerland.

Looking exclusively at third-level education, a similar pattern emerges. Ireland had around average European levels of third-level educational attainment in the late-90's.³⁰ Since then, the share of the population in Ireland with a third-level qualification has almost trebled (Figure 16). Ireland now has the highest share of its population with a third-level qualification in Europe.

Figure 16: Ireland Now has a Higher Share of Third-Level Graduates than Any Other European Country: Percentage of Population Aged 25-64 with Tertiary Education

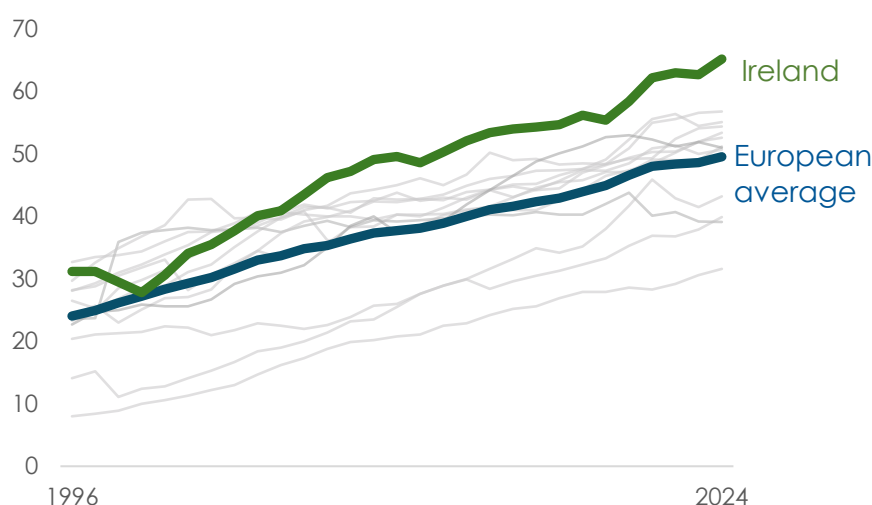


Notes: The level of education referred to here are levels 5-8 of the International Standard Classification of Education (ISCED 2011). High-income European countries shown here are Belgium, Denmark, Germany, Ireland, Spain, France, Italy, Netherlands, Austria, Portugal, Finland, Sweden, Norway and Switzerland.

By looking at adults aged between 25-34, this gives a sense of what percentage of the population have recently availed of third-level education. This also indicates what the educational attainment of the working age population will be in future decades.

³⁰ Third level tuition fees were abolished in 1996. This has since been replaced by a 'student contribution fee'. Students from lower-income households also receive financial assistance.

**Figure 17: Ireland will Continue to have a Higher Level of Educational Attainment:
Percentage of Population Aged 25-34 with Tertiary Education**



Notes: The level of education referred to here are levels 5-8 of the International Standard Classification of Education (ISCED 2011). High-income European countries shown here are Belgium, Denmark, Germany, Ireland, Spain, France, Italy, Netherlands, Portugal, Finland, Sweden, Norway and Switzerland.

Ireland has the highest percentage of those aged 25-34 with a third-level qualification in Europe (Figure 17). This suggests the Irish labour force is likely to be the most highly educated in the coming decades. OECD (2024a) data suggests that the financial return to third-level education is extremely high in Ireland. Only in the USA is there a larger earnings premium placed on third-level qualifications.

Standardised tests of students also allow for international comparisons. The Programme for International Student Assessment (PISA) tests reading, science and mathematics. These standardised tests are taken by 15-year-olds. Ireland scores well on all three test types compared to other high-income European countries.³¹ Like for all public spending, there should be a strong evidence basis for changes to education spending priorities. For example, reducing pupil-teacher ratios has been a stated aim in Irish policy for some time. These ratios have indeed fallen. However, there is limited evidence of substantial improvements in student outcomes due to smaller classes (See Jepsen, 2015). More recently, there has been a substantial increase in the number of special needs assistants in the Irish education system. It would be useful to have an assessment of the impact of these changes.

Overall, it appears that Ireland is spending less on education, compared to other European countries, given the young population Ireland currently has. Despite this, the population in Ireland has higher levels of educational attainment than in other European countries. Standardised test scores also compare favourably to other European countries.³² This finding that Ireland seems to get good education outcomes from a relatively low spend is consistent with recent work from the IMF (2025). This suggested that Irish spending on education was amongst the most efficient in the OECD.

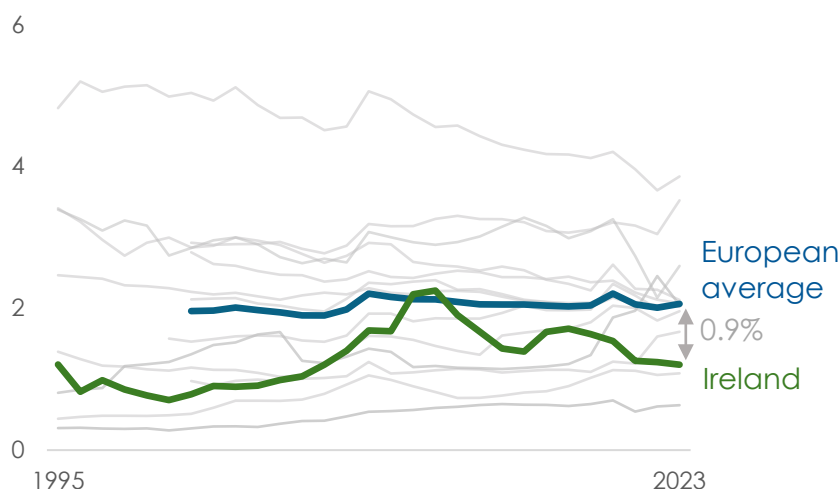
Child and Family Social Protection

The final aspect of spending that we can clearly link to demographics is social protection spending on child and family supports. This includes cash supports to parents and guardians, as well as spending on services such as preschool services provided by the state. Since these payments and services are based on the number of children, the key demographic to consider is the number of children in a country. As a result, we adjust spending in this area according to the proportion of the population aged 19 or younger. We can see that Ireland has consistently had a lower level of spending in this area (Figure 18). This is driven by lower spending on services provided to families. The most notable example of this is childcare, where in other countries the State invests more and plays a more direct role in providing childcare facilities. Conversely, Ireland's cash transfers to households with children are at or above levels in other high-income European countries.

³¹ Irish scores are 7% above the high-income European average for reading. For science, Irish scores are 3% above average and 2% higher for mathematics. The other high-income European countries which participate are Austria, Belgium, Denmark, Finland, France, Germany, Italy, Netherlands, Norway, Portugal, Spain, Sweden and Switzerland.

³² This is consistent with previous findings that Irish education outcomes were favourable given the level of spending in Ireland (Agasisti et al., 2023).

Figure 18: Given its Demographics, Ireland is a Low Spender on Child and Family Social Protection: General Government Spending on Family and Children Social Protection, Adjusted for Demographics (Percentage Of National Income)

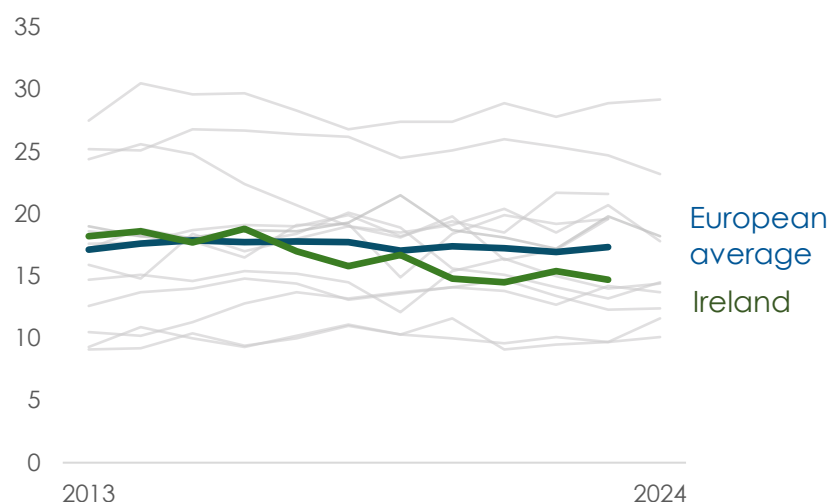


Notes: GNI* used for national income in Ireland, GDP for other countries. High-income European countries shown here are Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden and Switzerland.

Children and Social Protection Outcomes

Similar to our analysis of the older population, we can compare poverty and deprivation rates of children in Ireland to those in other European countries. If we simply look at the at-risk-of-poverty rate (those with less than 60% of median equivalised income after social transfers), we see that Ireland performs relatively well. The at-risk-of-poverty rates for children have fallen since 2013 and is now lower than in most high-income European countries (Figure 19).

Figure 19: At-Risk-Of-Poverty Rates for Children are Lower than European Averages: Percentage of Those Aged Under 18 at Risk of Poverty



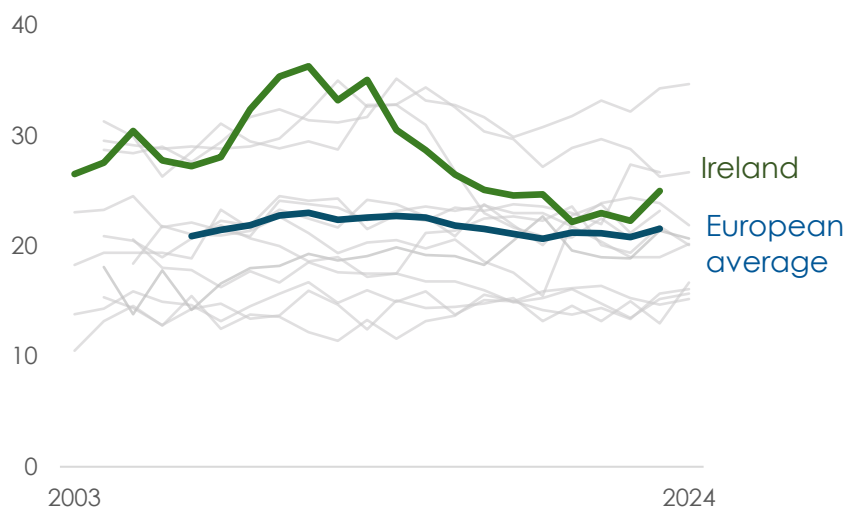
Source: Eurostat

Notes: The at-risk of poverty rate here is defined as the share of under 18's in households with equivalised income which is less than 60% of the national median after social transfers. High-income European countries shown here are Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden and Switzerland.

However, when using a broader measure, the outlook is less favourable. Considering those at risk of poverty, experiencing material deprivation, or living in low-work-intensity households, Ireland has above-average rates of child poverty and deprivation.³³ This is primarily driven by the number of children in households facing material deprivation or low work intensity. Nonetheless, there have been improvements since 2013, likely due to the economic recovery and falling unemployment (Figure 20).

³³ In addition, Roantree, Maître and Russell (2024) find that child poverty rates have been largely stable since 2005 if you account for increased housing costs.

Figure 20: Broader Measures of Children at Risk of Poverty have Fallen from a High Level in Ireland: Percentage of Those Aged Under 16 at Risk of Poverty or Social Exclusion



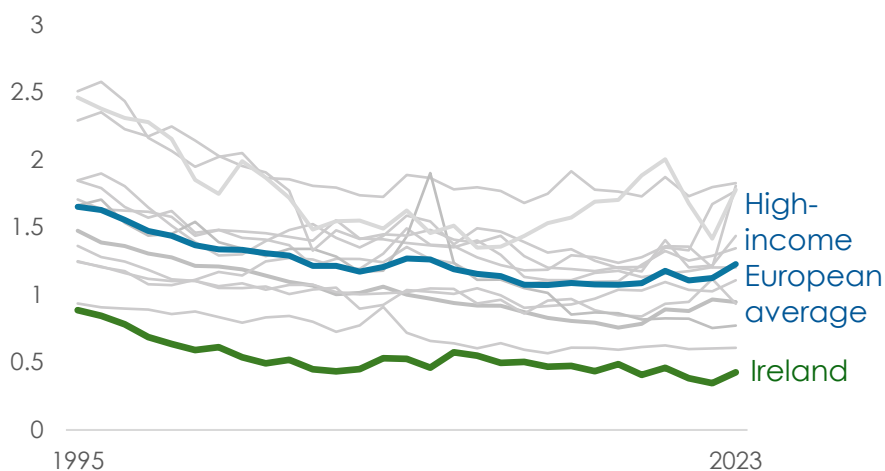
Source: Eurostat

Notes: The at-risk of poverty or social exclusion rate here is defined as the share of under 18's in households which satisfy at least of the following criteria: household equivalised income is less than 60% of the median after social transfers, material deprivation is apparent or the household has very low work intensity. High-income European countries shown here are Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden and Switzerland.

Defence

Ireland has historically maintained lower levels of defence spending compared to its European neighbours.³⁴ Consequently, this has contributed to Ireland's overall lower government spending relative to other high-income European countries (Figure 21).

Figure 21: Defence Spending in Ireland has been Consistently Lower than European Neighbours: General Government Defence Spending, Percentage Of National Income



Notes: GNI* used for national income in Ireland, GDP for other countries.

Many countries are now committing to increasing spending on defence. While it is not as certain a spending pressure as an ageing population or climate change, it would seem likely that defence spending will increase in future years from its (very low) current level.

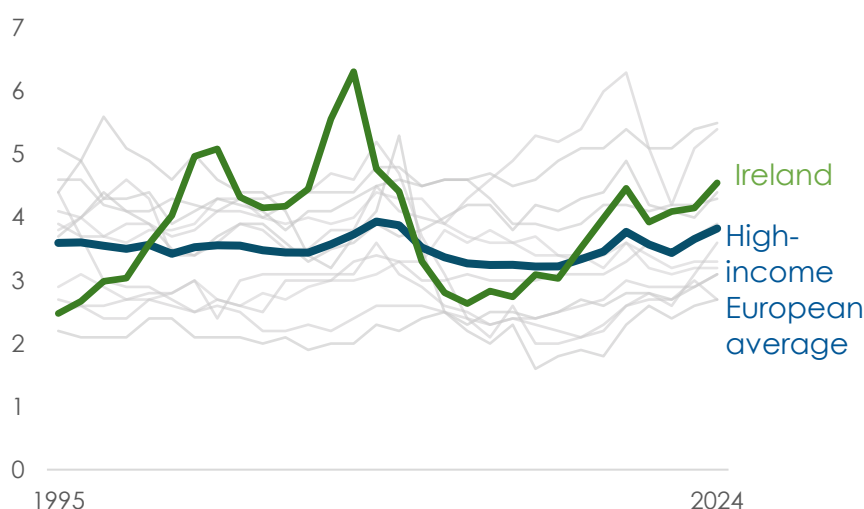
³⁴ Over 1995-2022, Ireland's defence spending has averaged 0.5% of national income. In high-income European countries, the average is 1.3%.

Public Investment

Public investment has been much more volatile in Ireland than in other European countries. In periods when the Irish economy was performing extremely well, public investment in Ireland has been above average European levels. In contrast, after the financial crisis, public investment in Ireland fell sharply. Overall, public investment has been highly procyclical. At present, Ireland's public investment levels are higher than those in other European countries (Figure 22).

The revised National Development Plan suggests that public investment is likely to increase further. This is part of a wider effort to upgrade Ireland's infrastructure. Conroy and Timoney (2024) found that Ireland's infrastructure is about 25% lower than other high-income European countries.³⁵ There are clear deficits in housing, healthcare, electricity, transport and (to a lesser extent) water.

**Figure 22: Public Investment has Reached Relatively High Levels in Ireland:
General Government Investment, Percentage of National Income**



Notes: GNI* used for national income in Ireland, GDP for other countries. Countries shown are Austria, Belgium, Denmark, Finland, France, Germany, Italy, Ireland, Netherlands, Norway, Portugal, Spain and Sweden.

A key consideration is how much of this public investment will be funded directly by government or via consumer charges. Given domestic water charges are not levied in Ireland, public investment will be required to upgrade the water infrastructure. This is in contrast to most European countries, where domestic water charges are commonplace. This largely funds investments in the water infrastructure.³⁶

For electricity, consumer charges have typically been used to finance investments in power generation and the electricity grid. However, given the scale of the investment required in Ireland's electricity sector, the government plans to inject significant equity into ESB and Eirgrid in the coming years.³⁷ How these equity injections impact on the public finances will largely depend on what rate of return the state receives from these investments.

Regarding housing, the Central Bank of Ireland (2024) found that government spending on housing has increased substantially since 2015. As a share of national income, government spending on housing in Ireland is the second highest in the Eurozone. At present, about 25% of the financing for housing comes from State sources (Central Bank of Ireland, 2024). If housing output were to double, that would require approximately €12 billion of additional funding per year.³⁸ If one assumes that the State maintains a 25% share of financing, this implies almost €3 billion of additional funding from the State annually.

³⁵ Part of this infrastructure deficit can be explained by the fact that Ireland has not always been a high-income country. Prior to the 1990s, Ireland did not have the same financial resources as many other European countries to invest in its infrastructure.

³⁶ Recently, an increase in water charges in England and Wales were announced, which are designed to fund investments in the water infrastructure.

³⁷ Higher charges on households and firms will still be required to help finance investments, but to a lower level than otherwise would have been needed.

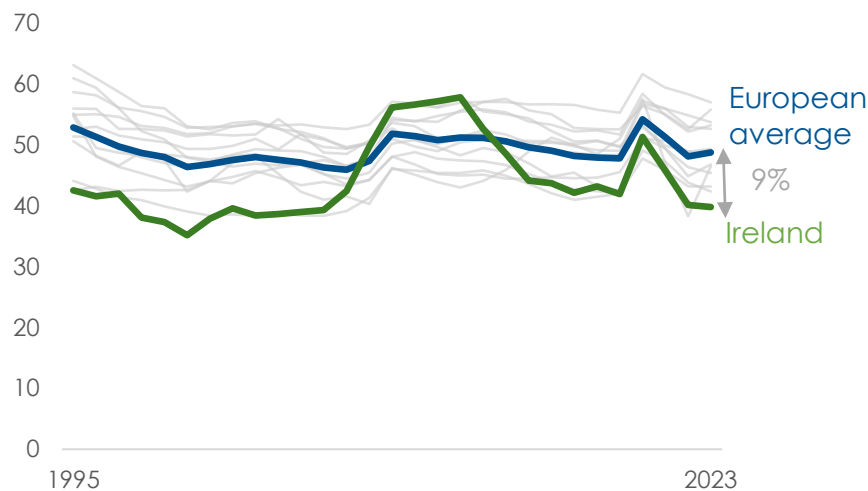
³⁸ To meet requirements for population increases, new households forming and pent-up demand, Conroy and Timoney (2024) estimate that housing output would need to reach approximately 68,500 per year. This is approximately double the level of housing that was built in 2025.

5. TOTAL GOVERNMENT SPENDING

We can now examine total general government spending across countries, adjusting for demographic differences. FitzGerald (2026) gives a historical perspective on Irish government spending and revenue.³⁹ Spending has risen from around 30% of GNI* in 1953 to over 40% in recent years. Much of this increase in spending has been in the form of higher social transfers.

There is significant variation in government spending across European countries and over time. For 2023, government spending in Ireland was just under 40% of national income, compared to an average of almost 49% in high-income European countries (Figure 23). While 2020-2022 are heavily impacted by spending related to the Covid-19 pandemic, the 2023 data is less impacted Covid related spending. However, some spending to assist households and businesses with the elevated cost of living was in place in 2023. These supports were withdrawn in Budget 2026. At the time of writing, COFOG data for Ireland was not yet available for 2024.

**Figure 23: Ireland's Spending has Generally been Below the European Average
General Government Spending as a Percentage of National Income**



Notes: General government spending is shown as a share of national income. Modified Gross National Income (GNI*) is used for Ireland, GDP is used for other countries. The countries shown are Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Portugal, Spain and Sweden. The costs of bank recapitalisations are excluded for all countries. Estimates are taken from Villar Burke (2017).

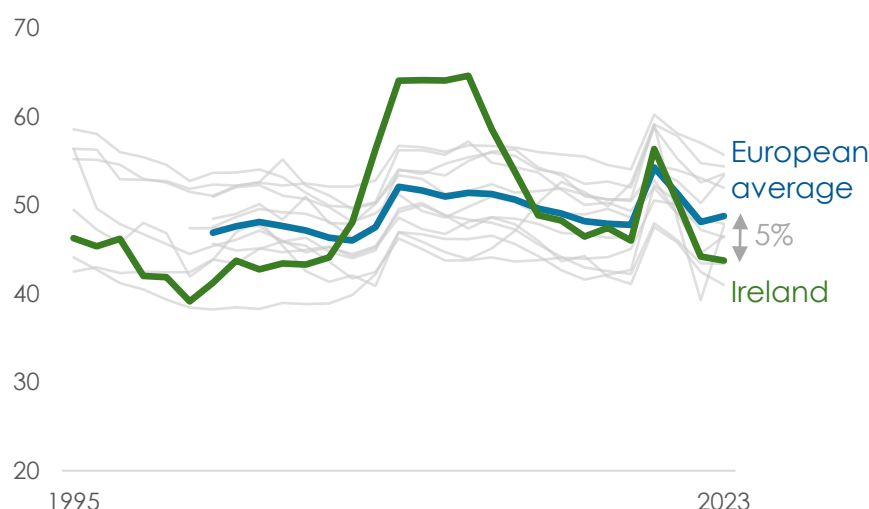
However, as outlined earlier, demographics has a significant impact on government spending. If Ireland had similar demographics to other high-income European countries, spending on health and old-age social protection would be higher. In contrast, spending on education and child/family social protection would be lower.

Overall, adjusting for demographics would imply higher spending in Ireland. In 2023, this adjustment would add about 4% of GNI* to government spending.⁴⁰ This explains almost half of the gap between spending levels in Ireland and other high-income European countries. After adjusting for demographics, Ireland's spending is 5% of national income lower than other European countries (Figure 24). This is equivalent to €2,700 per person in 2023.

³⁹ Carroll (2022) shows how government revenue and tax rates have evolved over the history of the Irish state.

⁴⁰ If Ireland's demographics were similar to other high-income European countries, old-age social protection spending would be higher, equivalent to 3.2% of GNI*. Health spending would increase by the equivalent to 2% of GNI*. For education and child/family social protection, the opposite is the case. These would fall by 0.9% and 0.3% of national income respectively with different demographics.

Figure 24: Given its demographics, Ireland's Spending is Just below Average European Levels: General Government Spending, Adjusted for Demographics (Percentage of National Income)



Notes: GNI* used for national income in Ireland, GDP for other countries. The costs of bank recapitalisations are excluded for all countries. Estimates are taken from Villar Burke (2017). All countries have their spending adjusted for demographics. The countries shown are Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Portugal, Spain and Sweden.

The only period where Ireland had significantly above-average government spending (as a share of national income) was the period between 2008 and 2013. This coincided with a deep recession, more severe than in most other countries. The downturn led to a sharp rise in unemployment, which in turn increased spending on unemployment supports. Ireland also experienced a steeper decline in national income than elsewhere. The combination of rising spending and falling income caused the spending-to-income ratio to increase sharply during this period.

The Impact of the Economic Cycle

A final factor that needs to be considered is how the economy is performing. The Irish economy has performed extremely well in recent years, despite global challenges like the pandemic and conflicts in Ukraine and the Middle East. Employment is at record highs, with strong labour demand being met via increased labour force participation rates and inward migration.

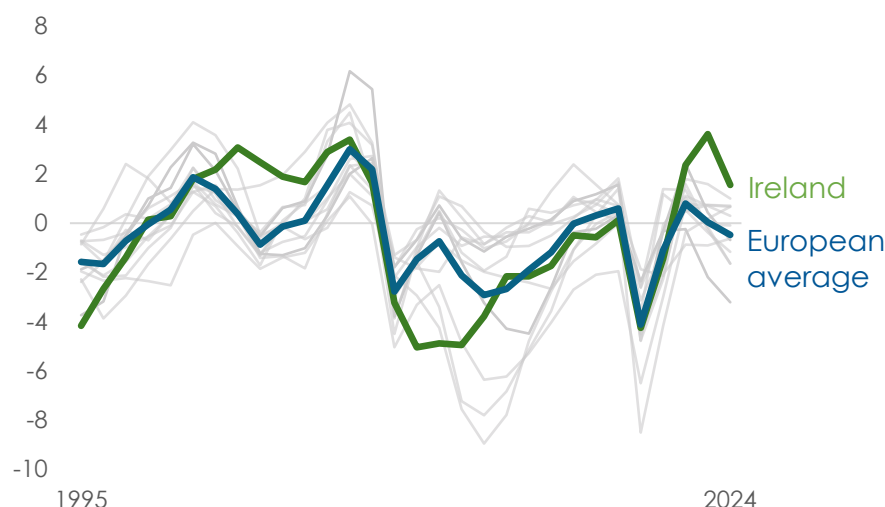
A strong economy typically results in a lower government spending-to-income ratio. This operates through two channels. First, this means national income is high. This makes the denominator in the fraction high, which keeps the spending to output ratio low. For example, if a country has a spending-to-output ratio of 50%, and output falls by 1%, this would mechanically increase the government spending to output ratio by 0.5%.

Second, a strong economy reduces government spending in certain areas. For example, social protection payments for the unemployed fall when unemployment is low. Conversely, these payments rise during economic downturns. Carroll (2019) estimated the elasticity of spending to output ratio to the economic cycle, finding that the elasticity ranges between 0.5 and 0.6.⁴¹ This means a 1 percentage point change in the output gap leads to a 0.5 to 0.6 percentage point change in the government spending-to-GNI* ratio. For our analysis, we use an elasticity of 0.5. Estimating potential output and output gaps is challenging – especially for a small, open economy like Ireland. Distortions to the national accounts caused by foreign multinationals add to the complexity. To address this, we use recent output gap estimates from the Fiscal Council (Figure 25).⁴² These follow the methodology outlined by Casey (2019), which combines multiple models and uses the midpoint of the estimates.

⁴¹ This paper is unique in estimating the budgetary semi-elasticity. That is, the change in the government spending to national income ratio resulting from a change in the cyclical position of the Irish economy. Papers such as Benetrix and Lane (2009) and Bergin et al (2017) estimate fiscal multipliers. That is, the impact of changes in government spending on output in the Irish economy. These papers do not directly measure the budgetary semi-elasticity.

⁴² These estimates were produced in March 2025. A wide variety of models are estimated, which provides a range of estimates. The largest estimates of the output gap in 2024 is 2.9%, while the smallest estimate is 0%.

**Figure 25: The Irish Economy is Operating Above Capacity, Unlike European Neighbours:
Output Gap, Percentage of Output**

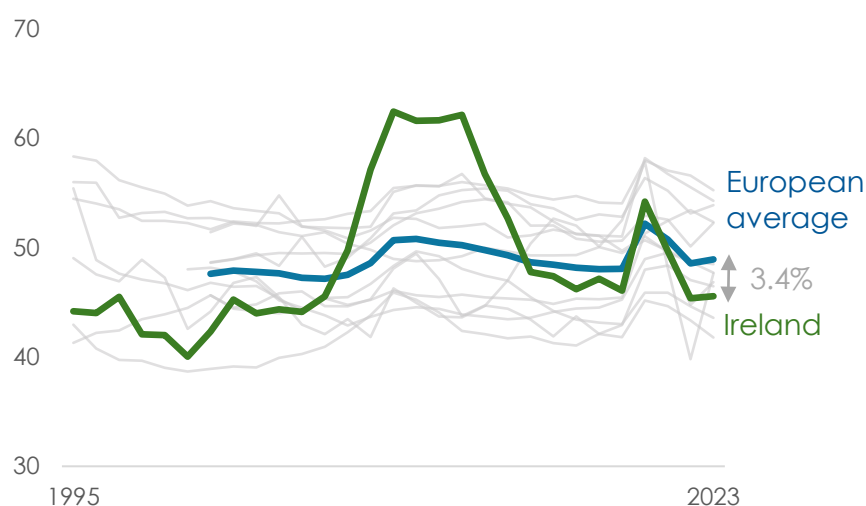


Sources: IMF and Fiscal Council forecasts.

Notes: a positive output gap indicates that the economy is operating above its long run potential level. Conversely, a negative output gap indicates that the economy is operating below its potential level. Countries used are Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Portugal, Spain and Sweden.

Estimates for 2023 suggest the Irish economy was operating 3.6% above its potential. In contrast, most high-income European countries were operating at or near potential.⁴³ This implies that if all economies had been operating at potential in 2023, Ireland's spending would have been 1.7% of GNI* closer to the European average.⁴⁴ Even after adjusting for demographics and the economic cycle, Ireland's spending remains slightly below the high-income European average (3.4% of national income). This is equivalent to €1,800 per person (Figure 26). Overall, most of the initial 9% of national income gap in spending can be explained by demographics (3.9%) and the economic cycle (1.7%).

**Figure 26: After Adjusting For Demographics And The Economic Cycle,
Ireland's Spending Levels Are Much Closer To European Levels:
Government Spending as a Share of National Income, Adjusted for Demographics and the Economic Cycle**



Sources: Eurostat, IMF and authors calculations.

Notes: The costs of bank recapitalisations are excluded for all countries. Estimates are taken from Villar Burke (2017). Spending is adjusted for the demographic structure of the population (see Section 4 for details) and for the economic cycle (see Section 5). Countries used are Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Portugal, Spain and Sweden.

⁴³ We use the IMF estimates of output gaps from their World Economic Outlook (IMF, 2024). We are focusing on 2023 as that is the latest year we have detailed spending data, which allows us to adjust spending in demographics sensitive areas.

⁴⁴ The average of high-income European countries shows a positive output gap of 0.3% of national income.

What are the Key Areas of Difference?

While we've focused on key areas of government spending, the COFOG database offers detailed insights across many other categories. For an overview, Table 1 compares Irish government spending – as a share of national income – with the average for other high-income European countries, using the latest data from 2023.

Table 1: Irish Government Spending is Lower than in Other High-Income European Countries: Irish Government Spending Minus Average High-Income European Country, Share Of National Income. Adjusted For Demographics

	2023
Total	-5.0
Health	4.5
Old-age social protection	-2.3
Education	-1.2
Other economic affairs	-1.0
Children and family social protection	-0.9
Defence	-0.8
Transport	-0.6
Research	-0.6
Recreation and culture	-0.4
Interest	-0.4
Environmental protection	-0.2
Foreign economic aid	-0.2
Other social protection	-0.1
Other public services	-0.8

Sources: Eurostat, CSO and authors calculations.

Notes: Spending on old-age social protection, child and family social protection, health and education are adjusted for demographics as described above. Positive numbers indicate that spending is higher in Ireland than in other high-income European countries. GNI* is used for national income in Ireland, GDP for other countries. In each of these areas, total spending is shown (current plus capital). As a result, capital spending is not shown separately here. 'Other economic affairs' refers to supports for industries, reimbursement of taxes paid, and capital injections by the state into firms. Research here covers research funding/grants to universities and research institutes.

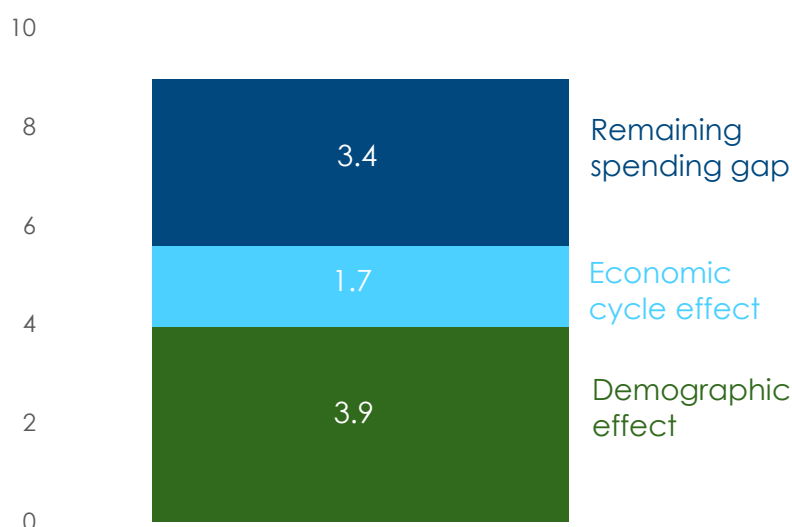
Overall, Irish government spending is lower – relative to national income – than in most other high-income European countries. The most notable gap is in old-age and children/family social protection. This remains lower even after adjusting for the age structure of Ireland's population. This likely reflects a heavier reliance in Ireland on flat rated payments, and means testing for some payments. Beyond this, Ireland also spends less in several other areas. Education is an area where Ireland is spending less than other European countries, yet is achieving good outcomes. Defence is an area where Ireland has persistently spent less than its European counterparts.

There are a number of other areas where Ireland spends slightly less than other high income European countries. These include transport, research, interest payments, and recreation/culture. These collectively contribute to Ireland's lower overall spending levels. Healthcare is the one major exception. Ireland spends significantly more than its peers in this area, and this difference becomes even more pronounced when accounting for its younger population.

Summing Up Spending

Overall, headline government spending in Ireland in 2023 was smaller relative to national income than in other high-income European countries (9% of national income). Ireland's younger population explains about 4 percentage points of this gap, due to lower demand for healthcare and pensions. The strong cyclical position of the Irish economy also reduces the spending to national income ratio. This effect in 2023 was 1.7 percentage points. After taking account of demographics and the strong position of the economy, government spending as a share of national income is 3.4% lower than in other high-income European countries (Figure 27). This equates to €1,800 per person.

**Figure 27: Lower Government Spending in Ireland is Driven by Demographics and a Strong Economy:
Per Cent of National Income, Difference Between Irish Government Spending
and Other High-Income European Countries**



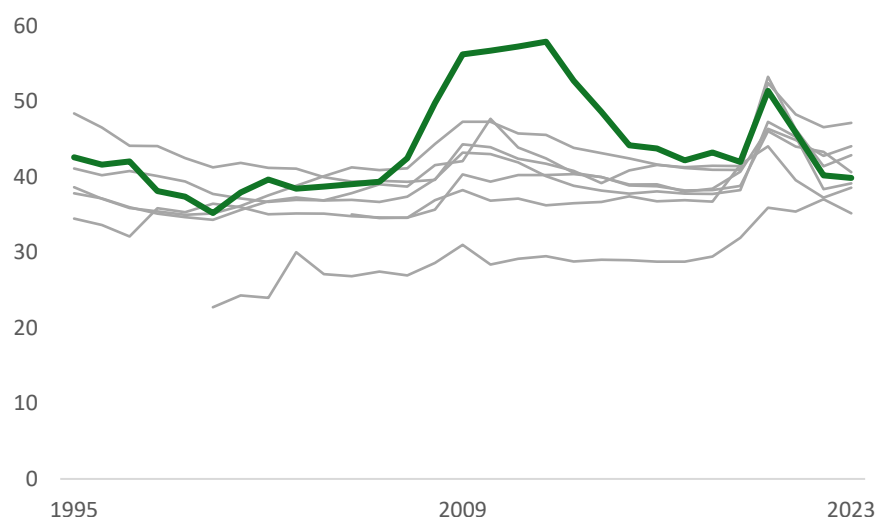
Sources: Eurostat and authors calculations.

Notes: Headline government spending in Ireland for 2023 was 9% lower as a share of national income, compared to other high-income European countries. Ireland's favourable demographics (a younger population) results in spending being 3.9% lower as a share of national income. The cyclical position of the Irish economy (relative to the rest of Europe) results in Irish spending as a share of national income being a further 1.7% lower as a share of national income. 3.4% is the remaining gap ($9\% - 3.9\% - 1.7\% = 3.4\%$)

Looking Beyond Europe

Advanced countries outside of Europe typically have lower levels of government spending than those in Europe. Ireland appears to have similar levels of government spending to advanced economies outside of Europe (Figure 28). However, like when comparing Irish spending to the rest of Europe, Ireland is benefitting from a younger population at present.

**Figure 28: Irish Government Spending is Close to Developed Economies Outside Europe:
General Government Spending as a Share of National Income**



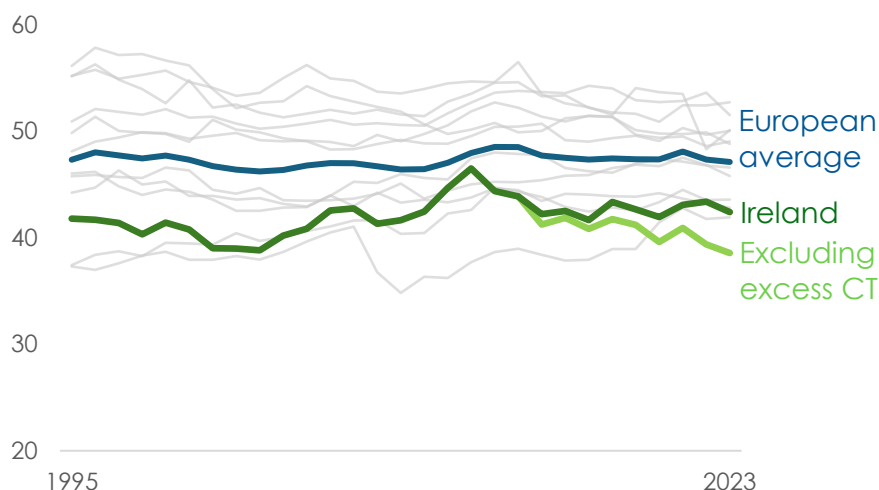
Sources: OECD and CSO.

Notes: Other high-income countries shown are Australia, Canada, Japan, Korea, New Zealand, United Kingdom and United States.

6. TOTAL GOVERNMENT REVENUE

In this section, we examine general government revenue across countries. Given the significant impact of corporation tax receipts in Ireland, we present results both including and excluding 'excess' corporation tax receipts.⁴⁵ We also exclude Norway from much of this analysis, as its general government revenue is heavily influenced by oil revenues and returns from its sovereign wealth fund. Looking at general government revenue as a share of national income reveals substantial variation across countries (Figure 29). Since government spending in Ireland is lower than in other high-income European countries, we would expect a similar pattern in revenue, which funds that spending.

**Figure 29: Government Revenue is Low in Ireland Compared to European Neighbours:
General Government Revenue, Percentage of National Income**



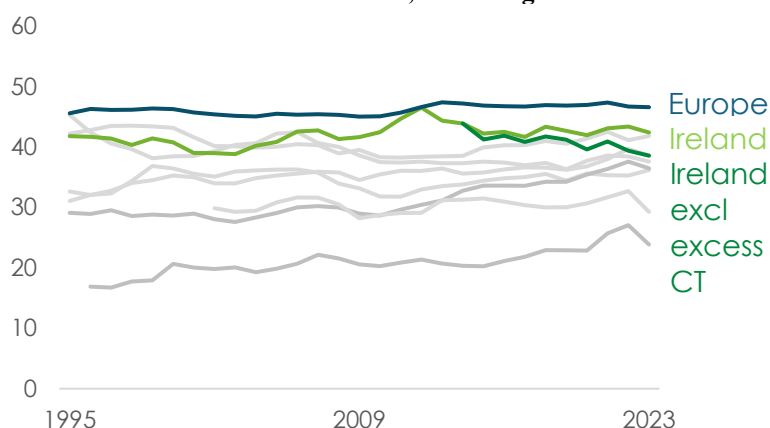
Notes: GNI* used for national income in Ireland, GDP for other countries. Norway is excluded from this chart as revenue is distorted by oil revenues and returns from investments made. Countries included are Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Portugal, Spain and Sweden.

Ireland records one of the lowest levels of general government revenue as a share of national income in Europe.⁴⁶ Irish government revenue is 4.7% of national income lower than the European average. This is equivalent to €2,600 per person. When excess corporation tax is excluded, this gap increases to 8.6% of national income, or €4,700 per person.

Looking Beyond Europe

Developed economies outside Europe also offer useful points of comparison for Ireland. Below, we present general government revenue as a share of national income for various developed economies. High-income European countries consistently collect the most government revenue.

**Figure 30: Ireland Collects a Similar Amount of Revenue to Other Advanced Countries:
General Government Revenue, Percentage Of National Income**



Notes: GNI* used for national income in Ireland, GDP for other countries. 'Europe' here is short for high-income European average. The other countries shown are Australia, Canada, Japan, Korea, New Zealand, United Kingdom and the United States.

⁴⁵ Excess corporation tax receipts are defined as corporation tax receipts above what would be expected due to the performance of the domestic economy. Given these receipts are not strongly tied to economic activity in Ireland, they could fall. It is also noteworthy that these taxes are paid almost exclusively by US multinational companies. As a result, this is not tax revenue that is paid by domestic residents and does not impact on domestic demand in the Irish economy.

⁴⁶ As expected, the highest revenue levels are found in Nordic countries such as Denmark, Sweden, and Finland.

Ireland collects a larger share of national income than any advanced non-European country shown – when headline figures are used. However, once ‘excess’ corporation tax receipts are excluded, Ireland’s revenue levels align more closely with countries like the UK, Canada, Japan, Australia, and New Zealand (Figure 30). In contrast, advanced economies such as the USA and Korea collect significantly less revenue than Ireland.

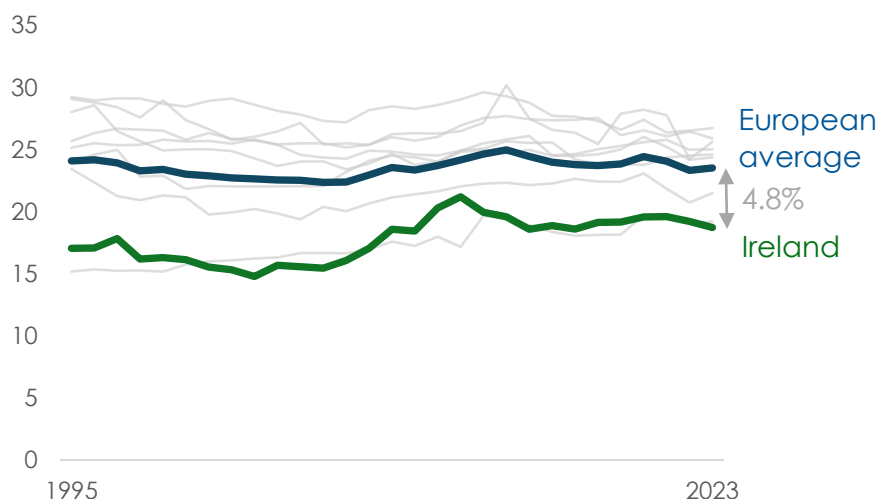
7. REVENUE IN DETAIL

We can compare different categories of government revenue across European countries. This helps highlight where Ireland collects significantly more – or less – revenue than other high-income European nations.

Income Tax and Social Contributions

Ireland collects less revenue from employment taxes than other high-income European countries (4.8% of national income). This gap is equivalent to €2,600 per person in Ireland.⁴⁷ This section compares taxes on employment across countries. These taxes are made up of income tax and social contributions, with the balance between the two varying by country. To account for this variation, we consider the combined total of income tax and social contributions (Figure 31). Ireland’s lower level of revenue from employment taxes is primarily driven by low social contributions. Both employer and household social contributions are well below the average seen in other high-income countries.

Figure 31: Ireland Collects Less Tax/Social Contributions on Income than its European Peers: Taxes on Individual or Household Income Plus Social Contributions, Percentage Of National Income



Notes: GNI* used for national income in Ireland, GDP for other countries. Total government revenue from labour is defined here as taxes on individual or household income plus social contributions paid by employers and employees. The countries shown are Austria, Belgium, Ireland, France, Italy, Netherlands, Austria, Portugal and Finland.

One factor behind this may be Ireland’s relatively young population. The State Pension and Social Insurance Fund operate on a pay-as-you-go basis. With lower spending on old-age social protection, Ireland doesn’t need to collect as much revenue in the short term. However, as the population ages and government spending rises, policy changes will be needed. The Pension Commission (2021) outlined several options to ensure the sustainability of the State Pension. These include increasing PRSI rates for employees and the self-employed, broadening the PRSI base and raising the State Pension age.

There are plans to gradually increase PRSI rates in the coming years.⁴⁸ However, these changes are modest. They are expected to raise social contributions by around 0.2% of GNI*.⁴⁹ As in most countries, employee social contributions in Ireland are a fixed percentage of income. This means the effective rate varies little across income levels.⁵⁰ As a result, social contributions tend to be less progressive than income taxes (OECD, 2024c).

⁴⁷ This is calculated using the 4.8% gap as a share of national income. This 4.8% is then multiplied by GNI* for 2023 (€291 billion) and divided by the population in 2023 (5.3 million).

⁴⁸ All classes of PRSI were increased by 0.1% on 1st October 2024. Another 0.1% increase is planned for October 2025, gradually rising to 0.2% by October 2028. See Department of Social Protection (2024) for details.

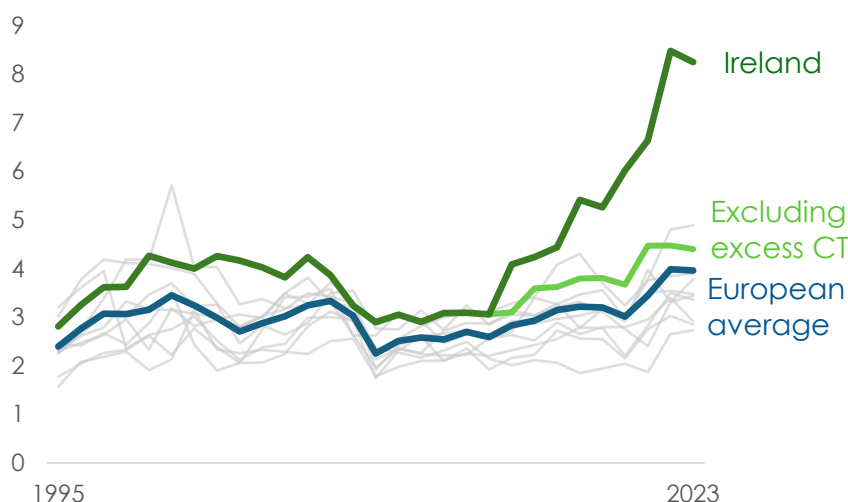
⁴⁹ By contrast, the Pensions Commission (2021) proposed an increase in Class A PRSI which is double what is currently planned (see Package 1 of proposals). Smaller increases would be required if the pension age was raised (Package 2 and Package 4).

⁵⁰ However, those earning less than €352 per week do not pay employees PRSI. In addition, those earning between €352 and €424 per week receive a tapered credit. As a result, they pay less than the headline rate (4.1%).

Corporation Tax

We can also assess taxes on corporate profits or incomes. It is well understood that Ireland collects an extraordinary amount of corporation tax (Figure 32). Some of this revenue exceeds what would be expected based on Irish economic activity. This exceptional portion is referred to as 'excess' corporation tax. Cronin (2023) detailed that these receipts are heavily concentrated, with just three firms paying more than 40% of Ireland's corporation tax in 2022.

**Figure 32: Ireland is Collecting an Extraordinary Level of Corporation Tax:
Taxes on Corporate Profits or Income, Percentage of National Income**

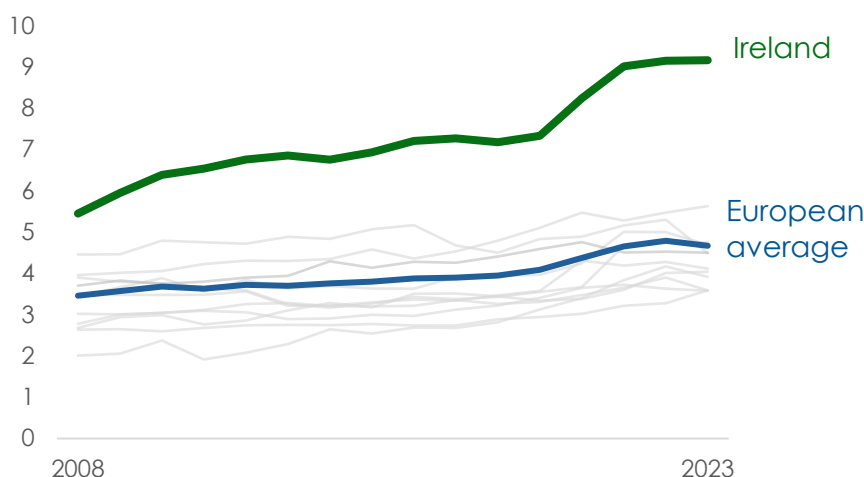


Sources: Eurostat, CSO, Budget 2025 and Fiscal Council estimates.

Notes: GNI* used for national income in Ireland, GDP for other countries. Excess corporation tax receipts for 2022-2023 are taken from Budget 2025. Figures for previous years are Fiscal Council estimates. Countries shown are Belgium, Denmark, Ireland, France, Italy, Netherlands, Austria, Portugal, Finland and Sweden. Detailed data for Spain and Germany was not available.

Compared to national income, Ireland collects more than twice the average amount of corporation tax of other high-income European countries. Even when “excess” corporation tax is excluded, Ireland still collects well above average levels of corporation tax. This partially reflects the unique structure of the Irish economy (Figure 33). According to Cronin (2023), 90% of Irish corporation tax in 2021 came from the ICT and pharmaceutical sectors. Ireland has a much larger presence of pharmaceutical and tech firms than other European countries.⁵¹ Ireland has historically had a larger presence of these sectors, and this gap has widened since 2019.

**Figure 33: Ireland has Unusually Large Pharma and Tech Sectors:
Percentage of Total Employment Accounted for by Pharmaceuticals and ICT**



Sources: Eurostat.

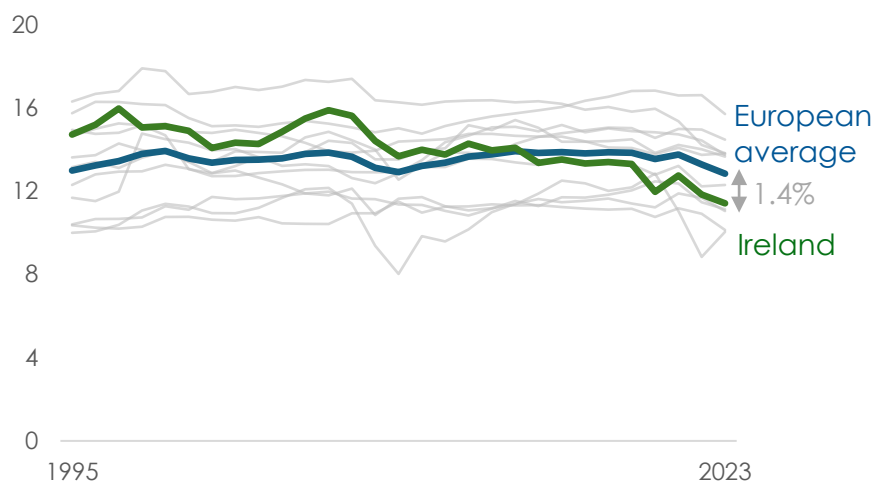
Notes: Employment in the information and communications sector (NACE code J) and pharmaceutical sector (Nace Code C21, Manufacture of basic pharmaceutical products and pharmaceutical preparations) as a share of total employment is shown. Countries shown are Belgium, Denmark, Germany, Ireland, Spain, France, Italy, Netherlands, Austria, Portugal, Finland, Sweden and Norway.

⁵¹ We use the category “Manufacture of basic pharmaceutical products and pharmaceutical preparations” (NACE Code C21). For more on how the pharmaceutical sector has developed in Ireland, see Van Egeraat and Barry (2009).

Taxes on Production and Imports

Taxes on products and imports are another important source of government revenue. Consumption taxes, such as Value Added Tax (VAT) in Ireland, make up a large portion of this revenue. This category also includes other taxes like excise duties and taxes on imported goods.⁵² Historically, taxes on products and imports have been higher in Ireland than in other high-income European countries. However, this has steadily declined in recent years, mainly due to decreasing revenue from excise duties on alcohol, tobacco, and petrol. As a result, this revenue source is now below average for a high-income European country (Figure 34).

**Figure 34: Taxes On Production And Imports Have Fallen In Ireland:
Taxes On Production And Imports, Percentage Of National Income**



Notes: GNI* used for national income in Ireland, GDP for other countries.

As Ireland transitions away from fossil fuels, certain government revenue streams are expected to diminish. Notable examples include excise duties and the carbon tax. According to Casey and Carroll (2023), this shift could result in a reduction of approximately 1.5% of GNI* in government revenue over the medium term.

8. CONCLUSIONS

While countries can choose to pursue a high-tax, high-spend model or a low-tax, low-spend one, there are other factors that play a role. Demographics and economic growth have a sizeable impact on tax and spending levels at any given time. This paper looks at the size of government in Ireland compared to other countries, taking these factors into account. At first glance, Ireland appears to be a low-tax, low-spend country relative to other high-income European countries. However, this is largely driven by Ireland's relatively young population and strong economic growth.

Ireland has a relatively young population, with fewer people aged 65 and over. A younger population means the government currently spends less on pensions and healthcare than it otherwise would. As Ireland's population ages, spending in these areas is expected to rise. This demographic shift will gradually bring Ireland's government spending more in line with levels seen in other European countries. Ireland's strong economy also helps explain why it is currently spending less as a proportion of its national income. After adjusting for these factors, Irish government spending is 3.3% of national income lower than other European countries (€1,800 per person).

One area where Ireland is already a relatively high spender is healthcare. As the population ages, this is likely to rise further, making Ireland even more of an outlier compared to other countries. Education is another area of interest. Ireland spends less than the European average but delivers above-average results. This suggests strong efficiency in education spending.

Ireland collects a lower level of government revenue than most other high-income European countries. This is equivalent to 4.7% of national income, or €2,600 per person. When excess corporation tax is excluded, the gap increases to 8.6% of national income, equivalent to €4,700 per person. This is mostly due to social contributions. Both employers and employees pay fewer social contributions than in most European countries. At the same time, Ireland collects a very high level of corporation tax. This is partly due to the large number of multinationals based in Ireland. These firms are highly profitable and make large payments of corporation tax in Ireland.

⁵² Excise duties are typically levied on goods such as tobacco, alcohol and fuel.

Looking ahead, Ireland faces major spending pressures from an ageing population and climate change. The recently introduced savings funds are a step in the right direction and can help offset some of these future costs. However, these funds alone will not be able to cover all future spending pressures. As a result, additional revenue will need to be raised, or some existing spending will need to be reallocated. The more the government sets aside today, the smaller the fiscal adjustments required in the decades to come.

The Commission on Taxation and Welfare (2022) suggested many areas where government revenue could be raised and the tax base broadened. Its suggestions included limiting the use of zero and reduced rates of Value Added Tax, increasing taxes on capital and wealth, and broadening the PRSI base. These recommendations have been largely ignored to date. The recent Future Forty publication (Department of Finance, 2025) highlights the scale of the challenges the public finances face. Without policy changes, substantial deficits would be run from the mid 2030's onward. This would result in the debt to GNI* ratio reaching 100% by 2057 and continuing to increase thereafter.

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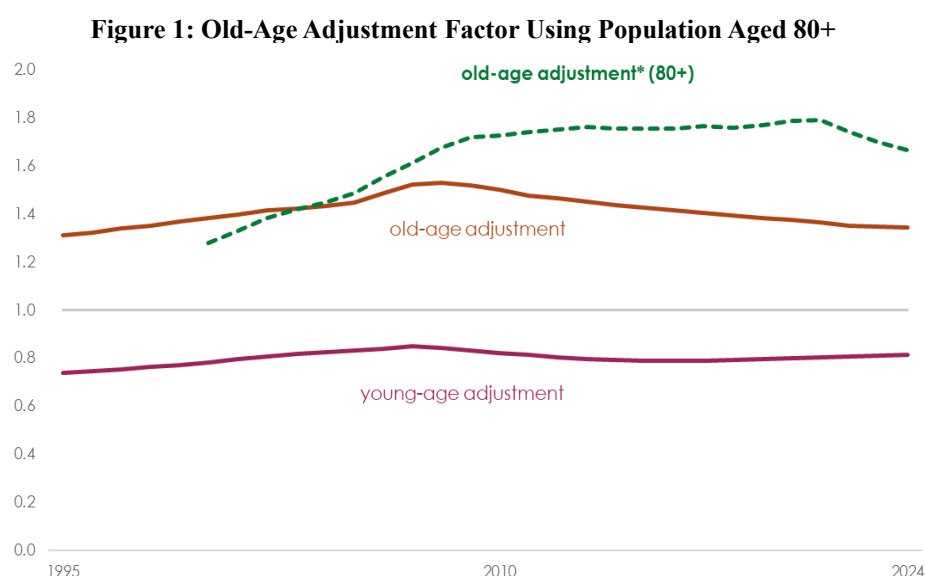
FIRST VOTE OF THANKS PROPOSED BY THOMAS CONEFREY, CENTRAL BANK OF IRELAND

Overview and Research Question

Congratulations to the author on this insightful paper addressing the research question of how Ireland's government spending and revenue compare to other high-income European countries. Using a methodology that adjusts for demographic differences and economic cycle effects, the key finding is that Ireland appears as a low tax, low expenditure country. The analysis finds that this characterisation largely reflects favourable demographics and strong economic growth rather than deliberate policy choices. The research provides clear, policy-relevant analysis that moves beyond simple headline comparisons, offering insights into the structural factors shaping Ireland's fiscal position relative to peers.

Methodology

A central element of the analysis involves age-adjusting spending to account for demographic differences, particularly the proportion of the population aged 65 and over. The methodology takes the ratio of the EU population over 65 to the 65+ Irish population to derive an adjustment factor. This implicitly assumes that expenditure increases in a linear manner with age. When these adjustments are applied, Ireland's old-age social protection spending appears much closer to Berlin (EU levels) than headline figures suggest. However, the presentation raises important methodological considerations. These include whether the over-65 age-adjustment assumption adequately captures non-linear spending patterns for the oldest cohorts (80+). The old-age adjustment factor based on the population aged 80+ stood at 1.7 in 2024, versus 1.3 in the paper using the 65+ population (Figure 1).



Moreover, it is worth considering whether the demographic adjustment fully accounts for other determinants of long-term ageing costs, such as differences in the role of migration and family structure in Ireland compared to other

countries. Another potentially useful extension of the analysis would be to consider more explicitly the role of public investment. Over the period 2020 to 2016, this fell to very low levels in Ireland by historic comparison and relative to the euro area, such that the increase in the public capital stock fell behind the growth in population. To what extent did the low levels of public investment expenditure in Ireland over this period affect the cross-country comparison?

Policy Considerations

The analysis highlights several policy-relevant concerns. It draws attention to dimensions of narrowness in Ireland's tax base, focussing in particular on income tax and corporation tax. There is evidence of narrowness beyond these headings, and it would be worthwhile for the analysis to consider indirect taxes, in particular VAT. Additionally, the presentation identifies a substantial increase in general government expenditure between 2019 and 2025 that has not been fully matched by increases in sustainable revenue, alongside concerns about (too) low public capital spending. These findings raise important implications for the assessment of long-term fiscal sustainability. The analysis focusses on benchmarking the level of public spending in Ireland relative to peers – a useful extension for further work would be to draw out what the analysis implies for the longer-term sustainability of the public finances.

SECOND VOTE OF THANKS PROPOSED BY JOHN FITZGERALD, ECONOMIC AND SOCIAL RESEARCH INSTITUTE

It gives me great pleasure to second the vote of thanks to the author, Niall Conroy, for an important and very informative paper. The comparative perspective adopted is valuable, helping us see where Ireland is different and where there are similarities with our partners. In doing this it points us to how our performance might be improved in the future. In particular, it provides detailed analysis of how the expenditure in Ireland on key areas is affected by the rather different demographics relative to our EU neighbours. This is important as it provides guidance as to how our public finances will be affected in the longer term by the changing population structure, including ageing. The results of this detailed analysis are generally consistent with the analysis in the Department of Finance paper Future Forty.

Ageing

One interesting conclusion of this paper is that “Even after adjusting for demographics, Ireland still spends significantly less on old-age social protection - 2.3% of national income below the European average in 2023.” As the author indicates, this lower expenditure has not resulted in significant rates of poverty among pensioners. However, to date in Ireland most of the elderly population own their own homes. In the future this may not be the case and this could require a significant increase in state support for the growing elderly population in the future.

Public Sector Pay

In the run up to the financial crisis public sector pay rates rose very rapidly, in some cases moving the public sector out of line with what was happening in the private sector. With the huge challenges facing the public finances, a very painful downward adjustment had to be made in public sector pay rates in the period 2009-2012. Figure 1 shows the relative development of public and private sector pay rates since 2008. Average earnings in the public sector peaked in 2009 at 1.55 times rates in the private sector. By 2016 this ratio had fallen to 1.4 and it has fallen further to 1.3 in 2021 and stabilised at that level in recent years. A very important factor in the decline in the ratio in more recent years has been the rapid growth in key sectors dominated by private sector firms (and MNEs), which have dramatically increased their employment of people with third level qualifications. (Figure 2). This means that graduates entering the labour market face a much wider range of opportunities than they did 40 years ago, or even 20 years ago, and this has been reflected in rising average earnings.

Figure 1: Private / Public Earnings

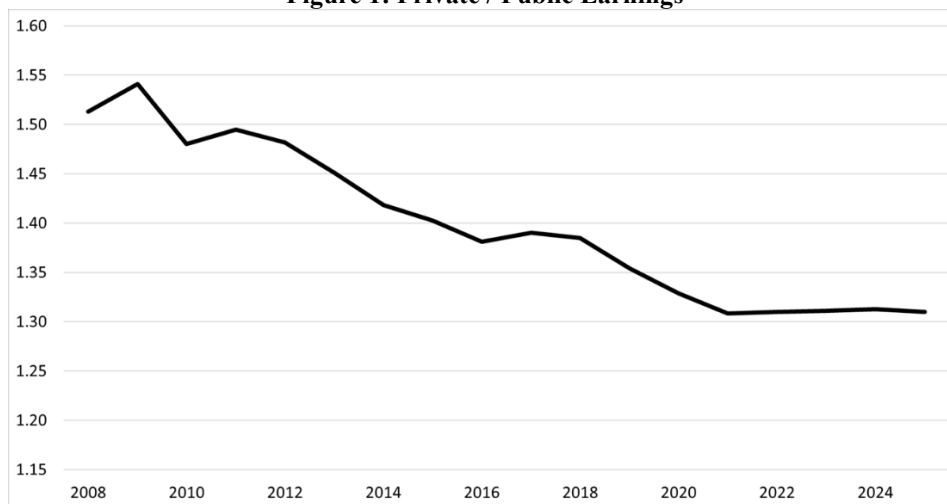
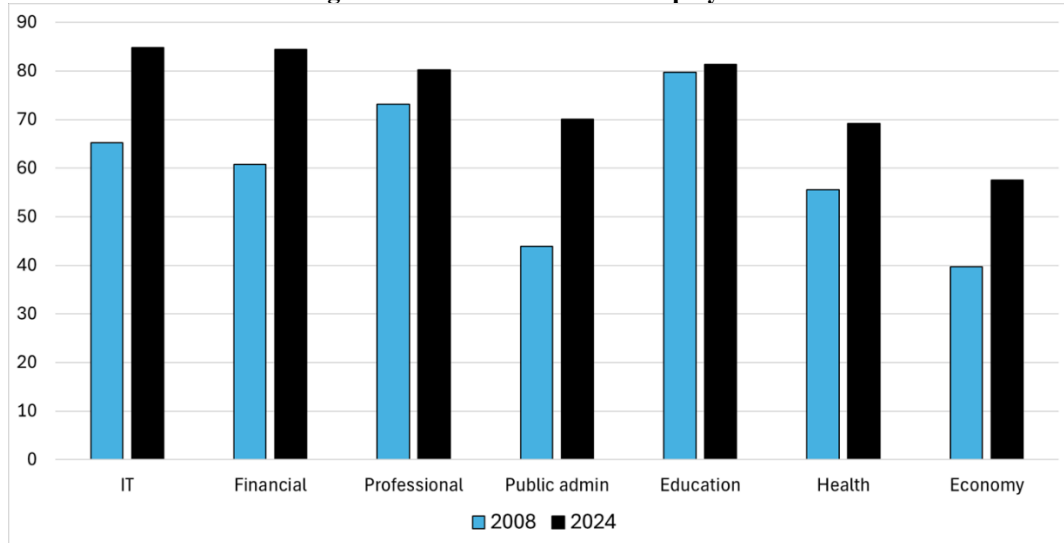


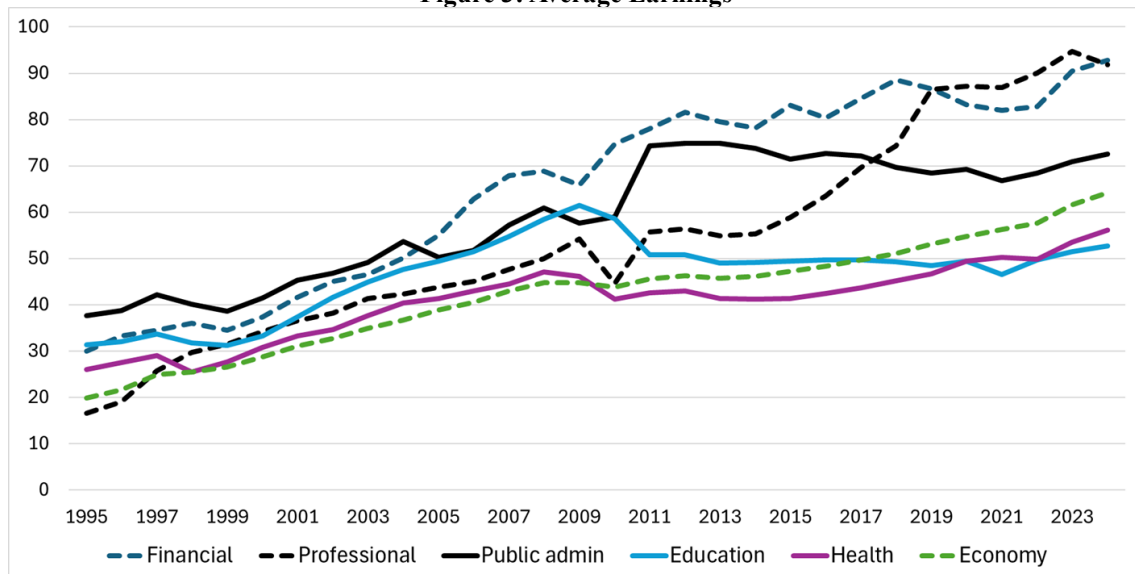
Figure 2: Graduate Share of Employment



This rise in private sector earnings (and employment) relative to the public sector has resulted in a rapid increase in revenue from taxes on income, which are disproportionately driven by the growth in higher incomes. At the same time, as average public sector earnings rose more slowly than the private sector, this eased the pressures from increases in public sector employment. Together these factors served to reduce government deficits and increase surpluses. The question is will this continue.

Figure 3 shows average earnings for the three key public dominated sectors and for two key private sector dominated sectors where there is a very high share of graduate employment (Figure 2). What it shows is that average earnings in the IT and professional services sectors have risen much more rapidly than in the 3 public sectors shown. There is now a growing gap between these public and private sectors.

Figure 3: Average Earnings



While a major readjustment was needed after the boom years of the early 2000s, the public sector needs to continue to hire skilled graduates in administration, education and health. Increasingly these sectors are having to compete with private sector employers.

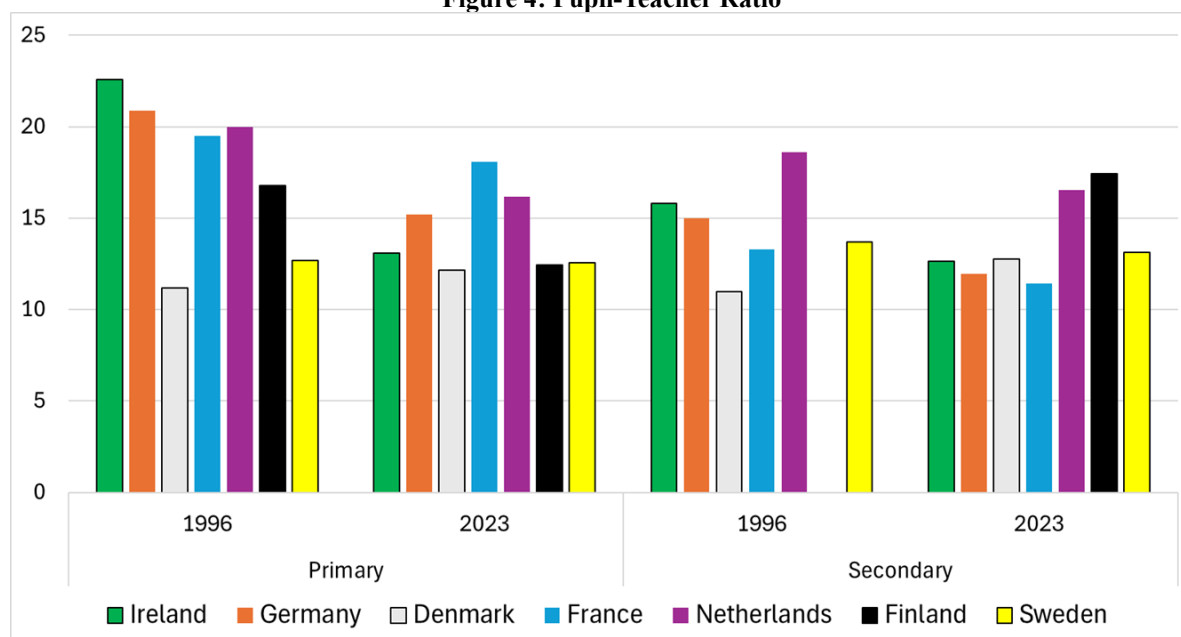
For existing employees in the public sector in their mid-30s, or older, most of them are housed. However, for younger labour market entrants the cost of living, including housing, is different, and jobs in teaching or the civil service may look uncompetitive relative to what is on offer elsewhere. This may mean that in the future public sector pay rates will have to track private sector rates, putting greater upward pressure on public expenditure than we have seen over the last decade.

Education

As the paper shows Ireland spends less on education than would be suggested by our larger youth population. During the 1980s fiscal crisis, while cuts were applied in all areas of public expenditure, teachers remained relatively well paid. This was sustained by having much larger class sizes than in many other EU countries. The relative scores on pupil attainment in the 1990s and 2000s showed that this policy was a success. Good teachers produced good outcomes, and these outcomes were relatively unaffected by class size. (See research by Hannan et al. in the 1990s).

As shown in Figure 4, in the past 25 years the pupil teacher ratio has fallen very substantially in Ireland. While the outcomes for pupils still appear to be very good, the greater teaching resources don't appear to have produced obvious major long-term benefits. This raises the issue as to whether, if in the future pay rates in education are to keep pace with rapidly growing salaries in related private sector businesses, part of the cost might be offset by a reversion to the slightly larger class sizes common 15 years ago.

Figure 4: Pupil-Teacher Ratio



Public Investment

The share of public sector expenditure going on investment is being ramped up. It is widely acknowledged that this is essential for future growth and the welfare of the population. It will put increasing pressures on the public finances. The problems of implementation have rightly received major attention in recent months. Hopefully, they will begin to be addressed. However, there are a number of other features of public investment that need to be considered to ensure, not only value for money, but also that the financial cost to the state of its investment programme is minimised.

Water is an example of what not to do and one where, in particular in the aftermath of the financial crisis, the financing model adopted severely constrained necessary investment while, simultaneously, adding to budgetary pressures. If Water were financed by a commercial utility, which funded itself through charges for services rendered, while still being owned by the state, it would not be part of government revenue, expenditure and borrowing. Instead, as its activities are part of the government's budget, its investment was severely constrained in the period 2013-20 at a time when the state-owned ESB was able to invest as required.

We need major investment in water services. In 2024 the total of the wage bill, investment, and depreciation in the water sector amounted to just under €2.5 billion. If water were a commercial state-owned company this expenditure would be taken off the government's budget. Future activity would be determined by what the economy needed, even in times of budgetary stress, to be funded by user charges. Thus, in comparing the Irish public sector investment with that in other countries account should be taken of differences in the coverage of the public sector.

The state owned energy utilities shows the success of this model. The ESB were able to borrow to fund their ongoing investment before the Irish government returned to the market. Importantly, as a commercial company, it has paid a significant dividend to the state, while retaining profits to build up its equity. In turn this equity has allowed it to borrow at competitive rates to finance a large investment programme. The commercial nature of this firm is reflected as a substantial state financial asset, which is deducted from the national debt to arrive at the net debt.

This year the state will borrow an additional €3 billion to inject additional equity into the ESB and EirGrid to allow them to undertake an even more ambitious investment programme. This will add to the national debt, but also to the state's assets, leaving the net debt unchanged. As a purely financial operation it is not part of the government borrowing requirement.

There have been some suggestions that the equity investment will allow lower electricity bills. This is wrong – it is not a subsidy to energy utilities and they will be expected to return a larger profit to fund their larger asset base. In a very unwise move the French government forced their state-owned electricity utility EDF to borrow to keep bills low after the Ukraine war. This was a hidden subsidy, off the French State's balance sheet. We should ensure no such repetition here.

A final aspect of state investment is housing. As the paper shows, as a share of national income, government spending on housing in Ireland is the second highest in the Eurozone. The paper highlights the fact that the state cannot hope to maintain its share of a hopefully much larger investment in housing in the coming years. The issue of the return on the housing investment of the state is rarely discussed. The investment is primarily destined to increase the supply of social housing. Initially the rent received from most new tenants under the differential rents scheme will not reflect the financial cost to the state. This reflects the low incomes of new tenants. However, the rent scheme needs to be reformed so that, if the household income rises substantially, the rent also rises towards more commercial levels. With welcoming the return to growing the stock of social housing, the financing model for this investment needs further analysis, and the way that housing stock is maintained needs reform. Too often the stock has been allowed to decay over time, something that is not reflected in the valuation of that state asset.

Adaptation

Finally, the state will have to fund much greater investment in adapting to climate change, including sea level rise. Failure to do so could result in huge damage to the physical infrastructure of the country in the future. While this will play out over the rest of the century, a detailed assessment is needed now of the likely investment needs and its likely timing.

Conclusion

I would like to end by thanking the author for a very useful and stimulating paper. It shows the challenges that the state is likely to face in the future, and also some of the opportunities.

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Symposium: The Evolution of Data Needs for Policy/Research in Ireland [Marking the Donation of Roy Geary's Papers to the UCD Geary Institute]

Introductory Remarks on Roy Geary

Patrick Honohan

Trinity College Dublin

(read before the Society, 13th May 2026)

Abstract: The life and professional achievements of Roy C. Geary are summarised.

Keywords: statistical methodology; Irish statistics; Roy Geary

JELs: B31, C12, E01

My task today is to describe briefly some of Roy Geary's professional skills and achievements. This is not the place for a comprehensive account, such as is provided in John Spencer's centenary lecture (Spencer 1997 – on which some of what follows relies), but we must be satisfied with a taster, to be complemented by the other presentations at this meeting.

Geary was born in Dublin in 1896 and grew up in Drumcondra. Like James Joyce a few years earlier, he went to O'Connell Schools (run by the Irish Christian Brothers), before proceeding to take a BSc. in Mathematics and Mathematical Physics at University College Dublin (UCD) in 1916 and a MSc. the following year. The traveling studentship he was awarded then took him to the Sorbonne in Paris where he studied under great mathematical names such as Borel, Goursat and Lebesgue.

He was an academic *manqué*. He accepted a lectureship at the University of Southampton in 1923 but never took it up, veering to a civil service job in Dublin in the Statistics Branch of the Department of Industry and Commerce. Ultimately, this unit evolved into an independent Central Statistics Office, of which he became the first Director in 1949 (after a kind of sabbatical year in Cambridge 1946/47). When he reached the age of 60 in 1957, he was ready to take early retirement from the CSO. UCD offered him a Chair when he reached 60, but apparently it was not accompanied by a sufficient salary. Instead, he went to the United Nations Statistical Office as Chief of the National Accounts Branch. He returned to Ireland to become the first Director of the Economic Research Institute (ERI—now the Economic and Social Research Institute). We may recall that it was the Statistical and Social Inquiry Society that wrote to the Ford Foundation seeking funding for the establishment of the ERI, and it is understood that the availability of Geary as Director was an influential factor in securing the Foundation's support. He was ERI Director from 1960 to 1966, and then continued there as a consultant until his death in 1983.

To an extent, Roy was a chip off the old block. His father was a civil servant whose job at the General Registrar's Office involved him in the 1901, 1911 and 1926 censuses. Geary *père* was elected to membership of this Society in 1923. Geary *fils* was elected the following year, and quickly became Honorary Secretary from 1926-1946 and President from 1946-51. Roy Geary was thus in the engine room of our Society for a quarter century.

And he was a prolific member, publishing no fewer than eleven papers in the Society's journal (JSSISI)—a score matched in the past century only by his boss in the Department of Industry & Commerce, Stanley Lyon, and by J.C.M. Eason, managing director of the family-owned bookshop and publishing company. He was also an active, not to say voluble, contributor to the post-paper discussion. Take, for example, his discussion of a 1936 paper by the agricultural economist Frank Hussey (who was incidentally my godfather). The paper doesn't seem too

complicated now, but apparently was not understood by many in the audience. Geary began his commentary trenchantly but facetiously as follows:

“In most statistical societies it is traditional that there should be one paper in each session completely incomprehensible to the great majority of members; and it was right that our Society, as one of the oldest in the world, should be true to this tradition... This is precisely the kind of paper which the Society requires.”

All the same, he did acknowledge that members could at least “appreciate the very practical importance of the problem and the significance of the results.”

Already in the early years, Geary was inventing fundamental statistical methods that he would apply to Ireland. For example, his paper on the distribution of the quotient of normal variates (Geary 1930) has the following application: Tuberculosis (TB) mortality grew by 5% in one particular location (Castletown Superintendent Registrar’s District, Co. Cork) between 1905 and 1924, whereas it fell by 40% on average across the country. Given the standard deviations in both years, what is the probability that such an outlier would be found? (He proposes to use rate of change over time, and not just current levels since there was great persistence in locality-specific death rates, attributable to stable but hard to measure local factors)? He worked out the formula for that probability, thereafter applicable to any ratio of normal variates, and applied it to the Irish data.

Other speakers today have more to say about his role in official statistics. I will just mention two examples of how imaginative he was in these matters. One is his suggestion of attaching a quality rating to published statistical series ranging from A to D depending on how reliable the CSO felt that statistic was. The other example is a comment I was struck by in Spencer (1997) who quotes Geary as saying that one of the principal functions of official statistics was in the “steadying of public opinion”.

His period at the UN is memorable in particular for the brilliant Geary-Khamis method he devised for producing measures of real income comparable across countries with widely differing relative price structures, a method which was long used in the major Penn World Tables data set.

His period as a well-liked Director of the ERI was marked by success in establishing that pioneering Institute on a solid basis. His modesty in offering his resignation because of what he saw as underperformance in hiring suitable senior staff was characteristic; though the Institute’s Council immediately dismissed the idea. Although he retired from the Directorship at the age of 70 he continued to come into the Institute on a daily basis thereafter to continue working.

Curiously, Geary had a poor opinion of economic theory, or at least “of the unrealistic abstractions of advanced mathematical economics.” It was not the advanced mathematics that bothered him, but the underlying naïve or “elementary logic that was assumed”. He criticized econometrics for its “almost slavish deference... to economic ideas”: preferring instead to plunge into a problem by measuring “obvious” concepts; as Peter Neary put it: he favoured more the inductive than the deductive. He was inclined to make dismissive remarks about economics, and did so even when chairing Nobel Laureate James Mirrlees’ Presidential Address at the Econometric Society’s European Meeting in Dublin in 1982.

Mention must be made here of his mathematical papers. Clearly, he made significant contributions, especially in the 1930s and 1940s to fundamental but practical statistical questions. As an example of the fundamental, there’s the famous Geary Theorem (Geary 1936). This states that, if repeated random samples are taken from a distribution and the mean and variance are independent, then the distribution must be Normal (Gaussian).

As an example of practicality, take, for example, his paper “Testing for Normality” (Geary 1947). This generalizes Fisher’s z-test for seeing if two samples have the same variance (thus enabling you to tell whether they come from the same population) to the case of non-normal distribution. Importantly, he shows that the correct significance boundaries can be much wider if the kurtosis is different to 3 (if kurtosis is 6, the conventional 95% confidence bound is actually only at about 80% confidence).

It is clear that he was very quick with mathematical manipulations. Complicated calculations of, for example, Charlier expansions used to derive approximate distributions seemed to pose no challenges. And, as another type of example, he quickly saw that the Klein-Rubin Linear Expenditure System (LES) was derivable from Stone-Geary utility function. (A rare example of economic theory being interesting to him.)

Some of his papers are quite hard to read today, partly because of notational choices and some old-fashioned terminology, but mainly because each one of them dips into the middle of a complex mathematical debate. His interventions, seeking to generalize or improve on authors such as T.W. Anderson, Gerhard Tintner, Harold Hotelling, almost seem to assume that the reader is part of the debate. His style was to make short, pointed, but important interventions in a methodological debate but then move on—inevitable I suppose if he was to hold down the day job.

Because his focus was on fundamental questions, others were often working in parallel and he didn't always get full credit – though he is well acknowledged in the literature (as witness the eight references in my prized graduate school copy of Kendall and Stuart 1967), and in the many honours he received, among which I will mention his Fellowship of the Econometric Society (despite his comments about Economic Theory) and Honorary Doctorates from the National University of Ireland and Queens University Belfast.

Roy Geary's importance, both as a long-time pillar of this Society and as one of the architects of the data and research infrastructure of the Irish State, can hardly be overstated.

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Symposium: The Evolution of Data Needs for Policy/Research in Ireland
[Marking the Donation of Roy Geary's Papers to the UCD Geary Institute]

Family Remarks on Roy Geary

Jill Dooney

[Granddaughter of Roy Geary]

(read before the Society, 13th May 2026)

Thank you for asking me to say a few words about Dr Geary, our much loved grandfather. My name is Jill Dooney. With me today are Emma Dooney, my sister; Kevin Dooney, my nephew (my brother Roy's son - Roy is on holiday and is sorry to miss this event); and, Sean McGovern, Emma's son and my nephew.

Our mother is Clodagh Dooney. She was brought up in Leeson Park, along with her older brother Colm. In my childhood, from 1965 we lived in Ticknock – very close to the Three Rock Forest. Our grandparents came to visit every Sunday; in the early years from Leeson Park and in the 1970s from the apartment that they moved to near Baggot Street by the canal.

I have a few anecdotes to tell to try to convey my grandfather's personality; we called him Goggi, so excuse me if I revert to that! As I said, our grandparents visited every Sunday. Goggi would collect up all his small change during the week so he could drive us crazy with "scrabble", a game he had invented for us. (At this stage Roy and I would have been about 8 and 9 and Laura, our other sister, about 3). He threw the money and we would wildly scrabble around to gather as much of the money as we could. Once he had created total chaos, Mum or Dad had to calm us down and stop us squabbling. Goggi then reverted to his cryptic crosswords, and when a great thought came to him, he would write out mathematical formulae around the border of the newspaper.

Another story relates to Christmas dinner, when Roy and I were about 15 and 16. Mum would buy a solitary bottle of red wine for Goggi to enjoy. (My parents didn't drink). Roy and I asked for a glass and at the end of the meal, Goggi said to Mum "Clodagh, I think you should get two bottles next year".

And finally, when I was living in rooms at Trinity, I used to go to my grandfather's every Wednesday evening to cook dinner and eat with him. (It was his housekeeper's day off). This meant that, when I left college and went to Liverpool to take up a graduate engineer post in a factory making telephone exchanges, we kept up a lively correspondence of old-fashioned letters. (I found these when I was preparing the documents for your archive, and I have a copy here). I have a few extracts from a letter dated 27th February 1982. (See on next page.) So, thank you for taking his personal papers into the UCD archive and for hosting this event in his honour.

On Next Page

[Letter from Roy Geary to Jill [Dooney], 27 February 1982]

[Front Page Below]

Telephone : 761436

No. 12 Court Flats,
Wilton Place,
Dublin 2.

Hi, my dear, 27 February 1982

Very many thanks for
your so interesting letter, I
am delighted that you are
finding your work interesting.

That's the great thing: far
more important than pay—
provided you can live on that.

And the night life good too.
I was very glad to hear that
the parents are visiting you.

I am glad your relation
with the computer are friendly.
It is certainly a great advantage
that the computer is learning
to debug itself. I have never
heard of a new programme

[Reverse Page Below]

that didn't founder first go
through.

I am very well—touching
wood! A few new jobs in
hand, including a paper
in the Stat. Soc. on 11 March.
The only time I ever feel
tired or out-of-sorts is
when I haven't enough work.

I look forward to seeing
you at the beginning of April.

Much love from

Goggi

Symposium: The Evolution of Data Needs for Policy/Research in Ireland [Marking the Donation of Roy Geary's Papers to the UCD Geary Institute]

R. C. Geary and Economic History

Alan de Bromhead[♦]

University College Dublin

(read before the Society, 13th May 2026)

Abstract: This paper pays tribute to the work of R.C. Geary from the perspective of an economic historian. It engages with aspects of Geary's work that touch on areas of economic history, such as international comparisons of living standards and the development of the official statistics of the early Irish state. The paper also gives an overview of some of Geary's early contributions to the analysis of important policy issues, read to this Society in the 1920s and 1930s. It concludes with a brief reflection on the ways in which Geary's approach, methods and values resonate with those of contemporary economic historians.

Keywords: Geary, economic history, Irish statistics; official statistics

JELs: N01; B31; C82

1. INTRODUCTION

"My deepest belief is that one cannot aspire to suggest improvements in anything whatever without trying to understand why things are as they are."

Roy Geary, quoted in Spencer, 1993, p.222

It is a great pleasure to speak to you today at this event marking the transfer of Roy Geary's personal papers to the UCD archives. What I want to discuss draws on accounts of those who knew Roy or worked closely with him over his long career. I will also offer my own personal impressions of how Roy's work relates to the subject of economic history based on my reading of a selection of that work, and my encounters with the statistics he established and developed. Before I begin, however, I want to touch briefly on the relationship between Roy Geary and the history of his own time, which I feel is relevant to understanding his motivations. Roy came of age at a tumultuous and pivotal time in Irish history, when Ireland was on the brink of civil war over the issue of Home Rule. He was present at the momentous first meeting of the Irish Volunteers in Dublin in 1913 and, as a student in Paris, assisted the Sinn Féin delegation in their diplomatic efforts in 1919. By all accounts, Roy was a patriot, and a firmly pragmatic one (Spencer 1993). This sense of service to the nation infused his career. His efforts to create a world-class statistical branch were driven by a desire to see Ireland take its place among the 'serious' nations of the world. However, it was not just the establishment of the state that motivated him but also the well-being of the nation and its people - wherever they might be. The analysis in his papers focused on the perennial ills of Irish society, be it the scourge of tuberculosis or the depressing drain of emigration. Roy's contribution to Irish state and society through his impressive record makes him stand out as one of the most dedicated public servants in the history of the state. For this, we owe him a significant debt of gratitude. I hope this event makes some small contribution towards acknowledging that debt, not least in the eyes of his family here today.

This evening I will touch briefly on three areas of Roy's work that resonate for economic historians: the debate over living standards in the long run, his contributions to the statistics of the emerging Irish state, and a discussion of some of his early work analysing Irish economy and society that he read to the *Statistical and Social Inquiry*

[♦] I am very grateful to Cormac Ó Gráda for helpful comments and suggestions.

Society of Ireland (SSISI) in the 1920s and 1930s. My treatment will be far from comprehensive, given the time constraints. For a more complete (and better) overview of Roy's life and career the interested reader can read the tribute volume edited by Denis Conniffe (1997) or the series of papers published by John E. Spencer (*inter alia* 1976; 1983). I hope, however, that by the end, I have managed to convey an impression of Roy Geary that tells you something about his contributions, his convictions and his character.

2. LIVING STANDARDS OVER THE LONG-RUN

The first place in which young economic historians are likely to come across the name of Roy Geary is through the Geary-Khamis International Dollar, especially as employed by Angus Maddison in his reconstructions of long-run living standards across the world. Geary's algorithm, presented in a 1958 paper of barely three pages, proposed a method of addressing the problem of comparing purchasing power across countries (Geary 1958). Using a system of average world prices, consumption in one country could be converted to an international currency and directly compared to others.¹ As in much of Geary's work, the motivation for writing such a paper was to solve a practical problem: how to meaningfully compare living standards across countries. A feature of Roy's work was his consistent use of international comparisons to illustrate differences and to gain perspective. In this regard he was likely influenced by C.H. Oldham, UCD economist and President of SSISI during Geary's early years at the Society, who advocated international comparisons with the pithy affirmation that "*Nobody can know Ireland who only Ireland knows*" (Oldham 1927).

Geary's method, while not the only approach proposed, gained wider currency when it was adopted by the International Price Comparison Project in 1968, which later developed into the production of the Penn World Tables, one of the most widely used macroeconomic datasets (Neary 1997). Through this, Maddison adopted the convention of using Geary's international currency for his work on reconstructing long-run living standards.²

Maddison's estimates, originally expressed in constant 1990 Geary-Khamis international dollars, ostensibly allow for comparisons of living standards over two millennia of human history. For example, we are given a figure of GDP per capita in Turkey in the first century AD that we can, adding several grains of salt as appropriate, compare directly to the GDP per capita of Ireland in the twentieth century. While Maddison's dataset was impressively comprehensive, many economic historians question its accuracy and reliability, particularly for inferences about the distant past (see Lindert 2016). Indeed, findings based on these estimates, such as when northwestern Europe overtook China (the Great Divergence), or when the US overtook the UK as the world's largest economy, have been challenged by studies that look to establish more reliable benchmarks.³ Geary's original challenge, to establish a reliable way to compare aggregates across time and space is one that remains unresolved. Indeed, the index number problem is one that resists a definitive solution as there are always trade-offs involved in choosing one method over another. As Peter Lindert (2016) describes it:

If one really wants to compare purchasing powers in 1700 the way an observer should have seen them then, one should replace the 1990 price comparisons with 1700 price comparisons. Even then, of course, one would have to make an arbitrary choice. On the other hand, the task of supplying and updating a global record of the growth of real national product and productivity will always be one for which the Maddison Project can accumulate, revise, and compare real national-account growth rates. This is a task that the benchmark direct comparisons, with their changing weights, cannot perform as well. Different questions call for different approaches.

This is something with which I suspect Roy Geary would firmly agree.

3. CONTRIBUTION TO THE STATISTICS OF THE EARLY IRISH STATE

Roy Geary's overall contribution to Irish official statistics is too vast to be given adequate recognition in one paper. His impact spanned many decades and reached disparate areas of the Irish economy and society. What follows touches on just a few of his early contributions, cherry-picked to highlight aspects of his professional and personal dedication to measurement - not measurement for measurement's sake, but measurement to understand the problems facing society and to shape policies to better the lives of Irish people.

¹ Geary motivated his efforts by a reference to the importance attached to comparing European economies as European integration emerged. He referred to this hypothetical currency as the 'Europa' (Geary 1958)

² Other methods, such as the EKS approach adopted by Eurostat, have been proposed and employed and the debate over the pros and cons of the approaches is a long one (Neary 1997).

³ Some of which have been incorporated into the estimates of the Maddison Project (Bolt and van Zanden 2025) that seeks to build on the legacy of Maddison's original work.

The first population census of the new Irish state took place early in Roy's career, but he was not the only Geary involved in its production. Roy's father, Edmond Geary, was an advisor on the 1926 Census, having led the production of the previous census in 1911 in his role at the Registrar General's office. Indeed, he worked as a clerk on an earlier census, giving the Geary family a connection to the census all the way back to 1901 (Spencer 1997). A search for the Geary family in the 1926 census finds Geary Sr. listed as Superintendent of Statistics at the General Register Office, while Roy, aged 30, is an Administrative Officer in the Department of Industry and Commerce. His eldest sister, Kathleen, is working as a Clerk at the Revenue department. A family comfortable with numbers, one might safely say! What makes this all the more interesting is that when we look at reported ages for the family across the 1911 and 1926 census returns. Looking at 1911 first, we see Edmond is 43 and Roy is 14. Fast forward 15 years to 1926 and the respective ages are 58 and 30, as expected.⁴ However, Roy's mother, Jennie, is listed as 40 in 1911 and 58 in 1926, a gap of 18 where 15 might be expected. That such a discrepancy should appear in such a statistically proficient household, directly involved in the creation of the census, is a pointed reminder of the hazards of using census age data – as sometimes happens in economic history – as an indicator of basic numeracy!

At the time, of course, Roy was working actively on the census and on processing the data collected. The census allowed Roy to calculate, as part of its publication, the first life tables of the new state in 1929. These life tables are accompanied by a detailed memorandum, written by Roy in his characteristically transparent and meticulous style, outlining and describing their process of construction. It was a style of writing and exposition that would be recognisable in his work across the next 50 years.

Roy would go on to be involved in many more firsts in the subsequent two decades (Linehan 1997).⁵ These included the first Balance of Payments estimates published in the *Irish Trade Journal* in 1938 and the pioneering National Income and Expenditure estimates for 1938-44. The *Statistical Abstract*, initiated in 1931 and continuing annually, was a compendium of data collected by government departments and would become a treasure trove of data for anyone interested in the economic development of the Irish economy over the 20th century. Inside are the expected official statistics on population, agricultural production and trade but also, for example, statistics on the number of university graduates and their degree classifications, juvenile crime by age and sex and monthly Private Motor Car registrations. Within the 'miscellaneous' category, further jewels include Quarterly Cost of Living indices and statistics on trade union membership. Selected international comparisons complete the abstract, providing useful context and a window into which areas were of particular interest to policy makers of the time. It should also be noted, of course, that the 1931 volume required significant effort to reconstitute the pre-1922 series for a consistent 26 county Irish Free State.⁶

Time precludes a full discussion of Geary's work developing early statistics for the Irish state. But I will highlight two further contributions here that stand out as good examples of Roy's impact and that have proved invaluable in my own research. The first is the 50-page-plus volume, *'The Agricultural Output of Saorstát Éireann, 1926-1927'* (Department of Industry and Commerce 1930). This publication, written almost exclusively by Geary, is a deep and wide-ranging statistical analysis of the agricultural sector of the new state (Linehan 1997; see too O'Connor and Guionard 1985). Although a separate inquiry for agriculture was produced in 1912 following the Census of Industrial Production of 1908, the 1926 report was a step up in terms of detail, presentation and commentary (DATI 1912). One striking feature is an international comparison of agricultural productivity at the time. Output per worker in the Irish Free State was estimated to be 92% that of Northern Ireland, 57% that of England and Wales and only 49% that of Denmark. In keeping with Geary's outlook, international comparison is a recognisable feature of the report.⁷

While the report presents many statistics at the aggregate level, we are also taken through a careful explanation of the process used to arrive at estimates of milk yields - extending across 12 pages - where evidence is presented, deductions are made and the answer finally revealed.⁸ Overall the report's analysis is as much a sociological study of farming practices as a presentation of dry statistical figures, revealing an author that is searching for answers to deep structural questions about agricultural production in Ireland. My only regret when I first encountered this work when reconstructing regional national accounts for Ireland, was that the exercise does not appear to have been repeated in subsequent years (de Bromhead and Kenny 2025).

⁴ Roy was born on 11 April – the 1911 census was taken on 3rd April while the 1926 census was taken on 18th April, shortly after his 30th birthday.

⁵ As Linehan comments, it is not always possible to precisely allocate credit for contributions in this period between Geary and his Director, Stanley Lyon.

⁶ The historical series of Statistical Abstracts have been digitised by the Centre for Economics, Policy and History and the data are now available on the CSO website.

⁷ The analysis of milk yields indicates that yields in Limerick compare favourably to international leaders, Switzerland and Denmark.

⁸ The answer for the average Free State yield was 487 Gallons per annum.

The second publication highlighted here is the 1933 *Census of Distribution* published in 1936. Following the 1926 Census of Industrial Production and the 1926 agricultural output estimates, it was clear that to reach estimates of national income, inquiries would need to be made as to the nature and extent of the services sector. What followed was truly pioneering - arguably the first of its kind in Europe and one of the first in the world.⁹ That a relatively poor, newly-independent state would produce such a study during the height of the Great Depression is no minor achievement. Inside are statistics detailing the number, size and location of retail shops, their wages and salaries paid and their stocks and sales. A response rate of 82% was achieved, impressive given the novel nature of the inquiry (Douglas 1937). The structure of Irish retail trade is revealed for the first time, alongside patterns of employment, distribution of sales and cycles of business turnover. The report is perhaps most impressive in its geographical granularity. If you want to find out the total sales of the 16 public houses in Kenmare Rural District in 1933 you need look no further than the Census of Distribution!¹⁰

4. EARLY WORK ON IRISH SOCIETY AND ECONOMY IN JSSISI

If not busy enough with the day-to-day job of preparing and compiling official statistics, Roy Geary was also engaged in public policy debates during these early years through his contributions to SSISI. In the first paper he read to the Society in 1925 (Geary 1925), his characteristically clear and well-documented approach to analysis was already on display. The topic of his paper, read a year after he became a member of the Society, was the accuracy of using random sampling - a method very much still in development in the early 1920s.¹¹ Roy's approach was a pragmatic and imaginative one - to test the accuracy of a sample of Irish agricultural statistics against the full count returns, returns that had been collected annually since the 1840s. The practical problem that Roy was attempting to get to grips with was the issue that during the "recent troubles" of the early 1920s, the system of full enumeration had broken down and only samples were collected, which raised questions about accuracy. While the motivation and data were agricultural, Geary emphasises that the relevance of the question is much broader, citing the application to cost-of-living indices and population sampling. Theoretical and practical concerns are blended, with statistical theory utilised as a key to unlock deeper truths. From theory and application, two essential elements to accurate sampling approaches are derived: that the samples are random, and that they are sufficiently large. While this may sound straightforward, achieving both in the real world of official statistics requires care, preparation and forethought, or as Geary eloquently states, "It seems paradoxically to be true that the golden rule of random sampling is to leave nothing to chance", a conclusion with which any modern behavioural or development economist would firmly concur. The paper ends with a thoughtful, introspective, and philosophical discussion of where and when methods of sampling should or shouldn't be applied. Geary's conclusion was that sampling and full enumeration are complements and not direct substitutes. Sampling should be used to extend our understanding of different areas of economic and social life, but not as replacements for full counts: the "great enumerations" are, to use a phrase from a modern context, the 'ground truth' of our societies. I am also uplifted to read that Geary recognised a duty to future economic historians: "His [the statistician's] existing statistics for a given year are but a part and incomplete if they are not comparable with those for previous years. He is also a custodian for the future: his statistics of today may only assume a significance twenty years hence."

His next paper in 1930 (Geary 1930) explored another pressing societal problem, the exceptionally high rates of tuberculosis (TB) that Ireland suffered in the first half of the twentieth century. The severity of the issue is made clear at the outset with a striking figure - in 1929 over 40% of deaths among those between the ages of 15 and 45 were due to TB. Drawing on his own life tables for 1926, Geary estimated that the eradication of the disease would add a full four years of life to male life expectancy. To this public health problem Roy turned his statistical lens and produced a fascinating exploration of TB mortality statistics in Ireland. The study explores many aspects and avenues to sketch the observed patterns of mortality, making comparisons across countries, cohorts and time, as well as Irish geography. The material assembled for analysis is indeed impressive, as is the attempt to evaluate various hypotheses.¹² Throughout the paper, it is apparent that Geary is searching for a causal interpretation, albeit he is too careful, of course, to fully conflate correlation with causation. Perhaps the most fascinating section is that which deals with the relationship between TB mortality and soil type in County Wexford - a theory put

⁹ For example, the UK did not complete a census of services until 1950 (Penneck 2005).

¹⁰ £5,474.

¹¹ The paper also demonstrates that Geary was also working at the technological frontier: "*It should be added that a Powers' Sorting and Tabulating Installation made this experiment but the work of a few hours*". These proto-computers would go on to be used in the tabulation of the 1926 census.

¹² "It would be extremely valuable for future guidance in combating this or other diseases to be able to show that the counties which exhibit the greatest declines in mortality are just those counties in which the public health activities were most pronounced. Perhaps some enquirer with special knowledge will examine these statistics in this sense". We took inspiration from Roy's call in our recent paper looking at mortality and social housing in Ireland (de Bromhead, Lyons and Ohler 2025).

forward by the English medical statistician, Dr. John Brownlee.¹³ Having elicited a soil map from a geological surveyor, Geary set about examining the spatial patterns within the county, finding a strong correlation between areas of marine boulder clay, or marl, and TB mortality; Brownlee having found a positive relationship between the proportion of area covered by boulder clay and TB in Suffolk, Norfolk and Essex.¹⁴ A less surprising correlation is also identified between urbanisation and social class. Mortality from TB would be a recurring topic of Roy's writing over subsequent years and represents one of his headline contributions (Breathnach and Moynihan 2003).

The final paper I will mention is one that relates to another of Geary's longstanding interests, that of future population.¹⁵ Ireland, as it is well known, is an outlier when it comes to its demography over the last 200 years. Famine and emigration led to population decline in the 19th century, a population decline that continued well into the 20th century. Such was the backdrop of Roy's 1936 JSSISI paper, *The Future Population of Saorstát Éireann and Some Observations on Population Statistics* (Geary 1936).¹⁶ The paper begins with producing projections of population up to 2016, seemingly intended to dispel the common misconception of the time that Ireland's population would recover following the effective cessation of emigration during the economic dislocations of the 1930s. What follows however is a digression that Geary cannot resist, with the opening lines offering a confession of his inherent curiosity:

While the principal object of this paper is to place on record the results of a couple of experiments in forecasting population, certain extended digressions have been made into the past (sometimes the distant past) not always with a view to extrapolation into the future. If these digressions depart too much from the main theme, it is hoped that they will compensate, in however small a degree, in interest for what they lack in relevance.

In terms of interest, the analysis does not disappoint. What follows is a characteristically thorough exploration of the determinants of population growth. The first examination is of fertility rates, with Ireland highlighted as an outlier in terms of having low marriage rates alongside high marital fertility rates. Looking across data for 22 countries however, Geary observes a clear inverse relationship between marriage rates and marital fertility rates. He speculates that some societal force may be at play that links overall birth rates with death rates and the needs of the economy.¹⁷ It is suggested perhaps that causation might run from high marital fertility to low marriage rates – high marital fertility potentially acting as a deterrent to marriage. Tantalisingly, further exploration of the topic is left to future researchers.

Next, it is the drivers of emigration that are put into focus, identifying push and pull factors most relevant to the Irish context. As ever, a diverse set of statistical evidence is brought to bear on the issue, including structural change within agriculture and shifting policies and conditions in destination countries. Taken together, Geary interprets the evidence as supportive of pull factors having a greater bearing on emigration. What is more, the plight of many Irish immigrants to the United States is highlighted – Irish migrants being overrepresented in low-skill occupations, experiencing higher mortality and poorer health.

Estimates of comparative living standards follow, both in levels and changes, employing valuations of agricultural stocks per capita and real wages in Dublin and London, before a final consideration of the level of Irish population in 1841. The paper therefore speaks to many aspects of demography - and Irish demography in particular - making it an engaging and interesting read, undertaken by an earnest and dedicated inquirer. In his response to comments from the floor, Geary gives us this in his own words: what he had tried to do throughout was “to find a reasonable explanation of certain statistical relationships”. His cautious characterisation of these explanations as “working hypotheses” was not an expression of “‘protective civil servese’ but a genuine expression of scientific doubt”. Here, the value of the comments and responses published alongside the paper emphasises the rare opportunity to witness the informal expression of debate and disagreement so preciously preserved by this noteworthy SSISI tradition.

¹³ On Brownlee see Brownlee 1920; Farewell and Johnson 2013.

¹⁴ Again, Geary is explicit in describing his approach: “The result is extremely striking when these proportions are expressed in figures. This was done roughly by drawing the boundaries on transparent paper, depositing the resulting map on 1-10-inch meshed squared paper and counting the squares.”

¹⁵ Again, the paper leans heavily on Geary's own life tables for 1926

¹⁶ Read to the Society in November 1935

¹⁷ This suggestion of a lack of agency on behalf of individuals was firmly challenged by Prof. Busteed in the post-reading comments. Geary's response is robust.

5. IN THE SPIRIT OF ECONOMIC HISTORY

When Mary Daly (1997) wrote the official history of the first 150 years of this Society, she adopted the title “The Spirit of Earnest Inquiry”, a phrase used to describe SSISI’s activities by the Trinity scholar J.K. Ingram in his address to the Society in 1863. Ingram, who had little time for the presentation of “dilettante statistics, collected with no special purpose”, demanded careful statistical analysis applied “to the most important questions affecting the condition of the country” (Ingram 1864: 13). Roy Geary’s contributions to the Society embody this spirit. His numerous contributions to SSISI still repay reading.¹⁸

There is a natural affinity between Geary’s approach and that of the economic historian. Economic history is an inherently interdisciplinary field, and an interdisciplinary approach is manifest throughout Geary’s work. He imaginatively combined the skills of a mathematician, a statistician, an economist and a historian as well as applying the “common sense of the practitioner” (Kendall 1973). While Geary had more sympathy for history than economic theory – his opposition to ‘literary’ economists was notorious – his outlook was one that favoured a practical attitude to future improvements over history for history’s sake. Despite his unashamedly data-driven approach, statistical analysis on its own was insufficient to reach reliable conclusions: deeper inquiries as to plausible mechanisms and channels were always required. In his own words, “It was useless to calculate correlation coefficients unless there were commonsense grounds for believing that a relationship existed.” (Geary 1936). An attitude of the greatest care in using data, a spark of imagination and creativity, and a wide curiosity are all values that economic historians would share.

This paper opens with a quote from Roy Geary that seems to capture much of what motivated him throughout his career. Roy’s work was about solving problems and gaining a better understanding of economy and society. To do this required accurate and complete information through the careful collection of data and the presentation of statistics. But statistics, or even the illumination they provided, were never the end in themselves. The end was improvement: for Ireland and the lives of Irish people. To sustain the levels of drive, productivity and energy that characterised Roy’s career over the decades required an innate motivation and insatiable curiosity about data and the secrets that they might reveal. To economic historians, the secrets of the past, long buried, must be excavated with care and veneration, and the fragments pieced together. The excitement of new discoveries is what propels us on and it is an excitement that Roy shared. As Brendan Walsh (1997) recollected:

I can recall his delight on receiving a new volume of a Census of Population or Industrial Production – two of his favourite statistical sources – and the enthusiasm with which he would announce: Here be riches.

Roy Geary did not only unearth riches — he created them. His legacy was to endow a nation with a statistical wealth that has been maintained and expanded for more than a century. That twentieth century Irish economic history rests on such solid foundations is something for which we are extremely grateful.

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¹⁸ According to the JSSISI archive on TARA, Geary authored eleven articles in his career, making him among the most prolific authors over more than 175 years.

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Symposium: The Evolution of Data Needs for Policy/Research in Ireland [Marking the Donation of Roy Geary's Papers to the UCD Geary Institute]

Data and Evidence in Policymaking since Geary

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(read before the Society, 13th May 2026)

Abstract: This paper reflects on the continuing importance of data and evidence in policymaking, taking Roy Geary's work and legacy as a starting point. It looks at how better data and analysis have shaped Irish policymaking in areas including fiscal policy, labour markets, housing and demographic change, while also highlighting some of the gaps that remain. The central argument is a simple one: data alone does not produce good policy, but good policy is rarely possible without good data.

Keywords: Roy Geary, Irish statistics, official statistics, evidence-based policymaking, data infrastructure

JELs: B31, C82

It is a great pleasure to be here to pay tribute to the long-lasting legacy of Roy Geary. Visitors to the ESRI building have probably noticed our portrait of Whitaker on the ground floor but slightly fewer of you may have seen that Geary's portrait is on the third floor just outside my office as Director, so he can keep an eye on me.

Patrick and Alan have given a great overview of Geary's life and contribution, but I do want to add one small anecdote, which is one of my favourite stories of the ESRI's foundation. So, we all know of Geary's contribution as the first director of the Institute, but his importance to its foundation is a bit less well-known. Securing external funding was crucial to establishing the Institute's independence, and the fact that someone of Geary's stature was ready to lead it helped persuade the Ford Foundation to provide the initial seed funding. Also important were the efforts of T. K. Whitaker and his junior civil servant, Thomas Kinsella – who soon afterwards went on to a very different career as a poet – who essentially stalked a Ford Foundation official on his daily walk to morning Mass in order to orchestrate the funding request.¹

Onto the present day and Geary's beliefs in the importance of data and evidence in policy-making are at least as important as they ever were and perhaps even more so given the constant flurries of commentary, disinformation and misinformation which policy makers have to navigate. Geary once described the publication of independent statistical information as "one of the greatest privileges and safeguards of a free democracy."² That phrase remains remarkably relevant today. Reliable evidence is central to enabling governments to identify problems earlier, allocate resources more effectively, evaluate outcomes more honestly, and adapt policy when circumstances change.

We often think about democratic institutions in terms of elections or courts. But democratic societies also depend upon trusted systems for establishing shared facts. In the absence of trusted evidence, public debate becomes increasingly fragmented. Economic discussion becomes vulnerable to misinformation, selective interpretation, or simple political convenience. The role of institutions such as the Central Statistics Office is therefore not just administrative. Independent statistics allow governments to be scrutinised, public spending to be evaluated, and national priorities to be debated on the basis of evidence rather than assertion.

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¹ Anne Chambers (2014). *T.K. Whitaker: Portrait of a Patriot*, Transworld. ISBN: 978-1-4481-7053-1.

² Roy C. Geary (1951) *The Official Cost of Living Index Number and its Critics*, Central Statistics Office, quoted in "A brief history of the CSO" at [CSO Marks 75 years - CSO - Central Statistics Office](#)

Similarly, the ESRI has played an enormously important role in Irish policymaking over many decades. Its work on labour markets, taxation, housing, demographics, education, and social policy has helped create a stronger analytical culture within Irish public administration. To draw on another quotation from a later ESRI director, Brendan Whelan, reflecting on Roy Geary's work, observed that "it is only by empirical analysis that the orders of magnitude so necessary for policy research can be established."³

That phrase captures something important about modern policymaking. Public debate often focuses on broad principles and the direction of an effect, positive or negative. But effective policy also depends upon scale, proportion, and measurement. How large is the problem? Which groups are most affected? What interventions are likely to produce meaningful effects? What are the long-term fiscal consequences?

These were some of the big questions of economic change that the ESRI was set up to examine. At the time, Ireland faced persistent economic stagnation, weak industrial development, and extraordinarily high levels of emigration. Hundreds of thousands of people were leaving the country in search of economic opportunity elsewhere. However, what Whitaker recognised was that economic decline was not inevitable. It reflected structural weaknesses that could be studied, measured, and addressed through policy.

More recently, the financial crisis of 2008 also demonstrated the consequences of insufficient analytical scrutiny. In striking contrast to the 1950s and 1960s, the years preceding the crisis were characterised by extraordinary economic growth, rising tax revenues, and widespread confidence in the durability of the Irish economic model. Yet beneath that growth were increasingly serious structural vulnerabilities: excessive dependence on property-related activity, unsustainable credit expansion, rising household indebtedness, and an overreliance on cyclical tax revenues linked to construction and real estate.

Many of those warning signs were visible in the data. One of the central analytical failures before 2008 was the confusion of temporary revenue with permanent national capacity. Rapidly rising property-related taxes created the impression of sustainable fiscal strength when in reality significant elements of state revenue depended upon an unsustainable economic cycle. This is a concern being emphasised strongly once again by economists in terms of the extent to which our public finances have become reliant on corporate tax revenues from a small number of firms.

Since the crisis, Ireland has significantly strengthened its fiscal oversight structures, macroprudential regulation, banking supervision, and economic forecasting capacity. Policymakers became more attentive to stress testing, scenario analysis, and long-term sustainability. In other words, evidence became more deeply embedded within policymaking processes precisely because the costs of insufficient scrutiny had become so apparent.

The importance of evidence-based policymaking is perhaps especially visible in labour market policy, where relatively small analytical differences can have significant implications for living standards and social equality. Over recent decades, Irish policymakers have increasingly relied on detailed labour market analysis in areas such as skills shortages, workforce participation, migration, educational attainment, and income distribution. Research from the ESRI and the CSO has informed debates on everything from childcare policy to regional employment patterns and the long-term effects of demographic change on labour supply.

But these discussions also illustrate an important point: the quality of policy analysis depends heavily upon the quality of the underlying data infrastructure. Even in a country with comparatively strong statistical institutions, important gaps remain. For example, analysis of issues such as minimum wages, low pay, underemployment, and gender pay disparities is often constrained by limited availability of sufficiently detailed and timely data on hours worked. Earnings data alone can provide an incomplete picture of labour market inequality if policymakers cannot accurately distinguish between hourly pay, part-time work patterns, or variations in labour force participation.

That may sound like a technical issue, but its implications are substantial. The design of wage policy, social protection systems, childcare supports, and measures aimed at improving gender equality all depend upon understanding how people actually participate in the labour market. And that points to a broader lesson. Evidence-based policymaking is not simply about analysing existing information. It also requires sustained investment in the systems that produce reliable information in the first place.

³ ESRI Annual Report 2005 [THE ECONOMIC & SOCIAL RESEARCH INSTITUTE](#) (page 1)

We can see similar issues arising in areas such as housing policy. Housing is a core social good but the housing market involves measurable relationships between population growth, household formation, infrastructure provision, construction capacity, financing conditions, planning systems, and land availability. Good housing policy therefore depends heavily upon good data. Without accurate information on demographic trends, vacancy rates, rental inflation, regional demand, and construction bottlenecks, governments risk responding either too slowly or inappropriately. Equally important, transparent evidence allows the public to assess whether policy interventions are actually improving outcomes. Housing policy also illustrates a challenge in democratic policymaking: political cycles are often short, while structural problems develop slowly. Data and long-term analysis help governments look beyond immediate pressures and think more seriously about sustainability.

The importance of long-term evidence is especially clear in relation to demographic ageing. Ireland remains younger than many European countries, but the underlying demographic trends are unmistakable. Over coming decades, the ratio between working-age populations and retirees will change significantly, with major implications for healthcare systems, pensions, taxation, housing, and public expenditure.

What matters here is not simply the existence of demographic change, but the ability to anticipate it early enough to plan effectively. Population projections, labour force modelling, and long-term expenditure analysis help governments move beyond short-term political cycles and think more seriously about sustainability over decades rather than years. Demographic policy is therefore one of the clearest examples of why evidence matters. The consequences of ageing unfold slowly, but they become far more difficult to address if governments fail to respond until pressures become immediate.

Statistics can be incomplete and economic behaviour changes over time. In addition, not everything that matters socially can be easily quantified. Some of the most important dimensions of social wellbeing — social cohesion, trust, community resilience, cultural life, environmental quality — are not always easily captured through conventional economic indicators.

Artificial intelligence, climate transition, energy security, demographic ageing, productivity growth, and housing affordability will all require long-term policymaking under conditions of uncertainty. Countries that succeed in navigating these pressures will not necessarily be those with the loudest political debates or the simplest ideological answers. They will be those most capable of learning, adapting, measuring outcomes honestly, and responding pragmatically to evidence.

In summary, in a way that I think is very much in the spirit of Roy Geary: data alone does not produce good policy. But good policy is rarely possible without good data.

Symposium: The Evolution of Data Needs for Policy/Research in Ireland
[Marking the Donation of Roy Geary's Papers to the UCD Geary Institute]

**Building a Data-Driven Public Service: Opportunities and Challenges for
Evidence-Informed Policymaking in Ireland**

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(read before the Society, 13th May 2026)

Abstract: The increasing complexity of modern policy challenges has intensified demands for evidence-informed decision-making across governments worldwide. Demographic change, technological transformation, economic uncertainty, climate pressures, and evolving citizen expectations require public institutions to become more agile, responsive, and data-driven. Ireland's policy regarding the use of data to drive better policy and services has evolved in this context. Current policy focuses on driving more strategic and coherent use of data to support the vision laid out in Better Public Services 2030 of 'inclusive, high quality and integrated Public Service provision that meets the needs and improves the lives of the people of Ireland'. The paper provides an assessment of Ireland's public data ecosystem, which attracts favourable international rankings on digital government, open data and trust. It lays out some of the current strengths in the system and remaining challenges to be addressed. A case study is included which illustrate strong examples of data use. Finally, it outlines priorities for a new Public Service Data Strategy and reflects on broader implications for public service transformation.

Keywords: public sector data, evidence-informed policy, public service transformation, public administration reform, public sector reform, data governance, public trust, digital government, public sector innovation, public governance, Ireland.

JELs: H83, H11

1. INTRODUCTION

Governments are operating in an increasingly complex environment characterized by rapid social, economic, technological, and environmental change. In this context, policymakers face interconnected challenges, including demographic trends, housing pressures, digital transformation, climate transition, geopolitical uncertainty, and shifting labour market demands. These challenges provide an impetus for change, both in the immediate and longer term. *Future Forty: An Economic and Fiscal Outlook to 2065* (Department of Finance, 2025), lays out the longer term view from an Irish perspective very well. In the short term, trade-offs and decisions are required to meet the needs and expectations of the public, within budgetary constraints and to ensure investment is delivering, and providing value for money. In these circumstances, effective governance requires an agile and responsive public service, with access to high-quality evidence capable of informing decisions throughout the policy cycle.

Data have become central to this endeavour. Evidence-informed policymaking has long been important to government and the civil service, as laid out in the other papers in this series, and as exemplified by Roy Geary's career and significant contribution. Now it has moved front and centre, beyond the remit of analysts and

¹ Sarah Glavey, Principal Officer, Public Service Transformation Policy; Marianne Cassidy, Assistant Secretary, Public Service Transformation; Alan Plummer, Assistant Principal Officer, Public Service Transformation Policy. With thanks to all colleagues in the Department of Public Expenditure, Infrastructure, Public Service Reform and Digitalisation, who have contributed to work which is described in this article. Note that the article reflects some of the insights gained through the analytical and policy development work carried out for the Public Service Data Strategy, while the ultimate priorities and actions to be contained in the Strategy will be decided by government.

statisticians exclusively, to become a core component of public sector effectiveness. Increasingly, governments seek to leverage administrative data, statistical resources, digital records, and emerging analytical technologies to improve policy design, implementation, monitoring, and evaluation.

In Ireland, this shift has been accompanied by a growing recognition that data should be viewed not simply as an operational resource, or the purview of specialists, but as a strategic asset, which public servants need to be adept at using in a wide range of roles. The advancement of digital public services has led to significant increases in data generation and availability. At the same time, public expectations regarding transparency, accountability, and service quality have intensified.

At the European level, the Draghi (2024) and Letta (2024) reports highlight the importance of utilising data and digital resources to drive European competitiveness. Simplification of European digital and data regulations is underway to enable this through the *Digital Omnibus Regulation Proposal* (European Commission, 2025) which is currently being negotiated.

This article explores how these developments are shaping Ireland's public service transformation agenda. It examines the current state of the national data ecosystem, identifies key strengths and challenges, and discusses how existing and emerging policy initiatives seek to strengthen the strategic use of data across government. Particular attention is paid to the relationship between data usage, institutional capability, and public trust.

2. PUBLIC SERVICE TRANSFORMATION AND THE IRISH CONTEXT

2.1 The Growing Importance of Data in Public Policymaking

The growing importance of data in policymaking aligns with broader transformations in the nature of public governance. Policy challenges are increasingly multidimensional and interconnected, requiring governments to draw upon diverse evidence sources in order to understand problems and develop appropriate interventions. Public organisations must work with each other across boundaries, which involves sharing data and insight.

Data supports policymaking in several ways. It enables governments to identify emerging trends, understand population needs, allocate resources more effectively, evaluate policy outcomes, and improve service delivery. Data also provides a foundation for accountability by allowing policymakers and the public to assess whether interventions are achieving intended results.

Importantly, the role of data extends beyond policy formulation. Increasing attention is now being paid to the relationship between policymaking and implementation. Policy is really only as good as its implementation, therefore policy development, implementation and service delivery must be closely intertwined and data are essential to drive better policy, services and outcomes, including assessing the impact of government programmes and interventions. There is growing interest in how data can be used throughout the entire policy cycle—from agenda-setting and design through implementation, monitoring, and evaluation. *The Policy Handbook* (Department of the Taoiseach, 2025) highlights data and evidence of one of three essential pillars of policy development alongside legitimacy and feasibility.

Digitalisation has accelerated these possibilities. As public services become increasingly digitised, public service bodies gain access to larger volumes of administrative information generated through routine service delivery. They also gain valuable insights from the behaviour and feedback of users of public services. This creates opportunities for more responsive and adaptive forms of governance. However, it also raises new questions regarding data management, governance, interoperability, and ethical use.

2.2 Better Public Services

Ireland's public service transformation agenda provides an important context for understanding current developments in data policy. Central government initiatives increasingly emphasise the need to equip public institutions with the capabilities required to respond to future challenges. Strategies for Civil and Public Service reform over the past decade, such as *Civil Service Renewal 2030* (Department of Public Expenditure, Infrastructure, Public Service Reform and Digitalisation, 2021), have placed an increasing focus on the importance of evidence-informed policy making, and the technical and specialist skills and infrastructures required to support this process.

Better Public Services 2030 (Department of Public Expenditure, Infrastructure, Public Service Reform and Digitalisation, 2023) is the Government's policy for public service transformation across the civil and public service. This lays out a shared public service vision to deliver inclusive, high quality and integrated public services that meet the needs and improve the lives of the people of Ireland.

Better Public Services provides the overarching strategic framework for bringing together key initiatives and infrastructure to drive transformation. With the leadership and sponsorship of the Public Service Leadership Board, it is being implemented through flagship programmes driven centrally, and transformation initiatives undertaken by all Public Service Bodies.

Progress on the key metrics associated with the Better Public Service priorities is tracked through specific output and outcome metrics including; customer satisfaction; use of digital public services; quality of public services; government effectiveness; employee engagement and public trust.

The strategy is framed around three interconnected pillars and priorities:

- ***Digital and Innovation at Scale***

Digitalisation represents a major pillar of transformation. Public services are increasingly adopting digital technologies to improve efficiency, accessibility, and responsiveness. While digitalisation generates operational benefits, it also dramatically increases the volume of information available to government. The challenge is therefore not merely one of collecting data but of organising, managing, and utilising those data effectively. Without appropriate governance structures and analytical capacity, the potential value of digital transformation may remain unrealised. The *Digital Public Services Plan 2030* (Department of Public Expenditure, Infrastructure, Public Service Reform and Digitalisation, 2025), lays out how Ireland will take a human centred approach to reach the EU Digital Decade targets of 100% of key public services online by 2030, and 90% of these services consumed online, allowing for in person service delivery options to be accessed where preferred.

- ***Workforce and Organisation of the Future***

The second priority concerns the future public service workforce. While investments in technology are important, the effective use of data ultimately depends upon people. Governments require staff capable of understanding and interpreting data, and utilising evidence to generate insight and inform decision making. This requires both specialist analytical roles and broader data literacy among generalist policymakers. As data become increasingly embedded within policy and service processes, workforce capability becomes a critical determinant of success. Increasing public service capacity for an evidence-informed approach to policymaking is therefore a priority to strengthen good public governance (OECD, 2020)

- ***Evidence-Informed Policy and Services Designed for and with our Public***

Evidence remains a central pillar and focus of public sector reform. Evidence-informed policy-making is the process of using the best available evidence to inform and guide the development, implementation, and evaluation of public policies. The goal of EIPM is to ensure that policy decisions are grounded in reliable, objective, and up-to-date evidence, rather than being based solely on opinions, ideologies, or political pressures (European Commission Joint Research Centre, 2025).

Better Public Services 2030 (Department of Public Expenditure, Infrastructure, Public Service Reform and Digitalisation, 2023) lays out how effective human centred policies must be developed based on enhanced data, analytics and insight, and designed and delivered with the customer at the centre. Accessible and shared public service data should be available and should support evidence informed policy and services.

3. TRUST AS A FOUNDATION OF PUBLIC SERVICE TRANSFORMATION

Public trust is essential for the support and successful delivery of government programmes, and it underpins good public governance. It is one of the outcomes we are monitoring and seeking to strengthen through the implementation of *Better Public Services 2030*.

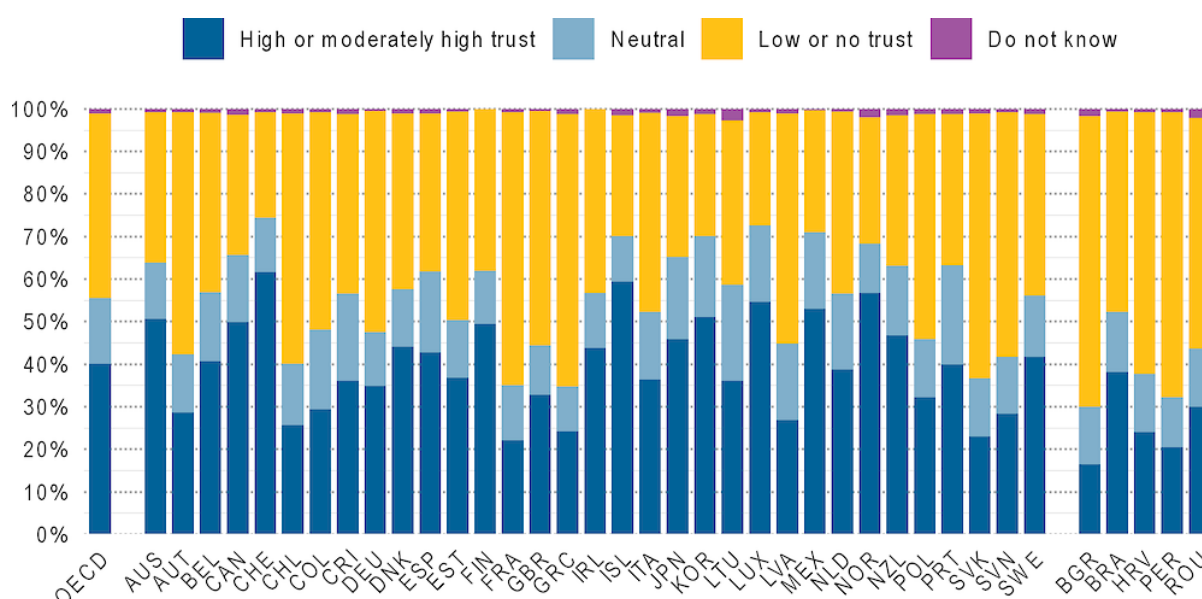
3.1 Drivers of Trust in Public Institutions

The OECD measures public trust every two years through their survey on Drivers of Trust in Public Institutions. Ireland has participated in all three iterations of the survey to date and this provides an important international benchmark of national performance on trust in public institutions, including national government, the civil service, local government, legislatures, police and courts. The survey was administered by the CSO in Ireland in autumn 2025, with a representative sample of 6,000 and 2,194 responses, giving a response rate of 37% (CSO, 2026).

The 2025 survey covers 33 OECD countries and 5 accession countries drawing on responses from more than 76,000 people. Figure 1 shows that 43% of people across OECD countries have low or no trust in the national government, compared with 40% with high or moderately high trust. As per previous survey waves, there are significant variations across countries and population groups. While there was a small decrease in trust in 2023

compared to 2021, trust levels have since stabilised, and substantially improved in about half of the countries where it had previously declined (OECD, 2024, 2026). In Ireland 44% of those surveyed reported high or moderately high trust in national government.

Figure 1: OECD Trust Survey Results 2025 – Trust in National Government



Trust in government therefore remains a significant challenge internationally. Even where trust levels compare favourably with international averages, substantial proportions of the public remain sceptical of government institutions.

The OECD's work provides important analysis and understanding of the factors that influence trust, as well as recommendations on what governments can do to build public trust. Previous iterations of the trust survey have reported that key drivers of trust in government include; perceptions of having a say in government decisions; satisfaction with day to day interactions with administrative and public services; perceptions regarding how government deals with complex policy issues; and perceptions of evidence informed policy making. The 2025 survey results confirm previous trends and provide additional insight.

With regard to public services, OECD analysis shows that trust is built through responsiveness, reliability, integrity, openness, fairness. Actions that governments can take to strengthen trust include; citizen engagement; strengthened ability to address complex policy challenges; a healthy information ecosystem and evidence-informed communication; and investment in reliable, responsive and fair public services.

OECD findings show that people who believe that governments make decisions based on the best available evidence, are open to input from the public and stakeholders, and balance the needs of current and future generations, that are more likely to have high or moderately high trust in the national government (OECD, 2024, 2026).

3.2 Trust, evidence and data

The effective use of data ultimately depends upon public trust. In the context of data-driven government, trust becomes especially important because many public sector activities depend upon the collection, use, and sharing of personal and administrative information.

Importantly, perceptions regarding evidence-informed decision-making are closely linked to trust. The public are more likely to trust governments when they believe policy decisions are informed by objective evidence rather than arbitrary or purely political considerations. The OECD recommends that governments should invest more in the engagement of people and stakeholders, transparency, evidence, and communication for decision-making, and in ensuring the fairness of decisions (OECD, 2024, 2026).

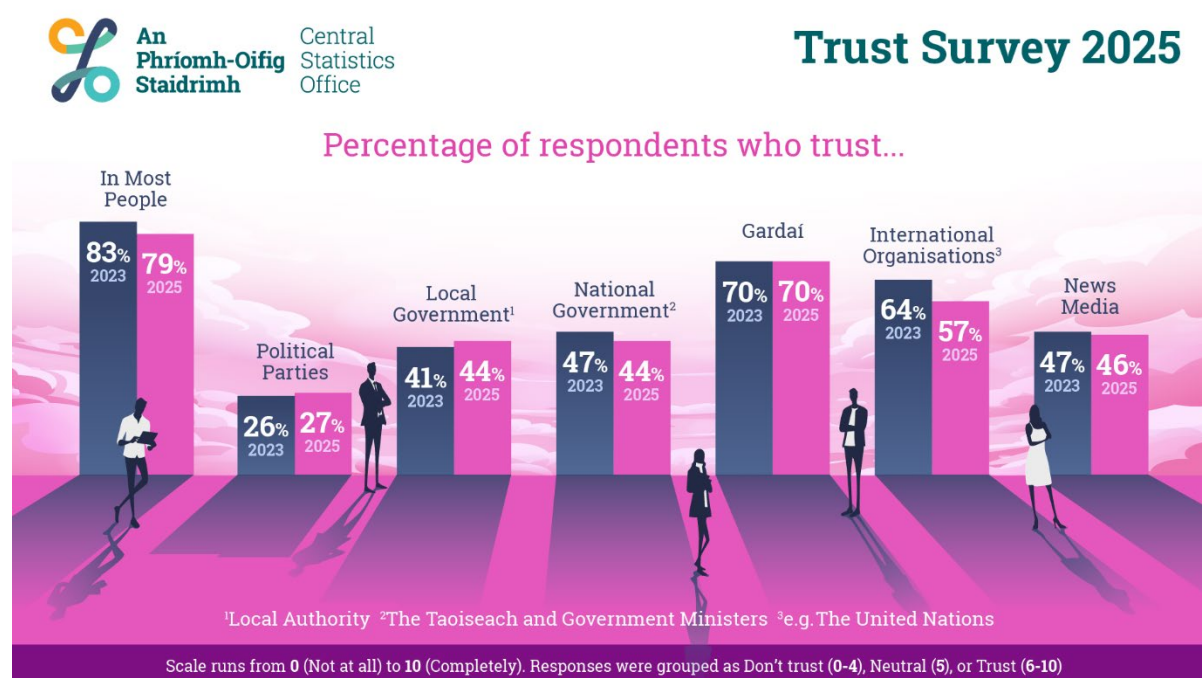
Irish results show a decline from 69% to 66% from 2023 to 2025 in those who trust that government will use personal data legitimately. This is still favourable compared to OECD average which found that in 2025, 52% of

people found it likely that government agencies use personal data only for legitimate purposes. Irish results also show a slight decline in those who believe that national government uses evidence in decision making from 41% to 39%. Here the Irish result is slightly below the OECD average, where 42% believe that national government uses evidence in decision making.

New data were collected through the 2025 survey on perceptions of the use of artificial intelligence by governments. Globally, only around four in ten people are confident that government use of AI could lead to more tailored public services and reduce costs, with rates higher among respondents familiar with AI. Confidence is even lower, when it comes to whether AI is used with transparency, fairness and the protection of personal information (OECD, 2026). In Ireland, 33% were confident, while half of respondents (50%) were not confident in the government's future use of AI in providing services that are better tailored to individual needs. Only 15% were confident with government agencies future use of AI and their ability to protect individuals' personal information from unauthorised access or misuse, while 72% of respondents were not confident (CSO, 2026). The CSO provides additional analysis and infographics to illustrate the results of the survey, such as that in Figure 2 below, which illustrates levels of trust in a range of public institutions.

The relationship between data, evidence and trust creates both an opportunity and a responsibility. Effective use of evidence can strengthen institutional legitimacy, but failures in data governance can quickly erode public confidence. Accordingly, transparency, accountability, and ethical stewardship must remain central components of any public service data strategy.

Figure 2: CSO Infographic illustrating trust in a range of public institutions – based on OECD Trust Survey Results 2025



4. IRELAND'S CURRENT DATA ECOSYSTEM

4.1 Overview

Overall, Ireland already has a strong foundation in data governance and enjoys a relatively high level of public trust in how data is used across public services. Beyond the findings of the OECD trust survey outlined above, Ireland performs well on metrics of digital and data governance internationally. Ireland ranked 7th out of 36 countries in the 2025 *Digital Government Index* (OECD, 2025), which measures how well countries are transforming public services using digital technology. Ireland ranked 5th overall out of 36 countries in the EU's 2025 *Open Data Maturity Assessment* (European Commission, 2025) which evaluates the progress of European countries in making public sector information available and promoting its reuse. Ireland was fourth among EU Member States in this survey, with an overall score of 96%.

Actions under The Public Service Data Strategy 2019–2023 (Department of Public Expenditure, Infrastructure, Public Service Reform and Digitalisation, 2019) delivered significant progress in how public sector data is governed, shared, and used, laying the foundations for a more integrated and evidence-driven system. A key achievement was the introduction of the Data Sharing and Governance Act 2019 (Government of Ireland 2019), which provided a clear legal basis for data sharing, alongside strengthened governance structures that improved accountability and coordination. The Open Data Strategy 2023–2027 (Department of Public Expenditure, Infrastructure, Public Service Reform and Digitalisation, 2023) and the Public Service Data Strategy 2019–2023 (Department of Public Expenditure, Infrastructure, Public Service Reform and Digitalisation, 2019) also advanced Ireland’s Open Data agenda, with continued expansion of the Open Data Portal² and greater availability of high-value datasets, now standing at 22,000 in 2026. Despite ongoing challenges, Ireland has developed a substantial and increasingly sophisticated data ecosystem.

Data.gov.ie is Ireland's national open data portal – hosting over twenty-two-thousand datasets from one-hundred-and-forty-one publishers across the public sector in Ireland. Spanning a wide variety of themes, data is made available by public service bodies to enhance transparency, support evidence-informed policymaking, and enable innovative re-use cases that unlock economic and social value at scale. Figure 3 below provides an overview of the volume and type of datasets available on Data.gov.ie.

Open data plays a crucial role in driving whole-of-government transformation and digital service delivery, in line with the Better Public Services 2030 Strategy, and is a key enabler of emerging technologies, like AI.

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4.2 Strengths within the Data Ecosystem

Growth of Analytical Capacity

An important strength is the expansion of analytical expertise within government itself. Following reforms introduced after the global financial crisis, Ireland invested significantly in strengthening internal analytical capacity, in particular through the development of the Irish Government Economic and Evaluation Service (IGEES) by DPER. The development of the National Statistical Service (NSS) by the CSO has been complementary, and we now see public service bodies, particularly within the civil service, increasingly linking these functions internally to establish core functions around data and analysis, such as teams focused on data and/or research. The analysts are also networked across Government Departments providing an important model of cross-sectoral expertise. Doyle, J. and Riordan, D. (2026) and Moloney, D., Dwyer, R., Glavey, S. and Sellars, D. (2024) tell the story of the development and contribution of these networks in the wider context of public service reform and evidence informed policy.

The presence of dedicated analytical personnel represents a significant institutional development. Rather than relying exclusively on external expertise, government departments now possess greater internal capacity to interrogate data, assess evidence, and contribute to policy design. The investment and increase in capacity regarding individuals, networks and functions focused on data and analysis has also driven increased demand for data within the system. These analysts play an increasingly important role in supporting evidence-informed decision-making and policy evaluation. The more recent establishment of the National Data Analytics Network by CSO holds promise to contribute strongly to this agenda. These developments represent strong progress, in skills development and capacity building.

Research and Policy Collaboration

Collaboration between policymakers and the higher education and research sector is a growing strength as well. The importance of evidence informed policy is embedded in Irish research and innovation strategies, and the programmes of key public service bodies such as Research Ireland. The Department of Further and Higher Education Research, Innovation and Science have a pivotal role to play in driving synergies between policy makers and researchers.

Universities and research institutes play a crucial role in generating knowledge, developing analytical methodologies, and training future data professionals. Collaborations between government, academia, and research centres contribute significantly to the national evidence infrastructure. These partnerships facilitate innovation while creating opportunities to address complex policy challenges through multidisciplinary approaches.

Advances in Data Infrastructure

Ireland has also made progress in developing technical infrastructure that supports secure data access and analysis with a number of organisations across the public service, including the CSO, playing crucial roles. Initiatives enabling the secure linking and analysis of datasets across organisational boundaries have expanded opportunities for policy-relevant research. Such developments facilitate deeper understanding of complex societal problems by allowing data from multiple sources to be combined and analysed in protected environments. Consistent use of key national identifiers, in particular the PPSN, UBI and Eircode underpins a shared approach to linking data. Data sharing agreements and strong data governance in line with the Data Sharing and Governance Act 2019 (Government of Ireland, 2019) have underpinned a robust approach to data sharing, in line with the General Data Protection Regulation (GDPR) (European Commission, 2016).

Specialised centres focusing on advanced technologies such as artificial intelligence, and high end computing have also strengthened national capabilities and enhanced opportunities for innovation. The CSO has developed a model of Virtual Data Rooms to meet the growing need for advanced data analytics capabilities across public service. The VDR collaborative service, is built on a secure analytics platform with standardised visualisation tools and robust governance processes that enable cross-agency data analysis in a controlled and compliant environment. It enables public service bodies to conduct analysis that supports evidence-informed decision making, necessary for public policy evaluation and formulation.

Culture and Strategy

With greater analytical capacity in place in many public service bodies, a more open and strategic approach to data is growing. The national open data portal has expanded to host more than 20,000 datasets published by almost 150 publishers, in line with the National Open Data Strategy 2023-2027 (Department of Public Expenditure, Infrastructure, Public Service Reform and Digitalisation, 2023) and the EU Open Data Directive (European Commission, 2019).

Several organisations have published dedicated data strategies. In addition, joined up approaches are being advanced through for example the CSO's Data Strategy (CSO, 2026) and the National Equality Data Strategy (Department of Children, Disability and Equality, 2026) which illustrate the development of a cross-cutting approach to standards and use that is also indicative of a maturing system.

4.3 Persistent Challenges in Achieving Data-Driven Government

There are strong foundations to build on. However, challenges persist and barriers remain to the realisation of a fully integrated data-driven public service. Through policy analysis and development associated with a forthcoming Public Service Data Strategy some consistent areas in need of attention have emerged. These will now need to be addressed in order to advance the maturity of the data ecosystem, and deliver an integrated, data-driven public service, where high-quality data routinely informs policy, service planning and delivery to achieve better public services outcomes for all. Achieving this vision is the next stage in Ireland's public service data journey.

Discoverability and Accessibility

Despite the existence of several central data resources, potential users do not always know where to find the data they need. There have been investments in catalogues, repositories, central portals and discovery tools, such as the National Open Data Portal, and the Public Service Data Catalogue³ but difficulties in locating relevant datasets remain. Addressing this issue requires not only better technical solutions but also greater coordination and communication across organisations.

Fragmented Data Sharing

One of the most significant challenges concerns data sharing between public bodies. Although there has been progress, particularly in line with the Data Sharing and Governance Act, data sharing practices remain inconsistent and often fragmented. Public service bodies frequently operate according to different standards, procedures, and governance frameworks. As a result, opportunities for data integration are not always fully realised. This fragmentation limits the ability of policymakers to develop comprehensive understandings of policy problems that span organisational or sectoral boundaries.

Data Quality and Standardisation

Data quality remains another significant concern. Before data can be shared or analysed, they often require extensive cleaning, preparation, and standardisation. Enormous effort goes into these processes, and the ability of public service bodies to carry out this work varies greatly. Inconsistent formats, differing definitions, and varying collection practices create barriers to interoperability. Some organisations may hesitate to share data because of concerns regarding quality or completeness. Such perceptions can create behavioural barriers that limit collaboration and reduce the overall effectiveness of the data ecosystem.

Governance Complexity

Data protection regulations play an essential role in safeguarding citizens' rights and maintaining public trust. However, their implementation has sometimes created uncertainty within public organisations, regarding practices to do with differentiating and handling personal data. In some cases, public service employees remain unsure about what forms of data sharing are legally permissible. This uncertainty may discourage potentially beneficial uses of data, even where appropriate legal mechanisms exist. There is a need to retain protections while improving clarity, guidance, and confidence regarding lawful and responsible data use.

Continuing Skills Gaps

Although specialist capacity has expanded, disparities remain in data literacy among generalist policymakers. Many public service employees are expected to engage with data and evidence without necessarily possessing advanced analytical training. Consequently, there is an ongoing need to strengthen data skills among generalists and in addition to growing technical expertise.

4.4 Towards a New Public Service Data Strategy

Recognising both achievements and ongoing challenges, Ireland is developing a new Public Service Data Strategy to strengthen data sharing and use across government and advance data maturity of our data ecosystem. The strategy is still under development, however there are a number of areas of focus. In line with international best practice, EU and national policy, a clear vision is emerging of an integrated, data-driven public service, where high-quality data routinely informs policy, service planning and delivery to achieve better public services

³Public Service Data Catalogue <https://datacatalogue.gov.ie/>

outcomes for all. This is a significant culture shift from data ownership to stewardship. This will be underpinned by commitments to transparent, ethical and responsible practices, value for money and a focus on outcomes.

Improving Data Access and Integration

There will need to be a focus on improving the collection, linking, and accessibility of data. This will involve reducing fragmentation and simplifying data access for public servants, to drive better policy, services and outcomes. Policymakers, analysts, researchers, and service providers require mechanisms that allow them to find, use and share relevant information while maintaining appropriate safeguards. We need to do more to reduce the barriers to data sharing between public service bodies.

Creating Public Value

To create additional public value from data, we need to have the people, skills and insights in place to achieve better outcomes. We need to have access to the data to measure and monitor these outcomes. This will require translation of data into insight and the use of this insight. It will require collaboration between governments, researchers, businesses, civil society organisations, and citizens. Value creation will lead to better policy and services, enabling innovation and broader economic and social benefits. This is in line with EU policy and the vision described by the Draghi and Letta reports.

Maintaining Trust

As we develop our data ecosystem we must continue to build on and develop our strong foundations of public trust. This is particularly important in the context of emerging technologies such as AI. As governments expand their use of data and advanced technologies, trust must remain a guiding principle. Citizens must have confidence that their information is being managed responsibly, securely, and ethically. This will require a strong focus on security, privacy, data protection and ethical use. Governance frameworks, accountability mechanisms, and public engagement processes are likely to remain central features of future developments.

Our public service data ecosystem will continue to develop. Within that context, public service bodies are at different stages of development and maturity. A core objective is to enable data leaders, while also supporting those who are at earlier stages of their journey, and to connect public service bodies to enable sharing and learning throughout the system. The Public Service Data Strategy will provide a collection of measures to enhance what is working well, as well as measures to address challenges and remove barriers, and to provide a joined up and strategic way forward.

5. EMERGING DIRECTIONS: NEW FORMS OF EVIDENCE AND ARTIFICIAL INTELLIGENCE

The environment continues to change rapidly with increasing focus on the intertwined drivers of transformation provided by digitalisation, increased volumes and types of data, and the rise of artificial intelligence. The future of evidence-informed policymaking is likely to involve increasingly diverse forms of data. Traditionally, policy analysis relied heavily on quantitative indicators and official statistics. While these remain essential, policymakers are increasingly recognising the value of qualitative information derived from service users, frontline staff, and community engagement processes. Insights from a range of data sources can be helpful in gaining a deeper understanding of policy and service challenges, and the feasibility of solutions, and interventions.

Developments in artificial intelligence offer new opportunities for analysing large and complex datasets. AI technologies may support pattern recognition, forecasting, service optimisation, and evidence synthesis. However, these possibilities also raise important and uncertain questions concerning accountability, transparency, bias, and governance. The successful integration of AI to enable public service processes and drive better outcomes and public value will therefore require both technical innovation and robust institutional safeguards.

The Guidelines for the Responsible Use of AI in the Public Service (Department of Public Expenditure, Infrastructure, Public Service Reform and Digitalisation, 2024), lay out an approach to responsible adoption in line with the EU AI Act (European Commission, 2024), but this is a rapidly evolving space. We see in the recent OECD Trust survey that citizens globally and in Ireland are unsure whether their governments are equipped to deal with AI responsibly (OECD, 2026). Governments will need to address these concerns while keeping up with the complex policy and programme development needed to harness the benefits of AI.

Promising practices and strengths continue to emerge across the public service, lending an optimism to the future. Skilled public servants are developing data driven analytical approaches, through networks such as IGEES, and the NSS, in a wider context of improved policy development through initiatives such as the Policy Handbook, which recognises data and evidence as one of the fundamental pillars of good policy development. A human centred approach to service design and delivery is embedded in the Digital Public Services Plan, with supports

and resources in place, through the delivery of the Design Action Plan (Department of Public Expenditure, Infrastructure, Public Service Reform and Digitalisation, 2026) and implementation of the Design for Public Value guidelines (Department of Public Expenditure, Infrastructure, Public Service Reform and Digitalisation, 2026). Data visualisation and dashboarding tools are becoming increasingly available and used, providing important insight to decision makers across the public service. Monitoring, evaluation and learning systems are becoming stronger supported by shared outcome frameworks such as the wellbeing framework (Department of the Taoiseach, 2023), and performance budgeting with its focus on overarching social outcomes – equality, sustainable development, environment impact.

6. CONCLUSION

The pursuit of data-driven government is a significant priority for public service transformation. In Ireland, progress has been made in developing analytical capacity, strengthening research partnerships, expanding digital infrastructure, and promoting evidence-informed policymaking. This is reflected in strong international rankings and public perceptions regarding digital government, open data and trust.

Nevertheless, important challenges remain to be addressed. Fragmented data-sharing arrangements, governance uncertainties, data quality issues, discoverability problems, and uneven skills development continue to constrain the full realisation of a mature data ecosystem.

At the heart of these challenges lies a broader issue: public trust. The legitimacy of data-driven governance depends not only upon technical capability but also upon public confidence that data are being used responsibly, transparently, and in the public interest. The Irish public expects government to use data effectively to drive better public services, while maintaining high standards of privacy, security and responsible use.

The next stage of development for our data ecosystem will be laid out in a new Public Service Data Strategy. The development of this strategy provides an opportunity to build on strengths, and address issues through a coordinated, system-wide approach. By improving data access, creating greater public value, and maintaining trust, Ireland can strengthen its capacity to respond to increasingly complex policy challenges.

Ultimately, the goal is not simply to collect more data but to create a public service in which data and evidence are routinely integrated into decision-making, service delivery, and evaluation. Achieving this vision will require sustained focus on strengthening our infrastructure, capability, governance, and collaboration. If successful, it offers the prospect of a more effective, responsive, and trusted system of public administration and public service delivery, which will help meet the needs and improve the lives of the people of Ireland.

[AI Acknowledgment: As an illustration of how public servants are adopting artificial intelligence to support their work, Microsoft Copilot was used in preparing this paper, in line with the Guidelines for the Responsible Use of AI in the Public Service (Department of Public Expenditure, Infrastructure, Public Service Reform and Digitalisation, 2024), as a writing assistant in the summarising and editing of text. It was not used to generate substantive content or to shape the analysis. All substantive analysis, interpretation, framing and conclusions are those of the authors.]

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DISCUSSION

Feargal O Brolchain: I would like to thank all contributors for their presentations which I found interesting, informative and entertaining. I think it is clear from what we have heard this evening that Roy Geary should be recognised as one of the architects of modern Ireland and be included in any future lists of such persons.

John O'Hagan: These talks bring me back to a book I once reviewed by Philipp Lepenies titled *The Power of a Single Number: A Political History of GDP*, published by Columbia University Press in 2016. Interestingly, for an Irish audience, he traces the origins of national statistics to William Petty, whose mapping/data skills were used by Cromwell to determine how land and estates in Ireland were to be distributed among the 'colonisers', which by coincidence resulted in a very sizeable allocation to his own family! Much of Petty's data collection work, in fact, he argues was politically motivated. So my question is then: To what extent might this be the case regarding national statistics in some countries today, including the US?

Barrington Lecture 2025/26

**International Comovements and Persistence in Irish Inflation:
A Nonlinear Approach¹**

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(read before the Society, 28th May 2026)

Abstract: This paper studies Ireland’s idiosyncratic inflation dynamics. We find that Irish inflation is highly susceptible to trends in international inflation. Our results indicate that international inflation’s gravitational pull strengthens over time, particularly in the decade leading up to the Global Financial Crisis, after which we see some signs of waning in inflation comovements. The results also suggest that goods are more responsible for higher speeds of convergence towards international inflation than services, which tend to exert more downward pressures. Adjustments in deviations from international inflation are found to be highly nonlinear. While shock persistence for moderate to large inflation gaps is negligible, half-lives are in excess of a year for small deviations from international inflation. We find that factors such as economic size and openness attenuate inflation gaps by enhancing comovements with international inflation. While the impact on idiosyncratic inflation inertia depends on the absolute size of the inflation deviation, it also relies on how covariates influence market frictions and thus the rate of adjustment for a given inflation gap. This implies that, in the case of opposing forces, the net effect hinges on the stronger of the two channels.

Keywords: Irish inflation dynamics, international comovements, inflation gaps, nonlinearities, persistence

JEL codes: E31, E32, F41

1. INTRODUCTION

Ireland’s ability to exert direct influence over domestic price dynamics is relatively limited (Galstyan and Lane, 2009; Galstyan and Velic, 2017). This outcome can be attributed to at least two factors. First, production, consumption, and finance in Ireland are highly dependent on international conditions. As a small open economy that is deeply integrated into international markets and supply chains, Ireland is heavily exposed to global macroeconomic shocks, as evinced by the recent energy crises. Second, Ireland is a currency union member, leaving its national policy toolkit void of monetary or exchange rate strategy options. Excessive sluggishness in price dynamics can impede real exchange rate adjustment and therefore reversion in external imbalances to sustainable levels (Galstyan and Velic, 2018; Curran and Velic, 2019; Velic, 2024). In terms of both trade and location of production, such developments are of particular relevance for the international competitiveness of Ireland.

According to some studies, such as that of Ciccarelli and Mojon (2010), global inflation can explain up to 70% of the variance in national inflation. Research of this variety stressing the global nature of domestic inflation has led to the “globalisation of inflation” literature (Monacelli and Sala, 2009; Mumtaz and Surico, 2012; Kamber and Wong, 2020; Peersman, 2022; Carluccio et al., 2023; Ascari and Fosso, 2024; Gerlach and Stuart, 2024). This raises the question of whether idiosyncratic inflation, or the purely local component of domestic inflation, is transitory with national inflation reverting to global trends over time. If so, the degree of idiosyncratic inflation persistence, furthermore, becomes important in discerning the extent to which external forces pin down inflation expectations. At the same time, the idea of convergence forces one to consider state-dependent inflation models and adjustment nonlinearities associated with frictions, shock sizes and stress episodes (Arghyrou et al., 2005; Golosov and Lucas, 2007; Blanco et al., 2024; Gagliardone et al., 2025).

Focusing on Ireland, the contribution of our paper is threefold. *First*, we empirically model nonlinear idiosyncratic inflation dynamics at both aggregate and more granular levels over the period 1996-2025. In particular, we analyse

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the evolution of idiosyncratic inflation inertia and the underlying nexus between domestic and international inflation for headline, core, goods, and services price measures. This is achieved by modelling deviations in Irish inflation from an international component based on 37 countries in a framework that embeds state dependence in gap corrections. Following Velic (2025a), these nonlinearities are manifested in the form of asymmetric adjustments over the size of the gap between national and international inflation rates.

Second, our setup, in turn, enables us to study the inextricable link between i) Irish-international inflation comovements, ii) deviations from international inflation, and iii) idiosyncratic inflation persistence. By allowing for time-varying parameters in our main inflation gap model, we are also able to assess how the rate of inflation adjustment and the size of the absolute inflation deviation interact over time to form the “effective” rate of adjustment, and thus inertia in idiosyncratic inflation. In general, the frequency and size of price fluctuations, as well as the associated uncertainties, are inseparable from the notion of inflation persistence. Consequently, inflation stickiness is a matter of primary concern amongst macroeconomists and policy-makers (Fuhrer and Moore, 1995; Benati, 2008; Fuhrer, 2010; De Michelis et al., 2024).

Third, building on this foundation, we offer more detailed insights into our findings by examining the potential macroeconomic and institutional determinants of i)-iii) in the case of overall Irish inflation. Additionally, we investigate how the aforementioned covariates influence the two constituent parts of idiosyncratic inflation inertia, namely a) the rate of adjustment, as underpinned by market frictions, for a given inflation gap and b) the size of the absolute inflation gap itself. Fundamentally, such a decomposition provides a deeper understanding of the net impact of drivers on the persistence of deviations from international inflation.

Our results highlight three key points about the role of international inflation as an attractor of domestic inflation. To begin, on average, international inflation continues to exert a relatively strong gravitational force on Irish inflation over the long run despite significant intertemporal fluctuations in cross-country inflation comovements. Next, while the former is typically true across different consumer price indexes, we find that the pull is more than twice as strong for goods compared to services inflation. Lastly, as reflected in the increasing speeds of adjustment, we find that the gravitational pull of international inflation on Irish inflation has been increasing over time in an almost synchronous fashion as the rise in international inflation comovements.

Our analysis reveals that adjustments and volatility in Irish inflation are notably more pronounced for larger departures from international inflation trends. This provides *prima facie* evidence of the presence of nonlinear dynamics, which is ultimately supported by formal tests. With an asymmetric treatment of adjustment over different sizes of the inflation gap, we find that the distribution of inflation shock half-lives varies in the cases of headline versus core inflation and goods versus services inflation.

For relatively large, moderate, and small inflation gap sizes, half-lives over the adjustment phase are estimated to be < 2 months, 2-2.5 months, and 25 months respectively in the case of headline inflation. By comparison, the estimates for core inflation are < 1 month, < 2 months, and 48 months. The discrepancy is driven primarily by the food component, which displays a relatively low correlation with international trends. On the other hand, the difference is even more marked for goods versus services. For goods, the half-life figures are < 0.5 months, < 1 month, and 12-14 months, compared to 1.5 months, 2-2.5 months, and 28 months for services. This suggests that services inflation adjusts far more slowly towards international levels, in contrast to goods inflation. Our findings on persistence, more generally, support ideas stemming from the “opportunistic approach to disinflation”, in the sense that corrections to Irish inflation are more aggressive for larger deviations from the target. Furthermore, we find that idiosyncratic inflation inertia has been declining over time, in line with weakening market frictions.

Although the strength of the comovement has diminished in more recent times following the global financial crisis (GFC), and particularly so for services, our assessment shows that the striking rise in the correlation between Irish and international inflation rates since the mid-1990s has been met with a deterioration in deviations from international inflation. More broadly, we find an inverse link between international inflation comovements and inflation gaps, meaning that, *ceteris paribus*, stronger inflation comovements should also be associated with higher idiosyncratic inflation persistence. The latter relation can be rationalised by recognising the nonlinear nature of idiosyncratic inflation adjustments over disparate inflation gap sizes. Namely, smaller deviations tend to be more persistent, as they tend to be more costly to arbitrage away in the presence of a fixed set of market frictions.

Turning attention to some of the possible drivers, we find that by increasing comovements with international inflation, a rise in trade openness, relative economic size, share of services, uncertainty, inflation volatility around the ECB target, and national central bank independence attenuate inflation deviations from international trends. Conversely, we obtain evidence suggesting that the accumulation of international reserves and exchange rate

flexibility have the opposite impact. Theoretically, the implications of these results for idiosyncratic inflation persistence are not so obvious. This is because the “effective” rate of inflation adjustment, on which inertia is based, can be affected through two channels. One of these is the absolute size of the inflation gap. The other is the rate of adjustment holding the inflation deviation constant, where the speed of adjustment for a given inflation gap covaries negatively with the strength of market frictions.

In terms of the net impact on inertia, we find that the picture is mixed across regressors. For some factors, there is no ambiguity surrounding the expected overall effect on idiosyncratic inflation persistence, as the direction of inertia through both of the aforementioned avenues is the same. For example, in the cases of greater uncertainty, variance of Irish inflation around the ECB target, and central bank independence, we find that persistence increases via i) a decline in the inflation gap which is now more stubborn due to its smaller size and ii) a lower speed of adjustment for a given gap. The latter, ii), could be associated with delayed decision-making in the face of elevated informational frictions (higher uncertainty or inflation volatility) and more robust regulation designed to limit credit expansions or reduce risky behaviour (prudential central bank policies). We indeed find that the anticipated overall impact on inertia in many of these instances is borne out in persistence regressions, which use the “effective” rate of adjustment as the basis for persistence.

In contrast, for other factors, our results indicate that idiosyncratic inflation persistence moves in opposite directions across *gap* and *adjustment* channels. This implies that the net effect on inertia, ex ante, is equivocal, ultimately depending on the more dominant channel in the sample. To illustrate, we find that while trade openness and relative market capitalisation exacerbate persistence via a contraction of inflation gaps, they also alleviate persistence by raising the speed of adjustment for a given gap. The latter can occur due to lower transaction costs and information asymmetries facing a more liberal economy and larger national stock market. Our estimates suggest that the *adjustment channel* dominates the *gap channel* for trade openness and market capitalisation, meaning that the net impact on inertia of both variables is negative.

The remainder of the paper is structured as follows. Section 2 provides a brief overview of the relevant literature, specifically touching on some of the underlying mechanisms through which potential drivers can shape international inflation comovements and corresponding inflation gaps. In section 3, we sequentially outline the elements of our analytical framework. Section 4 describes the data employed. A discussion of our preliminary and core results follows in section 5, before concluding in section 6.

2. BRIEF LITERATURE REVIEW

The three studies that are most closely related to this paper are those by Ciccarelli and Mojon (2010), Gerlach and Stuart (2024), and Velic (2025a). While our work follows the template of Velic (2025a) with attention solely devoted to Ireland, the other two pieces of research fail to capture the nonlinear nature of idiosyncratic inflation adjustments stressed in Velic (2025a). This omission, naturally, has significant implications for inflation forecasting. The neglect of state dependence partly explains why the two aforementioned studies reach opposing conclusions about the durability of international inflation deviations.

There is a suggestion in the literature that both real and financial outcomes tend to move in a synchronised fashion across economies. This trend is highlighted by Forbes et al. (2024) for interest rate cycles, Miranda-Agrippino and Rey (2022) for financial cycles, and Kose et al. (2003a, 2003b, 2008) for business cycles. Di Giovanni et al. (2022, 2023) expound the fundamental rationale in models of trade and monetary policy spillovers, in which transmission occurs through supply chains and risk premia.

Although global inflation has received much attention in recent times (Auer et al., 2025), the dynamics and fundamental drivers of international inflation comovements and idiosyncratic inflation are relatively under-explored. From a macro perspective, the forces defining cross-country correlations can range from similar policies and structural trends (e.g. globalisation) to common shocks (e.g. energy) that are transmitted, and potentially amplified, via real and financial routes. Velic (2025a) offers a thorough discussion of some of the factors and corresponding mechanisms that are important for understanding fluctuations in international inflation comovements. In what follows, we provide an abridged overview of a few of these sources and channels.

Trade and financial openness are prime candidates for explaining the evolution of inflation comovements across countries. Theoretically, their effects are ambiguous. Greater goods and services trade integration may indeed yield a stronger synchronisation of national business cycles, which would fundamentally be reflected in higher core inflation comovements. Such deeper structural integration can arise, for example, via global supply chains and demand side effects (Auer et al., 2017, 2019; Lane, 2020). In contrast to intra-industry trade where home and foreign varieties of products are imperfect substitutes, trade openness may prompt specialisation in quite disparate

industries across countries. If inter-industry trade dominates over intra-industry trade, the specialisation patterns may result in different wage dynamics across countries, conditional on labour intensities varying across industries. Significant industry-specific shocks in this case could act to weaken national business cycle and inflation comovements (Kose et al., 2003b; Curran and Velic, 2020).

On the one hand, better integration into international financial capital markets may strengthen a country's comovements with international inflation through, for instance, international portfolio diversification, spillovers during crises that produce more correlated disinflationary pressures, or a deployment of financial resources to sectors in which the source country has a comparative advantage (e.g. Big Tech FDI from U.S. into Ireland). On the other hand, additional foreign capital may accommodate stronger inter-industry specialisation patterns across nations and larger, more persistent current account imbalances with a divergence in inflation paths across deficit and surplus countries (Lane, 2020). Galstyan (2019) finds an inverse relation between inflation and the trade balance for the euro area, suggesting that the low inflation period in the currency union post 2011 may have been partly due to its surplus in the external balance.

The share of services in economic activity is another structural factor that is thought to play a role. An expansion of the services sector relative to others in the economy may lead to a divergence in national inflation outcomes, as aggregate output becomes more nontradable and core inflation, therefore, becomes increasingly determined by local factors. This is the conventional viewpoint. However, the growing importance of intangibles such as software and data, as documented by Velic (2025b), is providing a powerful counterforce. These intangibles are not only themselves very tradable. In conjunction with advances in ICT hardware and connectivity, they are also facilitating greater tradability in services that were previously more subject to a physical “proximity burden”, such as consulting. Modern services like cloud computing (e.g. for telecommunications) are used as intermediate inputs in global value chains, meaning shocks to these services propagate through global networks. Intangible-heavy services are thus likely to enhance inflation comovements.

Gravity-style models in the literature suggest that countries of larger economic size should exhibit stronger international comovements due to their tighter trade linkages. However, larger economic size may also result in a larger public sector, and hence more spending on nontradables that act as a buffer against international inflation synchronisation. Foreign exchange reserves can shield domestic markets from destabilising global shocks (Obstfeld et al., 2010), resulting in weaker cross-country correlations. But, equally, reserve accumulation may stimulate greater risk-taking in the private sector, translating to greater volatility at home. If confined to local markets, this volatility may erode comovements with international trends. If associated with cross-border spillover effects, it may enhance them.

Nominal exchange rate flexibility can attenuate the international propagation of inflation shocks, with exchange rate adjustments offsetting cross-country inflation differentials. For Ireland, this is particularly relevant vis-à-vis the U.S. dollar and British pound as the U.S. and U.K. are two of Ireland's main non-euro trading partners. On the other hand, according to the contagion explanation of asset price movements (King and Wadhvani, 1990), international comovements may rise in the presence of more volatile currency markets. Ahir et al. (2022) indicate that synchronised uncertainty spikes, reflecting both economic and political affairs, are more probable when shocks emanate from systemically important countries or when trade ties between countries are stronger. By inducing stock market volatility and disagreements in forecasts, higher uncertainty can prolong cross-country price and inflation differentials as consumption and investment decisions are postponed.

Finally, when considering the quality of national institutions, central bank independence and powers emerge as important dimensions in theory (Malovaná et al., 2023). Research suggests that macroprudential policy is more likely to be adopted and effectively implemented under a more autonomous central bank, with greater independence providing the capacity to act swiftly to achieve financial stability. For example, macroprudential policy rules pertaining to borrowing and lending may produce smoother business cycles that are more in line with those of stable developed economies. Lower autonomy in contrast may lead to fiscal mismanagement and a deviation from macroeconomic patterns in the developed world, unless there are spillovers that extend beyond national borders.

3. METHODOLOGY

To model the nonlinear adjustment dynamics of idiosyncratic inflation for consumer price index $i \in \{\textit{headline}, \textit{core}, \textit{goods}, \textit{services}\}$, the following exponential smooth transition autoregressive (ESTAR) model is adopted

$$\Delta y_t^i = \alpha_0^i + \sum_{j=1}^m \alpha_j^i D_{M(j)} + \phi^i y_{t-1}^i + \sum_{k=1}^{q^i} \beta_k^i \Delta y_{t-k}^i + \left(\alpha_0^{i*} + \sum_{j=1}^m \alpha_j^{i*} D_{M(j)} + \phi^{i*} y_{t-1}^i + \sum_{k=1}^{q^i} \beta_k^{i*} \Delta y_{t-k}^i \right) \tilde{F}(y_{t-d}^i; \tilde{\gamma}^i, \mu^i) + \varepsilon_t^i. \quad (1)$$

The difference between Ireland's inflation π and international inflation π^* gives the inflation gap $y \equiv \pi - \pi^*$, or idiosyncratic inflation. Month dummy $D_{M(j)}$ equals 1 for month j and 0 otherwise, while q is the model's lag length as determined by information criteria.

The continuous transition function $\tilde{F}(y_{t-d}; \tilde{\gamma}, \mu) = \left[1 - \exp\left(-e^{\tilde{\gamma} \frac{(y_{t-d}-\mu)^2}{\sigma_y^2}}\right) \right] \in [0,1]$ governs the nonlinear behaviour of the inflation gap y around the equilibrium gap μ .³ $\mu = 0$ suggests that π^* is a long-run attractor. As we obtain $\hat{\mu} \approx 0$ across all cases, $\tilde{F}(\cdot)$ can be interpreted as a function that enables larger deviations from international inflation to adjust at speeds that are different to those of smaller deviations. Reflecting price stickiness, the timing of the response to inflation gaps is dictated by delay parameter d . For a fixed value of $\tilde{\gamma}$, $\tilde{F}(\cdot) \in [0,1]$ represents a continuum of inflation gap regimes corresponding to the absolute size of the transition variable, $|y_{t-d}|$. $\tilde{\gamma}$ mediates the paths between inflation gap regimes. A higher $\tilde{\gamma}$ implies a steeper transition function and thus easier transition across regimes. The effective rate of gap adjustment at each point in time can be gauged by $\phi + \phi^* \tilde{F}(\cdot)$, where lower (higher) values of $\tilde{F}(\cdot)$ capture smaller (larger) inflation gaps. The model is estimated by nonlinear least squares, which is equivalent to maximum likelihood estimation under the additional assumption that the errors are normally distributed.

We use this model to examine the relation between international inflation comovements, inflation gaps, and idiosyncratic inflation persistence. The first of these is given by the correlation between Irish and international inflation for the given price index i , denoted by $\rho_t^{\pi^i, \pi^{i*}}$. The second is given by the transition function $\tilde{F}_t^i(\cdot)$ which is a standardised measure of the absolute deviation from international inflation $|\pi_t^i - \pi_t^{i*}| \approx |(\pi_t^i - \pi_t^{i*}) - \mu^i|$. The third is given by $|1 + \phi_t^i + \phi_t^{i*} \tilde{F}_t^i(\cdot)|$, where higher (lower) values of the measure signal higher (lower) persistence or, equivalently, slower (faster) reversion in y_t^i towards the long-run mean μ^i . The latter, in turn, suggests slower (faster) reversion in π^i towards π^{i*} .⁴ To obtain time-varying slope parameters ϕ_t^i and ϕ_t^{i*} , we estimate equation (1) over moving time intervals with varying restrictions on $\tilde{\gamma}$, μ , and d .

Although we do not impose this empirically as we wish to let the data speak freely, theory suggests that smaller deviations from international inflation are more difficult to eliminate compared to larger ones because market frictions are more binding at this level. For sufficiently small inflation gaps, our model allows for these more persistent dynamics, including the possibility of non-convergence. Therefore, for y_t^i to be globally stationary around μ^i in the case of $\phi^i \geq 0$, $-2 < \phi^i + \phi^{i*} < 0$ must hold. A more intuitive measure of inertia that follows directly from our model is the half-life

$$\hat{h}_{t|y_{t-d}}^i = \frac{\ln(0.5)}{\ln(|1 + \hat{\phi}_t^i + \hat{\phi}_t^{i*} \tilde{F}(y_{t-d}^i; \hat{\gamma}^i, \hat{\mu}^i)|)}. \quad (2)$$

We define it as the number of months required for the effects of a unit shock to disappear by 50%, without re-emerging, once adjustment kicks in. The half-life is calculated for the 99th percentile, median/mean, and 10th percentile of $\tilde{F}^i(\cdot)$, corresponding to relatively large, moderate, and small inflation gaps. To further understand the evolution of idiosyncratic inflation persistence, we examine its components, which include adjustment coefficients $\{\phi^i, \phi^{i*}\}$ and the standardised inflation gap $\tilde{F}^i(\cdot)$.

Focusing on the headline (overall) price index, a common set of covariates across international inflation comovements, inflation gaps, adjustment coefficients, and idiosyncratic inflation persistence is analysed in time series regressions of the form

$$\omega_t = \chi + \sum_{j=1}^r v_j D_{Q(j)} + \delta' \mathbf{X}_{t-l} + \epsilon_t. \quad (3)$$

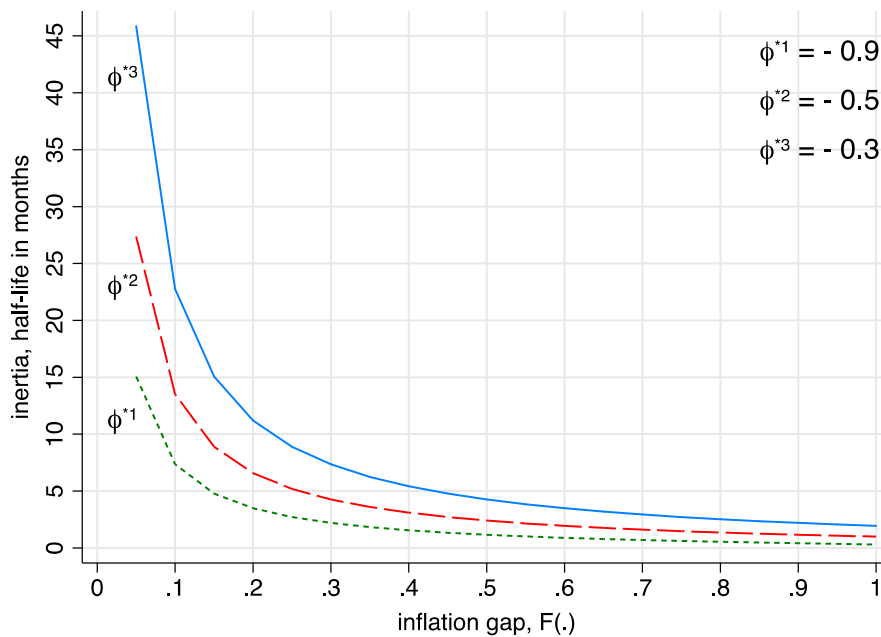
³ The variance σ_y^2 is a scaling factor that hastens convergence in model parameters.

⁴ Assuming that Ireland is an overall price-taker that does not affect world prices.

The regressands are defined as $\omega_t \in \{\ln(\rho_t^{\pi, \pi^*}), \ln(\tilde{F}_t(.)), \ln(|1 + \phi_t + \phi_t^*|), \ln(|1 + \phi_t + \phi_t^* \tilde{F}_t(.)|)\}$. $D_{Q(j)}$ is a quarterly time dummy that equals 1 for quarter j and 0 otherwise. Equation (3) is also estimated without quarterly dummies. The vector of non-deterministic regressors $\mathbf{X}$ includes trade openness, financial openness, relative GDP, relative market capitalisation, services share, international reserves, nominal exchange rate flexibility, uncertainty, volatility of inflation around the ECB target, and national central bank independence. All variables in $\mathbf{X}$ enter the equation in logarithmic form. Estimation is conducted using ordinary least squares (OLS) with Newey-West standard errors. As the extreme inner and outer inflation gap regimes, corresponding to the lower and upper bounds of $\tilde{F}(.) \in [0, 1]$, are visited over time, we additionally employ the logit model for inflation gaps. In these logit regressions, we define the dependent variable as $\omega_t = 1(0)$ if $\tilde{F}_t > (<=) 0.5$. A penalised likelihood estimator is employed for the logit specification in order to avoid small sample or rare event biases in estimation.⁵

To fully appreciate how a regressor's effects on adjustment coefficients $\{\phi_t, \phi_t^*\}$ and inflation gap $\tilde{F}_t(.)$ can lead to ambiguous implications for idiosyncratic inflation persistence prior to an observation of estimates, we turn to Figure 1. To simplify the illustration while preserving the core message, Figure 1 assumes that inflation deviations are best characterised by unit root dynamics whenever y_t is in the immediate vicinity of μ (i.e. extreme inner regimes). This means that $\phi \approx 0$. Larger departures from μ , meanwhile, are permitted to diminish over time at a rate consistent with $\phi^* \in (-1, 0)$.⁶ Thus, Figure 1 shows how idiosyncratic inflation inertia, as measured by the half-life in equation (2), changes with a) the size of the inflation deviation $\tilde{F}(.)$ under a fixed adjustment coefficient $\bar{\phi}^*$ and b) adjustment coefficient ϕ^* for a given inflation gap $\tilde{F}(.)$.

Figure 1: Idiosyncratic Inflation Persistence Simulations



Note: Transition function $F(.) \equiv \tilde{F}(.)$ provides a standardised measure of the absolute inflation gap $|\pi^i - \pi^{i*}| \approx |(\pi^i - \pi^{i*}) - \mu^i|$. $\phi^* \tilde{F}(.)$ is the effective inflation adjustment coefficient used in the calculation of the half-life.

Take for example the economic openness of Ireland. A more open Irish economy within a particular regulatory paradigm may observe increased comovements with international macroeconomic trends. If this stronger synchronisation implies a decline in deviations from international inflation, Figure 1 points to elevated levels of gap persistence as the country moves up along a given curve. The higher half-life in the graph, which is tied to a higher trade volume, however, is the outcome for a given set of market frictions as reflected in the absolute size of ϕ^* . By attenuating transaction costs, information asymmetries, and other elements that constrain profitable cross-border trade, higher openness may also be associated with a higher rate of adjustment for a given inflation gap. If so, $|\phi^*|$ rises and the curve in Figure 1 shifts downward. The presence of competing forces across gap and

⁵ We use lower frequency data for the analysis of covariates, leaving us with a smaller sample.

⁶ Given an adjustment rate of $-\phi^* \tilde{F}(.)$, the expected duration of a unit shock in these outer inflation gap regimes would be $\frac{1}{-\phi^* \tilde{F}(.)}$.

adjustment channels of persistence changes implies that the net impact on the half-life is equivocal, ultimately hinging on the channel that dominates in the sample. Put differently, the sign and magnitude of the change in idiosyncratic inflation inertia depend on whether the *movement along the curve* or the *shift in the curve* is more pronounced, and by how much.

4. DATA

Our study uses Eurostat’s harmonised indexes of consumer prices (HICP). We obtain monthly data for 38 countries over the period 1996:01-2025:12.⁷ Currently, for the various aggregate indexes, special aggregates, and sub-components listed in Table 1, there is no material difference in available figures and discernible patterns across the ECOICOP version 1 and ECOICOP version 2 HICP data in Eurostat.⁸ The first version, however, provides significantly better coverage over time across countries. As a result, ECOICOP version 1 data are employed. The only exception in Table 1 is for “Insurance and Financial Services” which employs version 2 data, as this special aggregate is unavailable in the version 1 repository.

Table 1: Irish-International Inflation Correlations, 1996-2025

HICP Index	(1) ρ^{π, π_{med}^*}	(2) ρ^{π, π_{avg}^*}	(3) ρ^{π, π_{wavg}^*}	(4) ρ^{π, π_{fpc}^*}	(5) ρ^{π, π_{sfm}^*}	(6) ρ^{π, π_{ndx}^*}	(7) $\sqrt{R_{\pi, \pi^j}^2}$
Total - All Items	0.65	0.60	0.60	0.71	0.71	0.70	0.87
Total - All Items, 2000-2025	0.67	0.65	0.66	0.70	0.70	0.70	0.87
Overall ex. A&T	0.69	0.66	0.69	0.74	0.74	0.70	0.89
Overall ex. Energy	0.63	0.60	0.61	0.64	0.64	0.62	0.86
Overall ex. Energy, Food, A&T	0.70	0.67	0.65	0.69	0.69	0.67	0.89
Overall ex. Energy, Unpr. Food	0.66	0.63	0.63	0.66	0.65	0.64	0.87
Overall ex. Energy, Seasl. Food	0.65	0.63	0.64	0.66	0.66	0.64	0.87
Overall ex. Adm. Prices, CTRs	0.72	0.72	0.73	0.74	0.73	0.73	0.96
Goods	0.73	0.71	0.71	0.74	0.74	0.69	0.91
Industrial Goods	0.77	0.75	0.74	0.80	0.80	0.72	0.94
Non-Energy Ind. Goods	0.72	0.72	0.70	0.73	0.73	0.67	0.96
Non-Energy Ind. Goods, Durables	0.50	0.50	0.54	0.62	0.63	0.50	0.75
Non-Energy Ind. Goods, Semi-Dur.	0.68	0.69	0.67	0.70	0.70	0.64	0.97
Non-Energy Ind. Goods, Non-Dur.	0.30	0.35	0.30	0.30	0.30	0.30	0.45
Food, inc. A&T	0.47	0.48	0.43	0.52	0.52	0.48	0.64
Processed Food inc. A&T	0.46	0.50	0.44	0.53	0.53	0.48	0.66
Processed Food ex. A&T	0.53	0.49	0.53	0.55	0.55	0.56	0.71
Unprocessed Food	0.30	0.27	0.26	0.30	0.29	0.28	0.54
Seasonal Food	0.22	0.18	0.19	0.24	0.23	0.22	0.40
Energy	0.77	0.70	0.74	0.77	0.78	0.77	0.92
Electricity, Gas, Solid Fuels, Heat	0.28	0.22	0.34	0.31	0.31	0.40	0.63
Liquid Fuels, Fuels, Lubric. - PTE	0.85	0.84	0.82	0.92	0.92	0.85	0.97
Energy & Unprocessed Food	0.70	0.66	0.70	0.74	0.74	0.75	0.88
Energy & Seasonal Food	0.69	0.64	0.69	0.73	0.73	0.74	0.88
Services	0.65	0.60	0.58	0.66	0.66	0.64	0.82
Services related to Communication	0.13	0.05	0.07	0.11	0.10	0.13	0.41
Services related to Housing	0.01	0.10	0.03	0.05	0.04	0.02	0.55
Services related to Recreation	0.62	0.64	0.50	0.67	0.67	0.56	0.79
Services related to Transport	0.63	0.62	0.60	0.66	0.66	0.65	0.79
Education, Health, Social Prot.	0.21	0.30	0.25	0.29	0.29	0.26	0.71
Housing Rental Payments	-0.04	0.13	-0.01	0.03	0.02	-0.01	0.56
Insurance & Financial Services	0.01	0.02	0.01	0.04	0.04	0.04	0.34

Note: Month-on-month inflation data employed (monthly year-on-year inflation rates, by construction, increase the correlation between domestic and international inflation). Correlation coefficients not in bold are statistically significant at conventional levels (almost all at 1% level). Correlation coefficients in bold are statistically insignificant. The Eurostat regional index (ndx) proxy for international patterns comprises EU countries. Apart from the ndx measure, all international inflation measures exclude Ireland.

⁷ The sample of countries includes Albania (AL), Austria (AT), Belgium (BE), Bulgaria (BG), Croatia (HR), Cyprus (CY), Czechia (CZ), Denmark (DK), Estonia (EE), Finland (FI), France (FR), Germany (DE), Greece (EL), Hungary (HU), Iceland (IS), Ireland (IE), Italy (IT), Kosovo (XK), Latvia (LV), Lithuania (LT), Luxembourg (LU), Malta (MT), Montenegro (ME), Netherlands (NL), North Macedonia (MK), Norway (NO), Poland (PL), Portugal (PT), Romania (RO), Serbia (RS), Slovakia (SK), Slovenia (SI), Spain (ES), Sweden (SE), Switzerland (CH), Turkey (TR), United Kingdom (UK), United States (US).

⁸ ECOICOP version 2 is the new European Classification of Individual Consumption According to Purpose and is aligned with the updated UN COICOP 2018 classification. This new scheme is in the process of replacing ECOICOP version 1 (implemented in 2015) which is based on the UN COICOP 1999 classification. Differences between these two versions of HICP data are most evident at higher levels of disaggregation with changes in certain classes and subclasses of goods and services.

To circumvent the issue of temporal aggregation bias (Paya et al., 2007; Savat, 2022), which tends to raise persistence, month-on-month inflation rates are used. As our measure of international inflation, we consider i) the cross-country median inflation rate (π_{med}^*), ii) the cross-country average inflation rate (π_{avg}^*), iii) the cross-country GDP-weighted inflation rate (π_{wavg}^*), iv) the first principal component of national inflation rates (π_{fpc}^*), v) a common single factor from a factor model (π_{sfm}^*) and vi) a Eurostat regional index that comprises EU countries (π_{ndx}^*). Although it does not affect our analysis empirically or in theory given the small open economy status of Ireland, we follow Gerlach and Stuart (2024) for comparability by excluding Ireland from the international inflation measure.⁹

The examination of potential determinants and transmission mechanisms in equation (3) employs quarterly data in line with data availability on the right-hand side of the regression. In relation to vector $\mathbf{X}$, the data sources primarily include Eurostat, LSEG Datastream, World Bank's World Development Indicators, External Wealth of Nations, and CSO. Trade openness for Ireland is defined as the total of exports and imports of goods and services divided by GDP. Financial openness meanwhile is given by the de facto volume-based measure of international financial integration adopted from Lane and Milesi-Ferretti (2007, 2018). It is defined as the sum of total external assets and liabilities relative to GDP.

Economic size variables include Irish GDP and market capitalisation relative to corresponding rest-of-sample figures. The size of the Irish services sector is defined as the value added of services divided by GDP. International reserves are expressed as a share of GDP. Nominal exchange rate flexibility in each quarter is the standard deviation of the monthly change in the logarithm of the trade-weighted multilateral nominal exchange rate. Retrieved from Ahir et al. (2022), national uncertainty data pertain to economic and political developments over short- and long-run horizons. The role of the ECB's inflation target is captured by the variance of monthly year-on-year inflation around the 2% rate. Finally, a de jure measure of Irish central bank independence is obtained from Romelli (2025).

5. EMPIRICAL FINDINGS

5.1 Some Empirical Foundations

Figure 2 shows the evolution of Irish headline, core, goods (total, industrial, non-energy industrial), and services inflation rates for month-on-month and year-on-year cases.¹⁰ The year-on-year plots indicate that all categories of inflation generally follow similar patterns, with two major spikes evident over the last two decades. The first of these episodes is associated with the Great Recession while the second relates to i) COVID after the initial disinflationary phase and ii) the energy crisis originating in the Ukraine-Russia war. On the matter of volatility and magnitude, we observe some divergence. For example, the difference between headline and core inflation at the onset of the Ukraine-Russia conflict highlights the direct role of global commodities. Pass-through from the energy sector to other parts of the economy, however, is still possible. Comparing goods to services inflation, the latter normally exhibit a lower variance and higher inertia. Services are thought to be more labour-intensive and nontradable. Relying more heavily on sticky wages or relatively more stable local conditions implies smoother trends in corresponding inflation.

Another salient point that emerges from the graphs is that developments in month-on-month inflation take time to embed themselves in year-on-year inflation statistics due to base effects. In the short-term (if the focus is on the latter), this can lead to misleading conclusions about persistence and de-anchor inflation expectations through entrenched mindsets amongst consumers and producers.¹¹ Year-on-year inflation, moreover, can exaggerate cross-country comovements in inflation.

As denoted by ρ^{π, π_s^*} for a given consumption basket, the full sample period correlation between Irish inflation and our measure of international inflation is reported in Table 1. Squaring the correlations in columns 1-6 returns R-squareds from simple linear regressions of Irish inflation on international inflation, which provide a basic measure of the proportion of national inflation that is explained by international patterns. Column 7 on the other hand shows, for comparison, the square root of the coefficient of determination from a multiple regression of Irish inflation on remaining foreign country inflation rates.¹² The single factor model measure of international inflation focuses on the shared variation in foreign inflation rates. Comparing ρ^2 from column 5 to R^2 in column 7 indicates that the single factor model usually captures a sizeable share of the explanatory power of foreign inflation rates. While the correlation coefficients across columns are generally quite strong, it is important to note that they can mask significant fluctuations in comovements over time, as we will observe later. Moreover, the table shows notable heterogeneity across aggregates of consumption items.

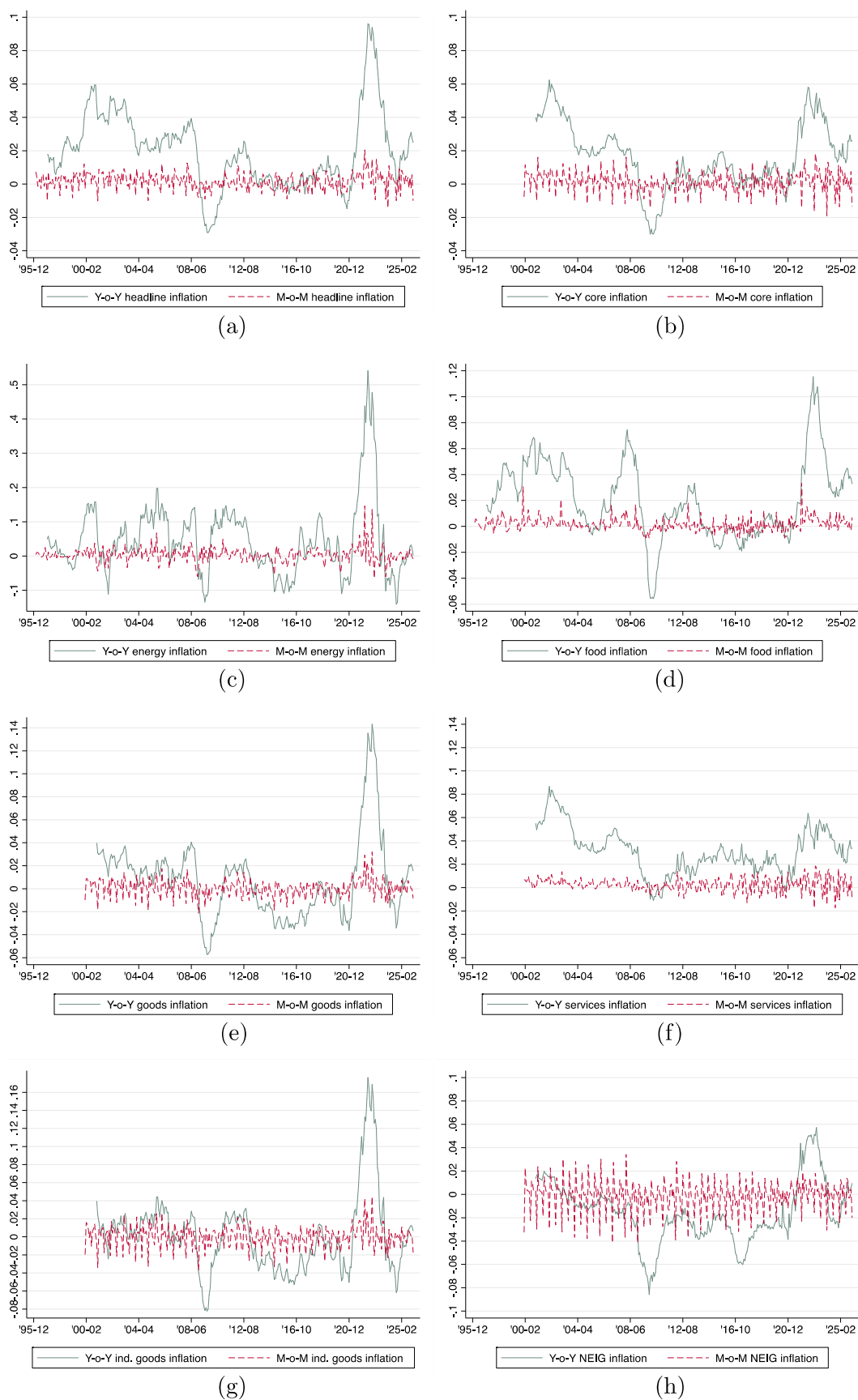
⁹ Gerlach and Stuart (2024) contend that including country c 's domestic inflation rate in the international measure may lead to a spurious relation between international inflation and the national inflation of country c .

¹⁰ Core inflation excludes energy, food, alcohol and tobacco.

¹¹ In times of crisis, month-on-month inflation can offer a better gauge of current movements in the economy.

¹² Conceptually, this offers bounds on the communality and uniqueness in Irish inflation.

Figure 2: Inflation in Ireland



Note: NEIG is non-energy industrial (ind.) goods.

Reflecting household usage, Irish electricity, gas, solid fuels and heating show a low correlation with the international counterpart. Some explanations for this divergence include the dispersion of Ireland's population, the level of diversification in the energy portfolio (reliance on gas), the effects of data centres, and the long-run hedging strategies of energy suppliers. Irish energy inflation overall, including that in liquid fuels for personal transport equipment (PTE), is clearly highly correlated with global trends, as expected. Some of this naturally feeds into the high correlation observed for aggregates and sub-components like industrial goods. Nevertheless, removing energy from headline inflation over time reveals that Irish inflation is still strongly correlated with international dynamics ($\rho > 0.6$ persists). Additionally excluding other components that are thought to be more volatile due to their dependence on global markets, namely food items, does not change this finding. The strong correlations for core inflation measures may suggest that international inflation comovements are not just because of exposure to global commodity markets, but also due to deeper structural integration of national markets that is reflected in more synchronised national business cycles. In other words, comovements are not only rooted in the supply-side dynamics of global commodities, but also underlying national aggregate demands.

Although correlations for processed food are stronger than those for unprocessed food, due to the higher energy-intensity of the former, food inflation more generally in Ireland shows a relatively weaker link with international trends. A number of factors contribute to this divergence. Firstly, Ireland's geographic location means that the country faces higher logistics costs. Shipping and distribution costs are more influenced by maritime constraints than the land-based supply networks prevalent in continental Europe. Second, due to its trade intensity vis-à-vis the UK and the presence of UK-based retailers in the Republic, Ireland's food prices have been more sensitive to UK-specific trends than trends in mainland Europe. Third, a relatively higher degree of concentration in the groceries market over time may have also contributed to differing price dynamics.¹³ Fourth, labour is a significant input in food processing, and so food price dynamics are heavily influenced by domestic wage growth. The correlation for overall goods therefore appears to be weighed down by food. This is indeed reflected in the higher correlations for industrial goods (which excludes food).

With structural transformation shifting the Irish economy towards services, one could argue that international inflation comovements should be weaker. Total services inflation for Ireland, however, demonstrates a relatively high correlation with corresponding international patterns. Column 7 suggests that close to 70 percent of the variation in Irish services inflation can be explained by the services inflation trajectories across foreign countries. Columns 1-6 meanwhile imply that the international inflation measure can account for over 40 percent of the domestic fluctuations, which is still a significant proportion. In relation to sub-components, services related to recreation and transport appear to be most important.¹⁴ By contrast, inflation patterns in housing rental payments and insurance & financial services display almost no correlation with corresponding industry trends abroad. Domestic legislation and structural market issues partly drive this result. Furthermore, housing rents refer to actual payments and not imputed ones for owner-occupiers. The relatively high home ownership rate in Ireland, compared to countries like Germany that have a stronger tenant culture, implies a weaker rental weight in Ireland's HICP aggregates. Although "services related to housing" inflation remains relatively uncorrelated, this may act to improve international inflation comovements in services given Ireland's notably higher average rents. Conversely, severe structural imbalances in the Irish residential property market (localised supply-demand mismatch) over the past decade have rapidly accelerated open-market housing rents. Such domestic capacity constraints can act to decouple trends in services inflation across countries.

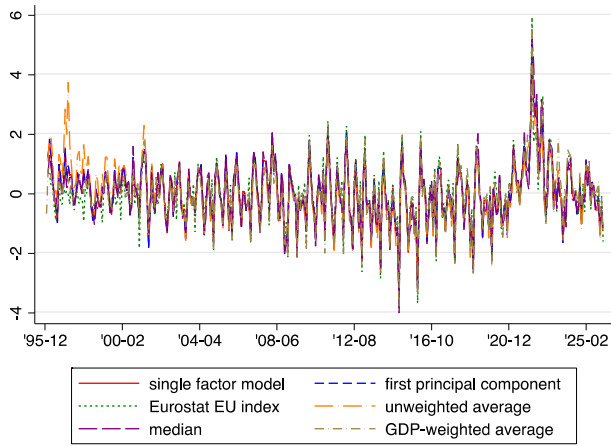
For each of the price indexes of interest, Figure 3 plots our six statistical measures of international inflation, representing the common component of national inflation rates. The graphs illustrate that these measures move in a highly synchronous fashion over time with a high degree of overlap. For comparability, the series are standardised so that they have a mean of zero and variance of one. From the graphs, it is evident that there was a relatively recent shock to global inflation, which is particularly pronounced in headline and goods measures.¹⁵ The correlation matrices of international inflation measures are presented in Table 2. The strong correlation coefficients, primarily in excess of 0.9, indeed corroborate the graphical evidence from Figure 3. This kind of analysis is important, as there is no obvious reason why the international measures should be almost perfectly congruent. Given that these results cannot tilt our preferences towards a particular measure, we proceed with the cross-country median for international inflation since it is robust to outliers in the distribution and an easy non-parametric statistic to compute.

¹³ Tesco acquired Crazy Prices in the late 1990s and by 2010 had over 30% of the market. At present, around 90% of the market is controlled by five players (Dunnes Stores, Tesco, SuperValu, Lidl, and Aldi). The 1987 Grocery Order, which prohibited the setting of prices below cost or invoice price, was also abolished in 2006. This, in turn, generated some volatility in the market with undercutting amongst competitors via loss leader strategies, while price increases were imposed on unaffected brands in order to maintain profit margins.

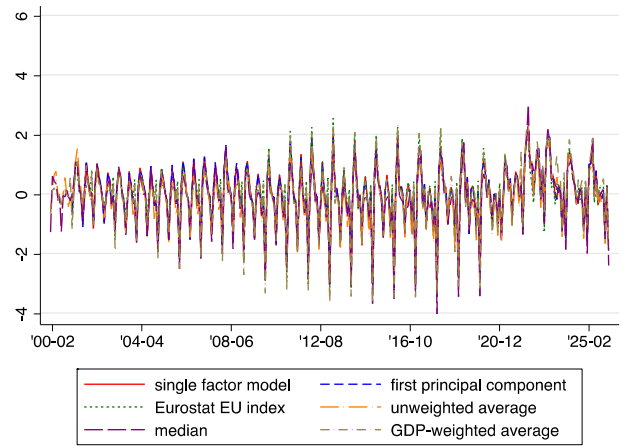
¹⁴ These services have seen a rise in their reliance on digital infrastructures. Energy also feeds naturally into transport services.

¹⁵ This stemmed from i) COVID-related supply chain disturbances, production bottlenecks, pent-up demand, and ii) geopolitical tensions. COVID shifted demand away from services to goods, while simultaneously crippling the supply of the latter. Meanwhile, goods inflation, which includes food and energy, was more sensitive to the Ukraine-Russia war compared to services inflation, which experienced lagged pass-through and second round effects. This explains the difference in inflation spikes across the two components.

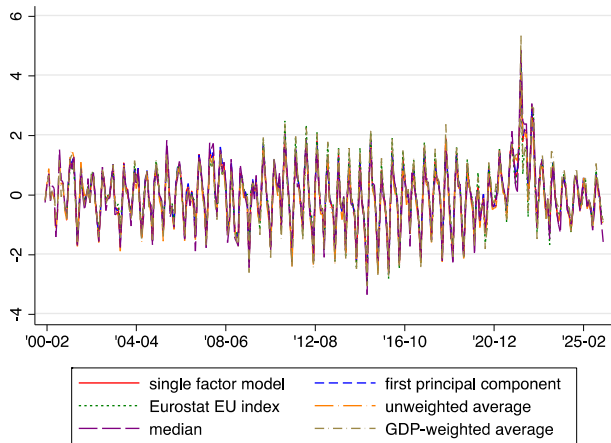
Figure 3: International Inflation Measures



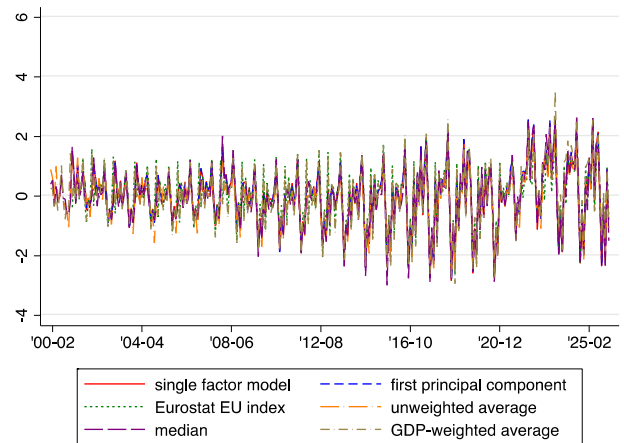
(a) headline



(b) core



(c) goods



(d) services

Table 2: Correlation Matrix of International Inflation Measures

HICP Index	(1) median	(2) unweighted average	(3) GDP- weighted average	(4) first principal component	(5) single factor model	(6) Eurostat EU index
Headline: Total - All Items						
median	1.00					
unweighted average	0.90	1.00				
GDP-weighted average	0.91	0.87	1.00			
first principal component	0.96	0.94	0.94	1.00		
single factor model	0.96	0.93	0.94	1.00	1.00	
Eurostat EU index	0.90	0.80	0.96	0.92	0.92	1.00
Core: Ex. Energy, Food, A&T						
median	1.00					
unweighted average	0.96	1.00				
GDP-weighted average	0.94	0.94	1.00			
first principal component	0.97	0.98	0.96	1.00		
single factor model	0.97	0.97	0.96	1.00	1.00	
Eurostat EU index	0.93	0.92	0.99	0.95	0.96	1.00
Core: Ex. Energy, Unpr. Food						
median	1.00					
unweighted average	0.95	1.00				
GDP-weighted average	0.93	0.93	1.00			
first principal component	0.97	0.97	0.95	1.00		
single factor model	0.97	0.97	0.95	1.00	1.00	
Eurostat EU index	0.92	0.91	0.98	0.95	0.95	1.00
Goods						
median	1.00					
unweighted average	0.97	1.00				
GDP-weighted average	0.94	0.97	1.00			
first principal component	0.98	0.99	0.97	1.00		
single factor model	0.98	0.99	0.98	1.00	1.00	
Eurostat EU index	0.94	0.96	0.99	0.97	0.98	1.00
Services						
median	1.00					
unweighted average	0.94	1.00				
GDP-weighted average	0.87	0.86	1.00			
first principal component	0.97	0.98	0.90	1.00		
single factor model	0.97	0.97	0.90	1.00	1.00	
Eurostat EU index	0.86	0.83	0.98	0.90	0.90	1.00

Note: All of the reported Pearson correlation coefficients are statistically significant at the 1% level. Apart from the Eurostat regional index measure capturing EU countries, all international inflation measures exclude Ireland.

Table 3 offers some tentative evidence of nonlinearities in idiosyncratic headline, core, goods, and services inflation for Ireland. In particular, the table stresses the presence of asymmetric adjustment and volatility in inflation deviations across regimes of high and low inflation gaps. The upper (lower) regime for HICP i captures absolute inflation gaps at time $t - 1$, $|\pi_{t-1}^i - \pi_{t-1}^{i*}|$, that are greater than (less than or equal to) the average absolute gap, $\tau^i = |\pi^i - \pi^{i*}|$. Under each of the regimes for a given index i , we calculate the average absolute monthly change in Irish inflation, $|\Delta\pi_t^i|$, and the standard deviation of these domestic inflation changes, $\sigma^{\Delta\pi_t^i}$. Firstly, we find greater adjustment and volatility in Irish inflation across all indexes whenever the lagged inflation gap lies above average. This may hint at subsequent corrections. The discrepancy is also notable. The figures of the upper regime are at least 50% larger than those of the lower regime. This could suggest that international inflation exerts a stronger pull on Irish inflation whenever the absolute inflation gap is relatively large.

Table 3: Inflation Adjustments and Volatility across Regimes

$t - 1$:	$ \pi^i - \pi^{i*} > \tau^i$	$ \pi^i - \pi^{i*} \leq \tau^i$	$t - 1$:	$ \pi^i - \pi^{i*} > \tau^i$	$ \pi^i - \pi^{i*} \leq \tau^i$
HICP	$ \overline{\Delta\pi_t^i} $	$ \overline{\Delta\pi_t^i} $	HICP	$\sigma^{\Delta\pi_t^i}$	$\sigma^{\Delta\pi_t^i}$
headline	0.006	0.004	headline	0.008	0.005
core	0.008	0.005	core	0.011	0.006
goods	0.009	0.006	goods	0.012	0.007
neig	0.013	0.007	neig	0.018	0.010
services	0.007	0.004	services	0.010	0.005

Note: i is the HICP. neig is non-energy industrial goods. $|\overline{\Delta\pi_t^i}|$ is the average absolute change in Irish inflation. Median absolute changes are similar. $\sigma^{\Delta\pi_t^i}$ is the standard deviation of Irish inflation changes. $|\pi^i - \pi^{i*}|$ is the absolute value of the gap between Irish inflation, π^i , and international inflation, π^{i*} . International inflation is gauged by the cross-country median inflation rate at each point in time. Threshold τ^i is the average/median value of $|\pi^i - \pi^{i*}|$.

Interestingly, we find that adjustment and volatility across regimes are stronger for core inflation than headline inflation. This difference might be due to the core measure's exclusion of food inflation, which can be relatively sticky for Ireland because of local factors. These include structural cost challenges such as high legal, insurance and logistics fees that generate steeper baseline costs and downward price rigidities.¹⁶ Earlier, we found that food exhibits a lower correlation with international trends. For energy, which is also excluded from the core measure, we see the opposite. However, given food's higher weight in overall inflation, it may be driving the positive net effect on core inflation figures in Table 3. Finally, the dynamics across regimes for services are weaker than those for goods. Services inflation could be stickier for reasons outlined earlier (higher labour intensity, non-tradability), implying slower rates of adjustment. Compared to goods, overall services inflation for Ireland shows somewhat weaker international comovements based on the full-sample correlation coefficients in Table 1.

5.2 Core Results

5.2.1 ESTAR

In the case of each price index, parameter estimates for the ESTAR model given in equation (1) are presented in Table 4. Before implementing the ESTAR framework, inflation gap series $\{y_t^i\}$ are exposed to tests of i) linearity versus nonlinearities of the smooth transition variety and ii) non-stationarity versus stationarity.¹⁷ In relation to i), tests in the spirit of Teräsvirta (1994) strongly point to STAR-type nonlinearities. Along with ESTAR model convergence considerations, they also provide guidance on the choice of d^i . The results of this first background check are consistent with the distribution of $\tilde{\gamma}$ estimates in column 4 of Table 4, as $\tilde{\gamma} \rightarrow -\infty$ (highly negative value in practice) implies a linear model. In relation to ii), all conventional linear and nonlinear unit root tests unequivocally support the view that the idiosyncratic inflation series are globally stationary.

Based on extensive assessments in the data, we find across all indexes that the extreme inner regime of the ESTAR specification is best described by unit root dynamics as captured by $\phi^i = 0$. Our persistence measures thus imply that any convergence towards equilibrium will be entirely reflected in $\phi^{i*} \tilde{F}^i(\cdot)$. Columns 2 and 3 of Table 4 indeed show that the global stationarity condition of $-2 < \phi^* < 0$ is met in all cases. Point estimates in column 2 indicate $\phi^{i*} \in (-1, 0)$, with the rate of adjustment towards equilibrium μ^i rising for lower values of $\phi^{i*} \in (-1, 0)$. Figure 4 presents the evolution of idiosyncratic inflation series over time. In particular, based on the mean or median as the measure of central tendency, graphs on the right suggest that zero is a good candidate for the long-run equilibrium of inflation gap series. The direct estimates of μ^i in column 5 provide formal evidence that zero is the ultimate target of inflation gap convergence.

¹⁶ Ireland's small market size and geographic remoteness are other factors driving the structural floor and keeping prices elevated.

¹⁷ Results available upon request.

Table 4: ESTAR Estimates and Idiosyncratic Inflation Persistence

	Parameter Estimates					Half Lives (months)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
HICP	ϕ	ϕ^*	$\phi + \phi^*$	$\tilde{\gamma}$	μ	$\tilde{F}(\cdot)^{99p}$	$\tilde{F}(\cdot)^{50p}$	$\tilde{F}(\cdot)^{10p}$	$\overline{\tilde{F}(\cdot)}$
headline	—	-0.320** (0.180)	-0.320** (0.180)	2.072*** (0.373)	-0.000*** (0.000)	1.814	1.934	25.941	2.611
core	—	-0.550** (0.290)	-0.550** (0.290)	1.167*** (0.323)	0.000 (0.000)	0.868	1.481	48.801	1.850
goods	—	-0.815*** (0.298)	-0.815*** (0.298)	1.388*** (0.434)	-0.000 (0.000)	0.411	0.683	14.874	0.913
neig	—	-0.905*** (0.266)	-0.905*** (0.266)	1.800*** (0.455)	-0.000 (0.000)	0.295	0.531	12.542	0.771
services	—	-0.365* (0.230)	-0.365* (0.230)	1.587*** (0.401)	0.000* (0.000)	1.527	2.047	27.639	2.651

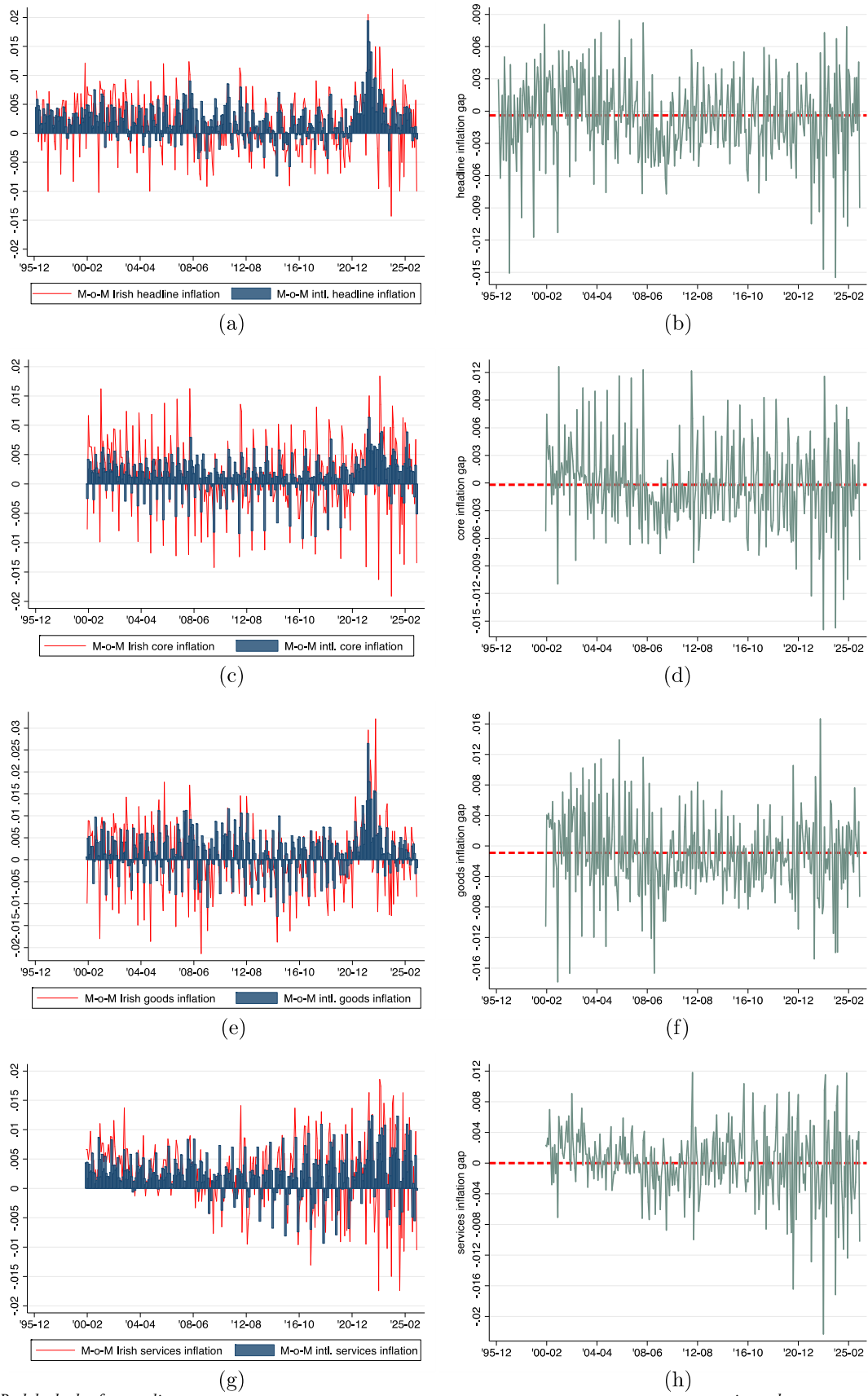
Note: neig is non-energy industrial goods. Columns (1)–(5) present parameter estimates for the model in equation (1). Columns (6)–(8) present rates of persistence at p^{th} percentiles of transition function $\tilde{F}(\cdot)$, while column (9) does so at the mean of $\tilde{F}(\cdot)$. * significant at 10%; ** significant at 5%; *** significant at 1%.

The estimate of $\tilde{\gamma}^i$ in column 4 pins down the gradient of the symmetric transition function $\tilde{F}^i(\cdot)$. Plots of the transition functions are provided down the middle in Figure 5. Those functions with a higher $\tilde{\gamma}^i$ observe easier movement between regimes, as the transition function is steeper. $\tilde{\gamma}^i$ effectively determines the paths between inflation gap regimes. To compensate for a flatter transition function in terms of speed of adjustment, a higher $|\phi^{i*}|$ would be required. Figure 5 indicates that all of the transition functions are relatively steep, suggesting relatively easier transitions between regimes for a given rate of adjustment.

Combined with the graphical evidence from Figure 4, our estimates of ϕ^{i*} and μ^i overall suggest that international inflation is continuously exerting a strong gravitational pull on Irish inflation. However, without violating this umbrella statement, non-negligible differences in results can be found across price indexes. In line with the initial suggestive evidence of Table 3, Table 4 supports the notion that goods place more upward pressure on the speed of adjustment in aggregate inflation gaps when compared to services, which are more responsible for downward pressures. Optimal d values also indicate that goods react to changing inflation gap sizes markedly faster than services, with the response time being around a quarter for goods and a year for services.

Columns 6–9 in Table 4 compute the corresponding levels of idiosyncratic inflation inertia for different gap sizes holding constant the rate of adjustment at its estimated average level. The half-lives imply that the speed of correction in inflation gaps increases with the absolute size of the deviation. Across the board, gaps of a moderate (columns 7 and 9) to large (column 6) size are characterised by relatively swift adjustments once they commence, with half-lives falling well short of 3 months. Conversely, very small gaps (column 8) persist much longer. These dynamics in persistence bear resemblance to ideas ascribed to the “opportunistic approach to disinflation”, in the sense that corrections to inflation are more aggressive for larger departures from the target. In our context, as market frictions tend to be more binding for smaller inflation gaps, they slow down the adjustment of such gaps. On the other hand, the larger profits associated with larger deviations suppress these constraints, thereby leading to faster adjustment. As idiosyncratic inflation persistence is very much state dependent, contentions about it need to be more nuanced.

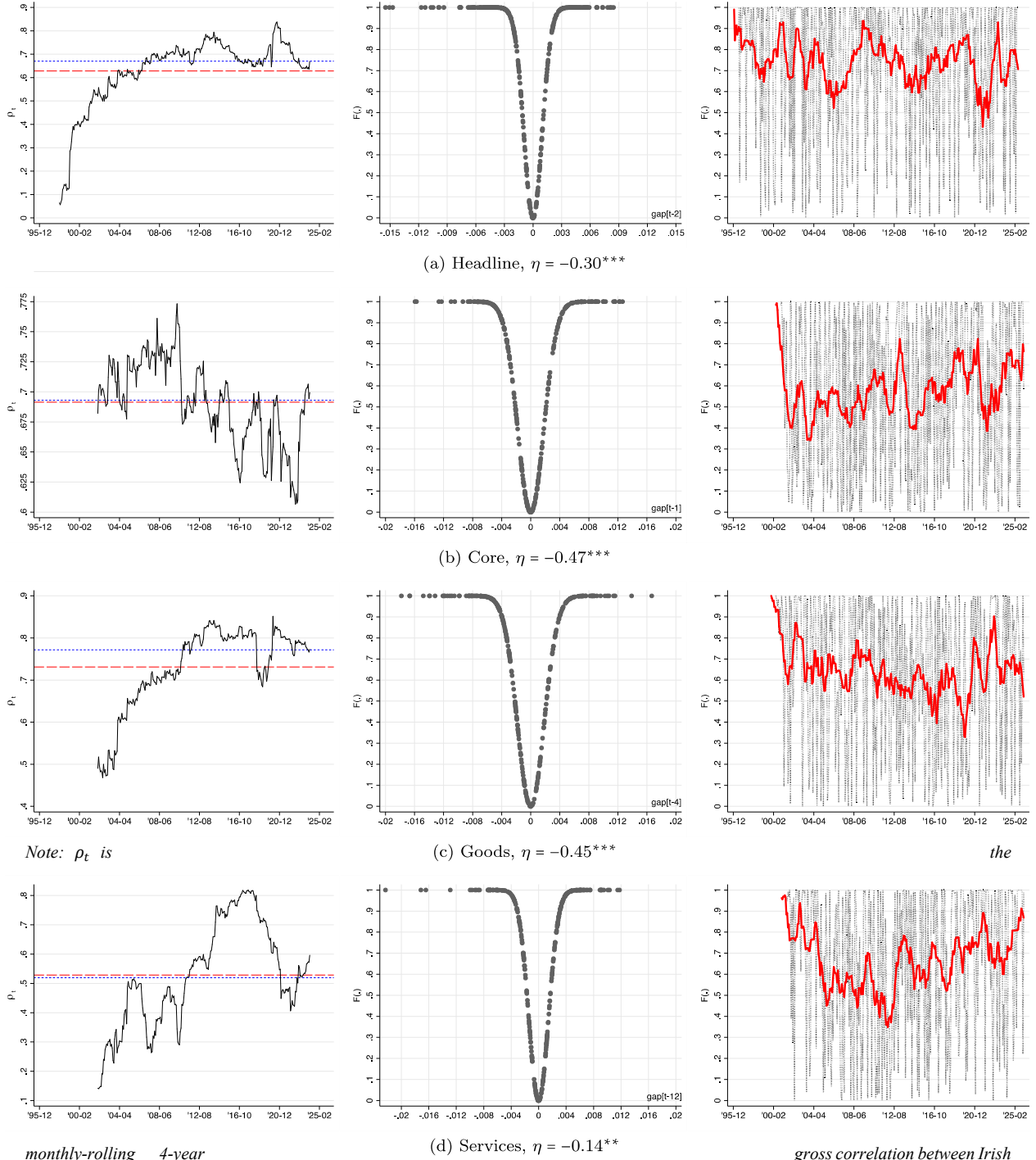
Figure 4: Idiosyncratic Inflation



Note: Red dashed reference line
inflation gap.

gives the mean or median

Figure 5: International Inflation Comovements (left), Transition Function vs. Transition Variable (middle), Transition Function vs. Time (right)



Captured by the 99th percentile of $\tilde{F}^i(.)$ and 50th percentile or mean of $\tilde{F}^i(.)$ respectively, large and moderate inflation gaps for services display half-lives that are 3 to 5 times the size of that for overall and non-energy industrial goods. Goods measures show shock dissipation of well over 50% after half a month in the case of large gaps, and after 1 month in the case of moderate gaps. For small gaps, as reflected in the 10th percentile of the

transition function, inertia in idiosyncratic services inflation based on the half-life is roughly twice as strong as observed for goods. In absolute terms, this difference is much more notable, with the small gap half-life for goods standing below 15 months.

Table 4 shows that most of the half-lives for core inflation gaps are lower than those for headline inflation gaps. This is likely related to the exclusion of food, which tends to experience more sluggish adjustment, from core inflation. Small inflation gaps are the exception, and display the opposite pattern in half-lives (column 8). The exclusion of food from core inflation means that the core aggregate measure should show greater comovement with international inflation. As we will see in the next section, this implies smaller deviations from international trends on average. These are generally more persistent, as we have found. Along this gap dimension, the increase in persistence for core inflation is particularly pronounced at the 10th percentile or lower of the transition function. Unlike at the higher ends of $\tilde{F}^i(\cdot)$, this offers a stronger counterforce to the increase in the rate of adjustment associated with the exclusion of food. The net effect is a reversal in the pattern of inertia across headline and core inflation in column 8 compared to patterns in columns 6, 7 and 9. Driven also by the omission of food, non-energy industrial goods see lower persistence relative to total goods across all of the examined gaps (columns 6-9).

5.2.2 Evolution of Inflation Comovements, Gaps, Adjustments, and Inertia

Graphs on the left-hand side of Figure 5 depict the evolution of comovements between Irish and international inflation, as measured by the monthly-rolling 4-year correlation coefficient $\rho_t^{\pi^i, \pi^{i*}}$. Average (median) 4-year correlations are marked by the red long-dash (blue short-dash) reference line. The graphs on the right-hand side of Figure 5 meanwhile track corresponding developments in standardised inflation gaps $\tilde{F}^i(\cdot)$. The thick red series, in particular, plot the 12-month moving average of the transition function, thereby giving a sense of the general trajectory of inflation gaps. This makes it easier to identify key turning points. Lastly, in Figure 5, η^i provides the correlation between the international inflation comovements ($\rho_t^{\pi^i, \pi^{i*}}$) shown on the left and the absolute inflation gaps ($\tilde{F}^i(\cdot)$) shown on the right.

International inflation comovements display significant heterogeneity over time. These trends are concealed by the average or median inflation correlations shown, which are quite similar to those reported in Table 1. The inflation comovement series unveil a striking rise in the synchronisation of Irish and international inflation dynamics in the lead up to the GFC and Great Recession, with signs of the link weakening thereafter, especially in more recent times. In tandem with these changes over the same timeframe, Figure 5 indicates that inflation deviations tend to initially contract in size, before showing some reversal post GFC. These concurrent general trends in inflation comovements and gaps for Ireland suggest an inverse long-run relation between the two variables. This cursory observation is indeed corroborated more formally by η estimates, which show a statistically significant negative link between comovements and gaps over our long-run horizon.

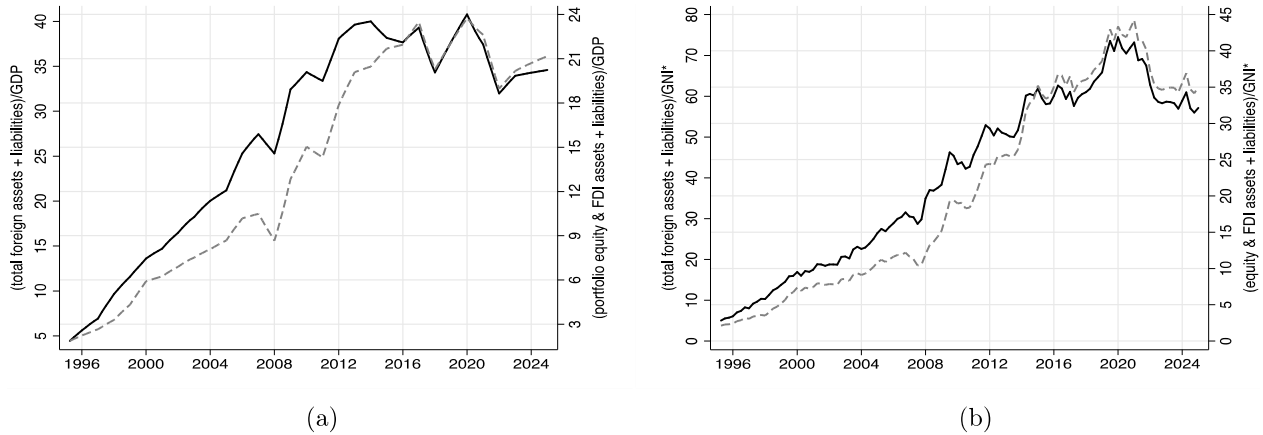
In line with previous discussions, we find that the inverse link is more pronounced for core compared to headline inflation, and goods compared to services inflation. As evident from the graphs, core (goods) inflation features stronger comovements and smaller gaps more regularly relative to headline (services) inflation.¹⁸ From Figure 5, in the case of each price aggregate, it is clear that Ireland visits both the extreme inner and outer regimes of inflation gaps at $\tilde{F}^i(\cdot) = 0$ and $\tilde{F}^i(\cdot) = 1$ over time. These extreme points correspond to zero or negligible inflation gaps and very large inflation gaps respectively. More generally, across indexes, we find that Ireland spends a considerable amount of time in each of the low and high inflation gap regimes corresponding to $\tilde{F}^i(\cdot) \leq 0.5$ and $\tilde{F}^i(\cdot) > 0.5$. However, it is Irish core and goods inflation that visit the extreme inner regime ($\tilde{F}^i(\cdot) \approx 0$) more frequently, and spend more time in the lower regime of inflation gaps ($\tilde{F}^i(\cdot) \leq 0.5$), compared to headline and services inflation.

Inflation comovements and gaps in the lead up to the GFC evolved in an environment of hyper-globalisation. This period was characterised by technology improvements supporting international production relying on global labour supplies, relatively high risk appetites, low global interest rates, deregulated financial markets, and an expansion of global capital flows, including the credit boom that fueled Ireland's construction sector. From GFC onwards, signs of a reversal in comovement and gap trends coincided with the external adjustments of the Great Recession, which included a trade collapse, and capital market fragmentation effects of the European sovereign debt crisis. The sudden stop in private capital flows left an indelible mark. Failing to fully recuperate, the ratio of global capital flows to world GDP has remained lodged well below its pre-crisis zenith. This can partly be attributed to government bailouts, inertia in higher levels of risk aversion, and macroprudential policy. The

¹⁸ Comovements are stronger, and corresponding deviations weaker, for core compared to headline inflation particularly in the period prior to the Great Recession.

introduction of regulatory frameworks, such as Basel III, after the GFC produced a financial environment defined by greater oversight. In more recent times, factors such as Brexit, Trump 1.0 & 2.0, COVID, and geopolitical tensions have adversely affected international markets and integration (Velic, 2025a). Overall, although it is inaccurate to describe the post-GFC period as a phase of deglobalisation, evidence of stagnation in globalisation can be argued. To illustrate, while Ireland's ratio of total foreign assets and liabilities to GDP went from 5.6 in 1996 to 27.4 in 2007, seeing a fivefold rise, this ratio increased from 32.4 in 2009 to only 34.6 by the end of 2025 as shown in Figure 6(a). Similar slowdowns can be observed for the equity-based measure of international financial integration and ratios using modified GNI, GNI* (Figure 6(b)).

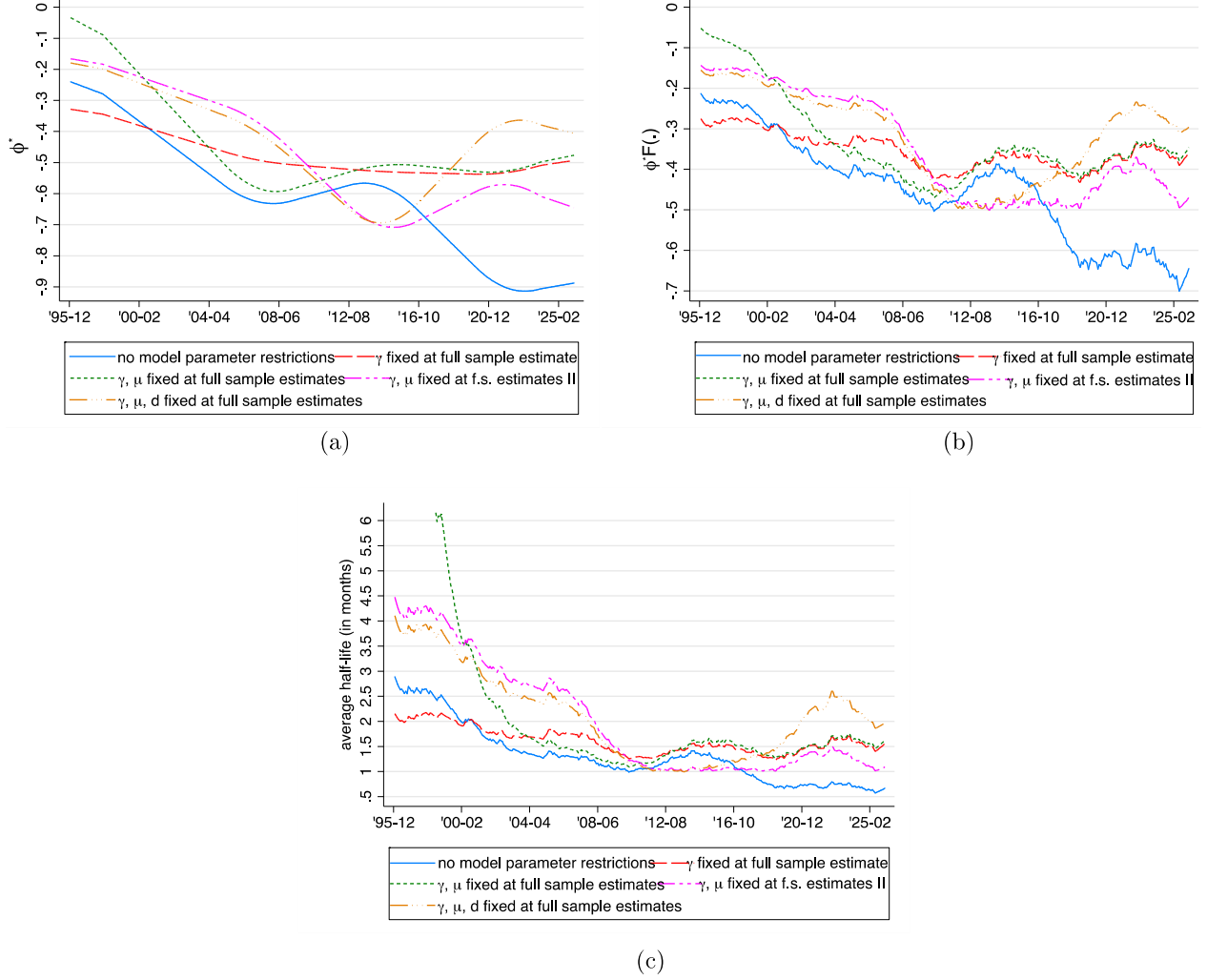
Figure 6: Volume-Based (solid line, left axis) and Equity-Based (dashed line, right axis) International Financial Integration, Ireland



What do the observed developments in inflation comovements and gaps imply about the evolution of idiosyncratic inflation persistence? For a given adjustment coefficient ϕ^* , gap inertia increases over time before beginning to show signs of abating post GFC. This trajectory points to a positive relation between international inflation comovements and idiosyncratic inflation persistence. The link can be rationalised by noting i) the inverse relation between inflation comovements and gaps and ii) the nonlinear nature of idiosyncratic inflation adjustments established in section 5.2.1. At the start of the sample, as inflation comovements are weak and gaps are relatively wide, the persistence of inflation deviations is relatively low, *ceteris paribus*. By the end of the sample, although there is some reversal in comovements and gaps, inflation comovements are stronger and deviations are weaker than they were initially, in 1996. As a result, gap inertia is more pronounced in 2025 than it is at the start of the sample.

However, this reasoning assumes that ϕ^* , which mediates a given gap's rate of adjustment, does not change over the sample period. It means that the effective rate of adjustment, $\phi^* \tilde{F}(\cdot)$, is driven intertemporally only by the inflation gap. To also allow ϕ^* to vary over time, we re-estimate equation (1) over moving 7.5-year windows in our sample under various model assumptions. To focus the analysis, we just examine headline inflation. Using 4-year moving averages, Figure 7(a) plots the evolution of our ϕ^* estimates in the case of i) no model parameter restrictions and ii) varying restrictions on γ , μ , and d . For the latter, we fix the aforementioned parameters at their full sample estimates in different ways, as highlighted in the graph, in order to enable comparability in ϕ^* over time. The plots suggest that the speed of adjustment for a given inflation gap has increased significantly over the sample period, although some tapering off and reversal is found post GFC. As ϕ^* reflects market frictions, the latter might be associated with the emergence of tighter financial controls after the GFC, including heightened banking supervision and prudential regulation. Brexit, the protectionist policies of the Trump administration, COVID, and geopolitical upheaval may furthermore have contributed to a slowdown in rates of adjustment in the past decade.

Figure 7: Evolution of Adjustment Coefficient ϕ^* , Effective Adjustment Coefficient $\phi^*F(\cdot)$, and Half-Life



Note: Estimates are for the headline inflation gap. $\phi^*F(\cdot)$ gives the effective inflation adjustment coefficient used in the measurement of idiosyncratic inflation persistence, including the half-life, where transition function $F(\cdot) \equiv \tilde{F}(\cdot)$ provides a standardised measure of the absolute inflation gap $|\pi - \pi^*| \approx |(\pi - \pi^*) - \mu|$. Adjustment coefficient ϕ_t^* is estimated using windows of 7.5 years. $F(\cdot) \equiv \tilde{F}(\cdot)$ is the full sample period transition function, with the full sample estimates of $\tilde{\gamma}$ and μ approximately equalling the corresponding average estimates over sub-intervals. 4-year moving average ϕ^* and $\phi^*F(\cdot)$ are plotted.

The general downward trend in ϕ^* from 1996 to 2025 presents a counterforce to the higher idiosyncratic inflation persistence originating in smaller inflation gaps. To obtain an idea of how the net effect on inertia has evolved over time, Figure 7(b) plots the 4-year moving average of the effective adjustment coefficient, $\phi^*F(\cdot)$. The salient feature of the graph is the long-term downward trend in the effective coefficient series, with pre and post GFC patterns that are predominantly consistent with those of ϕ_t^* . The evidence indicates that ϕ^* has largely been the more dominant component of the effective rate of adjustment. This is particularly clear in the period leading up to the GFC, during which the rising rate of adjustment ϕ^* is typically more than offsetting the declining inflation gap $\tilde{F}(\cdot)$ to produce lower levels of idiosyncratic inflation persistence. Figure 7(c) shows that the most substantial reduction in half-lives was observed in the period preceding the Great Recession. The half-life hits a low of just under 1 month by the time of the crisis. Thereafter, half-lives display mixed patterns, hovering around those relatively low values.

5.2.3 Multivariate Regression Results

Focusing on headline figures, Table 5 delves deeper into our findings for Ireland by examining some of the potential drivers of i) inflation comovements, ii) inflation gaps, iii) adjustment rates, and iv) idiosyncratic inflation persistence. As reported in the table, all unit root tests point to stationarity of corresponding regression residual series. Regression R-squareds, moreover, suggest that our set of covariates does a good job of capturing variation in the dependent variables. From columns 5-6 and 7-8, we see that regressors explain around 50% of the variation in adjustment coefficients and overall idiosyncratic inflation inertia, respectively. This figure is around 40% for inflation gaps (columns 3-4) and 80% for inflation comovements (columns 1-2).

We find in columns 1-2 that trade openness, economic size, share of services, uncertainty, volatility of inflation deviations from the ECB target, and extent of national central bank independence all covary positively with the degree of comovement between Irish inflation and international inflation. Conversely, higher international reserves attenuate these comovements. This inverse relation primarily stems from the higher holdings in the period before Euro Area entry, which coincided with the lower comovements observed during that time. It is interesting to note how the variance of Irish inflation around the ECB target reflects push and pull forces. Lower volatility around the inflation target implies lower comovements with international inflation as the ECB pulls in the direction of its 2% medium-run goal. Higher volatility may indicate that global inflation is exerting the more dominant force, resulting in Irish inflation following international trends more closely. This suggests that international inflation in our sample deviates considerably from 2%, otherwise lower volatility for Ireland would be associated with higher inflation comovements. In times of low Irish inflation volatility around the ECB target, the result also suggests that Ireland does a relatively better job of complying with the ECB's price stability mandate, as it diverges from other countries.

Given the inverse link between inflation comovements and gaps, our covariates are expected to carry the opposite sign in inflation gap regressions. Columns 3-4 of Table 5 indeed confirm this to be the case. We find this to also materialise in logit regressions as shown in Table 6, where the level odds ratios in square brackets are computed for +5% changes in covariates. The regressors that reduce deviations of Irish inflation from international inflation do so by strengthening comovements with international inflation.

Columns 5-6 in Table 5 report the effects on the rate of adjustment for a given inflation gap. Higher levels of trade and financial openness for Ireland are associated with higher $|\phi^*| \in (0, 1)$, implying a higher speed of adjustment. The same is true for relative market capitalisation, but not for the other economic size variable, relative GDP. A larger stock market may mean better access to information thereby reducing information asymmetries. A relatively larger economic size may on the other hand be accompanied by an outsized public sector. This could make overall national output less tradable and more labour intensive. A larger government can result in more layers of bureaucracy, red tape, or excessive legislation that bolsters market frictions and hinders market operations. Services represent over half of the Irish economy. As the sector has grown, Irish services inflation has become more closely aligned with its international counterpart (Figure 5), perhaps owing to the roles of intangibles and energy in transport, for example. This has led to a greater synchronisation of inflation at the headline level. However, we find that a higher share of services generally slows down overall inflation gap adjustments, as local labour costs and legislation start playing a more influential role.

By absorbing pressures, higher multilateral exchange rate flexibility places a wedge between Irish and international inflation, thereby inducing a slower rate of adjustment for a given inflation gap. Higher uncertainty meanwhile attenuates adjustment according to results. This can occur through informational frictions that delay decision-making. Qualitatively, we see a similar pattern for higher Irish inflation volatility around the ECB target. Finally, greater central bank independence is linked to more protracted inflation gap adjustments. A possible explanation is more pervasive, effective supervision and financial regulation in such an environment.

The net effects of covariates on idiosyncratic inflation inertia in columns 7-8 of Table 5 can be viewed through the lens of i) the gap channel and ii) the adjustment channel. The former is reflected in the results of columns 3-4, while the latter in those of columns 5-6. For some factors, the expected net impact on inertia is unambiguous based on findings from columns 3-6. These expectations are ultimately borne out in the results of columns 7-8. Namely, persistence travels in the same direction across the two channels for financial openness, relative GDP, share of services, uncertainty, and central bank independence.

Table 5: Drivers of Inflation Comovements, Gaps, Adjustments and Inertia

Dependent Variable:	<i>Comov.</i> $\ln(\rho^{\pi, \pi^*})$		<i>Inf. Gap</i> $\ln(\tilde{F}(.))$		<i>Adj. Coeff.</i> $\ln(1 + \phi^*)$		<i>Idio. Inertia</i> $\ln(1 + \phi^* \tilde{F}(.))$	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Trade Openness	0.721*	0.704*	-0.920*	-0.812*	-0.457***	-0.470***	-0.760***	-0.712***
	(0.424)	(0.423)	(0.570)	(0.500)	(0.152)	(0.143)	(0.272)	(0.247)
Financial Openness	-0.016	-0.016	1.736***	1.625***	-0.778***	-0.807***	-0.374**	-0.330*
	(0.011)	(0.011)	(0.485)	(0.515)	(0.114)	(0.106)	(0.169)	(0.206)
Relative GDP	0.443***	0.458***	-1.330**	-1.294**	1.058***	1.158***	0.776**	0.645*
	(0.121)	(0.128)	(0.663)	(0.679)	(0.139)	(0.137)	(0.325)	(0.390)
Relative Market Cap.	0.074***	0.076***	-0.259***	-0.256***	-0.091***	-0.078***	-0.076**	-0.094**
	(0.022)	(0.024)	(0.077)	(0.080)	(0.025)	(0.023)	(0.036)	(0.040)
Services Share	1.025***	1.063***	-3.138*	-2.993*	0.667*	0.873**	1.198*	0.900
	(0.258)	(0.268)	(1.689)	(1.792)	(0.404)	(0.387)	(0.689)	(0.845)
Reserves	-0.129***	-0.126***	0.347***	0.321***	0.036*	0.045**	0.093*	0.085**
	(0.047)	(0.047)	(0.118)	(0.113)	(0.019)	(0.020)	(0.051)	(0.043)
Exch. Rate Flexibility	-0.012	-0.012	0.106	0.113	0.023**	0.023**	0.074*	0.069*
	(0.017)	(0.018)	(0.082)	(0.083)	(0.011)	(0.010)	(0.043)	(0.041)
Uncertainty	0.007**	0.008**	-0.040***	-0.032***	0.003*	0.002	0.014**	0.012*
	(0.003)	(0.004)	(0.012)	(0.012)	(0.001)	(0.002)	(0.006)	(0.007)
Inflation Target	0.014**	0.014**	-0.032*	-0.036*	0.003	0.005	-0.011	-0.014
	(0.007)	(0.007)	(0.018)	(0.020)	(0.004)	(0.004)	(0.016)	(0.016)
CB Independence	3.503***	3.521***	-1.441***	-1.417***	0.627***	0.621***	0.510***	0.472***
	(0.297)	(0.297)	(0.333)	(0.391)	(0.109)	(0.103)	(0.080)	(0.107)
Quarter dummies	no	yes	no	yes	no	yes	no	yes
No. of observations	120	120	120	120	120	120	120	120
R-squared	0.80	0.80	0.38	0.45	0.42	0.53	0.43	0.47
DFGLS _u	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ADF _u	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PP _u	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
KPSS _u	0.08	0.08	0.05	0.05	0.09	0.09	0.02	0.02

Note: * significant at 10%; ** significant at 5%; *** significant at 1%. Newey-West heteroskedasticity and autocorrelation robust standard errors in parentheses. The aforementioned standard errors are used as a precaution, even though Breusch-Godfrey, Durbin-Watson, and Gauss-Newton serial correlation tests on regression residuals in many cases show no signs of autoregressive errors. Prais-Winsten regressions that correct for first-order serially correlated residuals using a GLS estimator produce very similar results to standard OLS. With the exception of quarter dummies, all regressors are in logarithmic form. ρ^{π, π^*} is the correlation between Irish (domestic) inflation π and international inflation π^* . Transition function $\tilde{F}(\cdot)$ is a standardised measure of the absolute deviation from international inflation, $|\pi - \pi^*| \approx |(\pi - \pi^*) - \mu|$. ϕ^* mediates the rate of idiosyncratic inflation adjustment for a given inflation gap $\tilde{F}(\cdot)$. $\phi^* \tilde{F}(\cdot)$ is the effective rate of adjustment, which is used in the measure of idiosyncratic inflation persistence (Idio. Inertia). P-values are reported in modified Dickey-Fuller (DFGLS), augmented Dickey-Fuller (ADF), and Phillips-Perron (PP) tests for which the null hypothesis is that of a unit root in regression residuals u . Test statistic is reported in Kwiatkowski-Phillips-Schmidt-Shin (KPSS) test, with asterisks indicating significance, for which the null hypothesis is that of stationary regression residuals u . KPSS critical test statistic values at 10%, 5% and 1% significance levels are 0.35, 0.46 and 0.74 respectively.

Table 6: Drivers of Domestic-International Inflation Gap: Logit Regressions

Dependent Variable: $\omega = 1[0] \text{ if } \tilde{F}(\cdot) > [\leq] 0.5$	Odds Ratios I (1)	Marginal Effects I (2)	Odds Ratios II (3)	Marginal Effects II (4)
Trade Openness	-14.602* (9.000) [0.491]	-1.778* (1.086)	-14.324* (9.209) [0.497]	-1.765* (1.090)
Financial Openness	8.970** (3.832) [1.549]	1.092*** (0.403)	8.796*** (3.652) [1.536]	1.084*** (0.406)
Relative GDP	-10.924** (5.044) [0.587]	-1.330** (0.577)	-10.718** (4.751) [0.593]	-1.321** (0.581)
Relative Market Cap.	-4.723* (2.564) [0.794]	-0.575** (0.261)	-4.641** (2.474) [0.797]	-0.572** (0.262)
Services Share	-15.797* (9.429) [0.463]	-1.923* (1.155)	-15.501* (8.996) [0.470]	-1.911* (1.167)
Reserves	1.474* (0.890) [1.075]	0.180* (0.103)	1.448* (0.876) [1.073]	0.179* (0.104)
Exch. Rate Flexibility	0.895** (0.480) [1.045]	0.109** (0.056)	0.888** (0.477) [1.044]	0.110** (0.057)
Uncertainty	-0.281** (0.136) [0.986]	-0.035*** (0.014)	-0.277** (0.136) [0.987]	-0.034** (0.015)
Inflation Target	0.133 (0.196) [1.007]	0.016 (0.024)	0.133 (0.196) [1.007]	0.016 (0.024)
CB Independence	-0.883 (5.506) [0.958]	-0.108 (0.651)	-0.858 (5.466) [0.959]	-0.106 (0.651)
Quarter dummies	no	no	yes	yes
Efron's Pseudo R ²	0.29		0.29	
Tjur's D Pseudo R ²	0.28		0.28	

Note: * significant at 10%; ** significant at 5%; *** significant at 1%. Standard errors in parentheses. Penalised likelihood estimator employed. Model shows no signs of state (path) dependency (lagged dependent variable as a regressor is statistically insignificant). With the exception of quarter dummies, all regressors are in logarithmic form. Estimates of effects on log odds are shown while figures in square brackets show corresponding odds ratios in levels for +5% changes in regressors. Average marginal effects are reported. The marginal effect is computed as the average of evaluations across individual observations i.e. average of $\frac{\partial p}{\partial x_j} |_{\mathbf{x}=\mathbf{x}_t}$ over observations $t = 1, 2 \dots T$ with conditional probability $p = P(\omega = 1|\mathbf{x}) = e^{\mathbf{x}'\delta} (1 + e^{\mathbf{x}'\delta})^{-1}$.

For example, higher financial openness widens the inflation gap, which, ceteris paribus, reduces inertia as larger deviations experience more prompt adjustment. The wider inflation gaps can emerge if easier access to international financial markets enables an expansion of external surpluses and deficits and, therefore, a divergence in home and foreign inflation trajectories. At the same time, greater financial openness improves a given inflation gap's speed of adjustment, by possibly alleviating market frictions. Both the gap and adjustment channels therefore indicate an inverse relation between financial openness and idiosyncratic inflation inertia, implying an overall negative net impact of financial openness on inertia. This net effect ultimately materialises in columns 7-8, where we find that a 5% increase in financial openness is associated with approximately a 2% decline in inflation gap persistence. From the viewpoint of Figure 1, we find a movement down the curve alongside a downward shift in the curve producing the net effect.

With much of it related to external factors, higher uncertainty, on the other hand, reduces inflation gaps by boosting inflation comovements. Smaller gaps exhibit greater persistence in the context of our nonlinear model. Simultaneously, increases in uncertainty slow down inflation gap adjustments by obscuring information sets and delaying decision-making. As both of these channels increase idiosyncratic inflation persistence, the estimated positive net impact in columns 7-8 of Table 5 is to be expected. In terms of Figure 1, we find a movement up the curve and an upward shift of the curve. These two changes reinforce each other to yield the overall positive effect. The same patterns are found for relative GDP, share of services, and central bank independence.

For other covariates, including trade openness, relative market capitalisation, reserves, and exchange rate flexibility, the expected net impact on idiosyncratic inflation persistence is ambiguous based on results in columns 3-6 of Table 5. An increase of 5% in trade openness raises the international inflation correlation by around 3.6% and, in turn, reduces the inflation gap by about 4.3%. Relying on the logit model, Table 6 reports that the odds of a relatively large inflation gap in this case fall by half while marginal effects suggest a drop of around 8.8 percentage points in the conditional probability of such a deviation. The gap channel therefore implies an increase in persistence, which is reflected in a movement to the left along the curve in Figure 1. Along the adjustment channel, we find an increase in $|\phi^*|$ that implies a 2.5% decrease in inertia. The corresponding interpretation in Figure 1 is a downward shift in the curve. Examining net effects in columns 7-8, we find that the *adjustment channel* dominates the *gap channel* to generate an overall decline in idiosyncratic inflation inertia of around 3.7%. The same qualitative patterns across channels and net effect are found for relative market capitalisation. For reserves and exchange rate flexibility, the gap channel implies a decline in inertia while the adjustment channel indicates the opposite, with the latter more than offsetting the former to produce a net increase in idiosyncratic inflation persistence.

6. CONCLUSIONS

As a small island nation that is deeply integrated into global markets, Ireland faces a significant risk of overvaluing the weight of domestic policies by overlooking international developments. Moving forward, however, rising geopolitical tensions threaten to create long-term structural fissures in the global economic landscape. A more fragmented world economy and continued stagnation of globalisation may mean that domestic policy becomes more important for Ireland as the nation, for example, shifts towards greater energy independence and away from an overreliance on foreign multinationals. While global comovements may decline in such an environment, the emergence of new geopolitical blocs divided by sanctions and protectionist measures could enhance Ireland's comovements with regional or strategic partners.

Our findings suggest that international inflation, acting as an anchor, exerts a strong pull on overall Irish inflation. In tandem with Ireland's increasing relative economic size and openness, we find that this gravitational force strengthens over time, with the rate of adjustment in inflation deviations displaying a long-run upward trend. Our results reveal this to be particularly true in the 10 to 15 years preceding the Great Recession. The results also indicate that goods are more responsible for higher speeds of convergence in aggregate inflation gaps when compared to services, which tend to place more downward pressures. In contrast to services, goods inflation reacts considerably faster to the changing size of deviations from its international counterpart.

We find that the idiosyncratic inflation dynamics of Ireland are strongly nonlinear. For moderate to large inflation deviations, shocks are mostly corrected (over 50%) within 3 months. Very small inflation gaps exhibit much higher shock persistence, with the half-life being around 12-14 months for goods, 28 months for services, and about two years for the aggregate (headline) consumption basket. In general, inertia across inflation gap sizes tends to be lower for core compared to headline inflation owing to the food component, and goods compared to services inflation. Our results emphasise the state-dependent nature of idiosyncratic inflation inertia. They suggest that conclusions about idiosyncratic inflation persistence in the literature should be more nuanced, ultimately depending on the size of the inflation gap.

Ireland's comovements with international inflation are found to be inversely related to the size of corresponding inflation deviations. In the context of our nonlinear framework, this implies a positive link between inflation comovements and inflation gap inertia, *ceteris paribus*. We find that Ireland experiences a striking increase in international inflation comovements, accompanied by smaller inflation deviations, particularly in the lead up to the GFC, after which this trend peters out and we see some reversals.

Higher trade openness, relative economic size, share of services, uncertainty, inflation volatility around the ECB target, and national central bank independence attenuate inflation gaps by enhancing comovements with international inflation. However, the expected impact of these covariates on idiosyncratic inflation persistence is not so clear-cut. This is because the effective rate of adjustment relies on two underlying channels. The first is the gap channel, which captures the impact of the inflation gap's absolute size. The second is the adjustment channel, which captures the rate of adjustment, as mediated by market frictions, for a given inflation gap.

For factors like uncertainty and share of services, we find that the adjustment channel reinforces the gap channel to produce a positive overall effect on idiosyncratic inflation inertia, as confirmed in regressions. As information asymmetries worsen under higher uncertainty, and nontradability potentially rises in the case of a greater role for services, we observe a decline in a given inflation gap's speed of convergence. Conversely, by weakening market frictions, higher trade openness and relative market capitalisation induce a rise in a given inflation gap's speed of

adjustment according to our estimates. This offers a counterforce to the rise in inertia along the gap channel. In these cases, we find that the adjustment channel dominates the gap channel over the sample to yield an overall fall in inertia. Therefore, in order to fully understand how covariates influence idiosyncratic inflation persistence, we must study its decomposition.

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LAWS AND CONSTITUTION OF THE STATISTICAL AND SOCIAL INQUIRY SOCIETY OF IRELAND

As amended on 15 April 2015

1. The title of the Society shall be The Statistical and Social Inquiry Society of Ireland. The object of the Society shall be the promotion of the study of statistics, jurisprudence, and social and economic science.
2. The Society shall consist of Ordinary Members, Group Members and Honorary Members.
3. Applications for Ordinary and Group Membership shall be addressed to the Honorary Secretaries who shall consult with the President and then decide on the applications. The Honorary Secretaries shall subsequently inform the Council of such applications at the next meeting.
4. A Group Member may be any corporate body or unincorporated association. A Group Member shall have the privilege of nominating two representatives to attend all ordinary meetings. Each representative shall be entitled to vote.
5. The Council is empowered to recommend persons for election as Honorary members.— Persons thus recommended, may be elected by a resolution of the Society.
6. Ordinary Members shall pay a yearly subscription. This sum shall include the subscription for the Journal of the Society. The subscription becomes due on the 1st October in each year, and is payable in advance. Ordinary Members may compound for life for their annual subscription by a single specified payment. No Ordinary Member shall be entitled to any of the privileges of the Society or to vote at any meetings of the Society while his or her subscription is unpaid. No subscription shall be payable by Honorary members. A Group Member shall pay a yearly subscription and shall receive two copies of the Journal of the Society. These subscriptions shall be determined from time to time by the Council and any proposed alteration shall be ratified by a resolution passed at an Ordinary Meeting of the Society.
7. The Officers of the Society shall consist of a President, not more than eight Vice-Presidents, an Honorary Treasurer and three Honorary Secretaries who, together with fourteen other Ordinary Members of the Society shall constitute the Council.
8. Nine members of the Council, in addition to those who retire under Law 10, shall retire each year and shall be eligible for re-election without nomination. The retiring members of the Council shall be those who are most senior in membership of the council by reference to the latest date of election of each member of the Council. In the event of equal seniority, the member or members who shall retire shall be decided by agreement or, failing agreement, by lot. In the absence of a majority recommendation by the Council, no member of the council other than an officer of the Society shall be eligible for re-election on the expiration of his or her term of office or shall continue in membership of the Council if such member has not attended at least one half of the aggregate number of the meetings of the Council and of the Society which he was eligible to attend during the twelve months ending in each year on 1st April preceding the annual election of Council Members. At an ordinary meeting of the Society normally to be held in the month of May in each year, vacancies on the Council shall be filled by election. Notice of such election shall be given by the Honorary Secretaries to each member of the Society not less than three days before such meeting, and none but Members shall vote at such meeting. Any Member wishing to nominate a candidate for election under this Law, who has previously obtained the consent of such person, shall forward the name of the candidate to the Honorary Secretaries not less than ten days preceding such meeting.
9. Immediately following the election of Council members at the ordinary meeting of the Society held each year under Law 8, the Members of the Society shall elect a Member of the Council as President of the Society, and from the remaining Members of the Council they shall elect the Honorary Officers of the Society.
10. In the case of the death or resignation of an Officer or other Member of the Council, the Council may appoint a Member to supply his or her place until the next annual election. The Council shall have power at any time to co-opt a member to fill a casual vacancy on the Council, but the total number of members of the Council shall not at any time exceed the maximum number fixed under Law 7. Any member so appointed shall hold office until the next annual election and shall then be eligible for re-election.
11. The President shall preside at all meetings of the Council and of the Society, but in his or her absence the Vice-President who is the senior of those present in continuous membership of the Council shall preside. In case no Vice-President is present, the member of the Council present who is senior in membership of that body shall preside.
12. The Government of the Society and the management of its funds shall be vested in the Council, and the Honorary Treasurer shall make payments as approved by the Council.
13. The Council shall meet whenever summoned by the Honorary Secretaries of the Society on the instructions of the President, or on a requisition in writing signed by any three Members of the Council. Five members shall form a quorum, and the Chairman shall have a casting vote. Procedure at meetings of the Council shall be determined by the Council.

14. The business of the Society shall include the reading at the ordinary meetings of the Society, of written communications upon subjects connected with statistics, jurisprudence, and social and economic science, and of the discussion of the same. The Society shall also engage in such other activities as in the opinion of the Members tend to promote its object as defined in Law 1. No communication shall be read before the Society involving topics likely to produce discussions connected with religious differences or party politics.
15. The Council may print and publish in such form as it may approve any of the papers read before the Society, and such other material as it may direct, including excerpts from discussion on such papers. It shall be a condition precedent to the reading of a paper that the copyright of such paper shall vest in the Society and shall become the property of the Society.
16. No communication shall be read to the Society unless one of the Honorary Secretaries shall certify to the Council that he or she considers the paper accordant with the Laws of the Society and the Council shall have approved of the reading of the paper.
17. The Council may elect special Committees of the Society for promoting the investigation of any particular subject. The result of such investigation may be laid before the Society in such form as the Council may direct.
18. The session shall commence in the month of October (when the President or a Vice-President shall, if convenient, read an opening address), and close in the month of May, and if possible seven ordinary meetings at least shall be held in each session.
19. The Honorary Secretaries, subject to the approval of the Council, shall regulate the dates at which the ordinary meetings in each session shall be held.
20. The Honorary Secretaries by the direction of the Council, or on a requisition in writing signed by twenty members, shall, summon an extraordinary meeting, of which at least fourteen days notice shall be given to all the members. Such notice shall contain a statement of the nature of the business to be brought before such meeting and no business other than that for which the extraordinary meeting has been called shall be transacted at such meeting. No motion shall be adopted at any extraordinary meeting unless by a majority representing three-quarters of those present and voting.
21. No motion shall be brought forward at any ordinary meeting of the Society unless notice of the intention to propose such motion shall have been given by an Ordinary Member to the Honorary Secretaries at least fourteen days before such meeting. The Honorary Secretaries shall notify members of such motion not less than three days before such meeting.
22. Subject to these Laws, procedure at ordinary meetings shall be determined by the members present, but all contested elections at such meetings shall be by ballot of the members present. Ballot procedure shall be determined by the Council.
23. The financial year shall end on the 30th September in each year, and a statement of accounts shall be laid by the Honorary Treasurer before the Council in November or as soon as possible thereafter.
24. The Honorary Treasurer's account shall be audited by a professional auditor selected by the Council.
25. An audited statement of accounts shall be presented by the Council to the Society at the ordinary meeting of the Society held each year under Law 8.
26. The foregoing shall be the Laws of the Society, subject to alteration from time to time by resolution passed at two consecutive meetings of the Society. No resolution for a change in the Laws shall be considered at any meeting of the Society, save after notice given as provided by Law 21.
27. Any reference in these Laws to Member(s) shall be deemed to refer to Honorary Member(s), Group Member(s) and Ordinary Member(s) where the context so permits.

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One Hundred and Seventy-Ninth Session: 2025/2026***

First Meeting

The first ordinary meeting of the 179th session of the Statistical and Social Inquiry Society of Ireland was held at 5.30pm on Thursday 30th October 2025, online and in-person at IBEC. The meeting opened with society business, including some introductory remarks by the Honorary Secretary John Evans who was standing in for the new President Jennifer Banim. There then followed a paper entitled “Current and Future Waves of Technological Transformation: Potential Economic Impacts and the Challenges for Public Policy in Ireland” by Dermot Coates, Harry Williamson, Keith FitzGerald, Kevin Daly and Neil Gannon. The proposal of the vote of thanks was made by James Browne and seconded by John Fitzgerald. There were contributions from the floor, including from Kevin Daly, Francis Ruane, Sean Lyons, Sam Enright and Patrick Honohan. Following the discussion and responses from the authors, John Evans thanked those who had contributed, and brought the meeting to a close.

Second Meeting

The second ordinary meeting of the 179th session of the Statistical and Social Inquiry Society of Ireland was held at 5.30pm on Wednesday 3rd December 2024, online and at IBEC. The meeting opened with society business, including some introductory remarks by President Jennifer Banim. Yvonne Hatden presented a paper entitled “An Economic and Tax Overview of Companies with No Corporation Tax Liability”. The proposal of the vote of thanks was made by Nessa Ni Chasaide, which was seconded by Connor Prescott. There were contributions from the floor, including from John Fitzgerald, Jennifer Banim and Chris Sibley. Following the discussion and responses from the authors, the President thanked those who had contributed, and brought the meeting to a close.

Third Meeting

The third ordinary meeting of the 179th session of the Statistical and Social Inquiry Society of Ireland was held at 5.00pm on Thursday 18th February 2026, online and in person at IBEC. The meeting opened with society business, including some introductory remarks by President Jennifer Banim. John Fitzgerald presented a paper entitled “Seventy Years of Irish Fiscal Policy: 1954 - 2024”. The proposal of the vote of thanks was made by Eddie Casey, which was seconded by Patrick Honohan. There were contributions from the floor, including from Patrick Paul Walsh, Thomas Conefrey, Danny McCoy, Stephen Weir, Tom Healy and Tom Ferris. Following the discussion and responses from the author the President thanked those who had contributed and brought the meeting to a close.

Fourth Meeting

The fourth ordinary meeting of the 179th session of the Statistical and Social Inquiry Society of Ireland was held at 5.30pm on Thursday 2nd April 2026, online and in-person at the Central Bank of Ireland. There was a presentation of a paper by Niall Conroy entitled “Boston or Berlin? How Does Ireland's Tax and Spending Compare?” The proposal of the vote of thanks was made by John Fitzgerald which was seconded by Thomas Conefrey. There were contributions from the floor, including from Tom Ferris and Martin O’Brien. Following the discussion and responses from the author, the President thanked those who had contributed and brought the meeting to a close.

Fifth Meeting

The fifth ordinary meeting of the 179th session of the Statistical & Social Inquiry Society of Ireland was held at 5.30pm on Wednesday 13th May 2026, online and at the UCD Geary Institute. Society President, Jennifer Banim, was in the Chair. This meeting was a symposium entitled “The Evolution of Data Needs for Policy/Research in Ireland” to mark the donation of Roy Geary's papers to the UCD Geary Institute, and was moderated by Michelle Norris, Director of the Geary Institute. Michelle first introduced Jill Dooney, granddaughter of Roy Geary, who thanked the Society and the Institute for hosting the event in his honour. Introductory biographical remarks were made by Patrick Honohan and there then followed presentations by Alan de Bromhead (UCD) on the historical

significance of Roy Geary; by Martina Lawless (ESRI) on statistical analysis in policymaking, and by Sarah Glavey (Department of Public Expenditure, Infrastructure, Public Service Reform and Digitalisation) on the modern reality of working with data and challenges going forward. There were contributions from the floor, including from Patrick Paul Walsh and Feargal O Brolchain. Following the discussion, the President thanked those who had contributed and brought the meeting to a close.

Sixth Meeting

The sixth and final ordinary meeting of the 179th session took place at 5.30pm on Thursday 28th May 2024, online and in person at IBEC with the Society President Jennifer Banim in the Chair. The meeting was also the Annual General Meeting of the 179th session, and was followed by the Barrington Lecture. This year, the Barrington Lector was delivered by Adnan Velic. His lecture was entitled “International Comovements and Persistence in Irish Inflation: A Nonlinear Approach”. After the presentation, there were contributions from the floor from Deirdre Toher, Patrick Paul Walsh and Kevin Timoney. The President then thanked those who had contributed and brought the meeting to a close.

