ESRI Forecasting Series

December 2025

AN INSTITIÚID UM THAIGHDE EACNAMAÍOCHTA AGUS SÓISIALTA
ESRI ECONOMIC & SOCIAL RESEARCH INSTITUTE

Ireland's medium-term economic outlook: Risks and opportunities

AYKUT MERT YAKUT, SAMUEL MCARDLE, DÓNAL O'SHEA, ÇAĞAÇAN DEĞER, ALAN BARRETT AND JOHN CURTIS

IRELAND'S MEDIUM-TERM ECONOMIC OUTLOOK: RISKS AND OPPORTUNITIES

Aykut Mert Yakut
Samuel McArdle
Dónal O'Shea
Çağaçan Değer
Alan Barrett
John Curtis

December 2025

ESRI FORECASTING SERIES

Available to download from www.esri.ie

https://doi.org/10.26504/eo02

ABOUT THE ESRI

The Economic and Social Research Institute (ESRI) advances evidence-based policymaking that supports economic sustainability and social progress in Ireland. ESRI researchers apply the highest standards of academic excellence to challenges facing policymakers, focusing on ten areas of critical importance to 21st century Ireland.

The Institute was founded in 1960 by a group of senior civil servants led by Dr T.K. Whitaker, who identified the need for independent and in-depth research analysis. Since then, the Institute has remained committed to independent research, and its work is free of any expressed ideology or political position. The Institute publishes all research reaching the appropriate academic standard, irrespective of its findings or who funds the research.

The ESRI is a company limited by guarantee, answerable to its members and governed by a Council, comprising up to 14 representatives drawn from a cross-section of ESRI members from academia, civil services, state agencies, businesses and civil society. Funding for the ESRI comes from research programmes supported by government departments and agencies, public bodies, competitive research programmes, membership fees, and an annual grant-in-aid from the Department of Public Expenditure, Infrastructure, Public Service Reform and Digitalisation.

Further information is available at www.esri.ie

THE AUTHORS

Aykut Mert Yakut is a Senior Research Officer at the Economic and Social Research Institute (ESRI) and an Adjunct Assistant Professor at Trinity College Dublin (TCD). Samuel McArdle and Dónal O'Shea are Research Assistants at the ESRI. Çağaçan Değer is a Research Officer at the ESRI and an Adjunct Assistant Professor at TCD. Alan Barrett and John Curtis are Research Professors at the ESRI and Adjunct Professors at TCD.

ACKNOWLEDGEMENTS

The research carried out in this report was funded by the Department of Public Expenditure, Infrastructure, Public Service Reform and Digitalisation (DPER) through the annual grant-in-aid provided to the ESRI. The findings presented in the report are the results of the ESRI's Ireland Environment, Energy and Economy (I3E) model, which was developed with funding from the Department of Climate, Energy and the Environment.

The model calibration requires extensive use of several Central Statistics Office (CSO) sources, including the Supply and Use Tables (SUTs) and the Research Microdata Files (RMFs) from several surveys. The authors thank the Department of Finance (David Owens, Mike Fahy, Jean Brennan) and the DPER (Ciara Morgan, Anna Cremin, Niamh Foley) colleagues for their contributions to getting more detailed versions of the SUTs from the CSO's National Accounts Analysis and Globalisation unit (Brian King and Becky Mangan). The authors would like to thank Kelly de Bruin and Kirsten Everett (the ESRI) for collecting other relevant data used in further disaggregation of the SUTs. Results are based on analysis of strictly controlled RMFs provided by the CSO. The CSO does not take any responsibility for the views expressed or the outputs generated from this research.

The authors thank Martina Lawless, Adele Bergin, Conor O'Toole, Paul Egan, and anonymous reviewers for their valuable comments and suggestions on the earlier versions of the *Economic Outlook*.

This report has been accepted for publication by the Institute, which does not itself take institutional policy positions. The report has been peer-reviewed prior to publication. The authors are solely responsible for the content and the views expressed.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS

AI	Artificial intelligence
CBI	Central Bank of Ireland
CBO	Congressional Budget Office
CES	Constant elasticity of substitution
CGE	Computable general equilibrium
CPI	Consumer price index
CSO	Central Statistics Office
CT	Corporation tax
DETE	Department of Enterprise, Trade and Employment
DFIN	Department of Finance
DPER	Department of Public Expenditure, Infrastructure, Public Service Reform and Digitalisation
DSGE	Dynamic stochastic general equilibrium
EC	European Commission
ESAM	Energy Social Accounting Matrix
ETS	Emissions Trading System
EU	European Union
FDI	Foreign direct investment
GDP	Gross domestic product
GGB	General government balance
GHGs	Greenhouse gases
GNI	Gross national income
GNI*	Modified gross national income
GNP	Gross national product
GVA	Gross value added
HBS	Household Budget Survey
HH	Households
HSL	High-skilled labour
ICT	Information and communications technology
IFAC	Irish Fiscal Advisory Council
IO	Input-output
LFPR	Labour force participation rate

LFS	Labour Force Survey
LSL	Low-skilled labour
MDD	Modified domestic demand
MNCs	Multinational corporations
MNE	Multinational enterprises
MSL	Medium-skilled labour
NACE	Nomenclature of economic activities
NNP	Net national product
OECD	Organisation for Economic Co-operation and Development
PLCs	Public limited companies
R&D	Research and development
RD&I	Research, development and innovation
RHG	Representative household group
SAM	Social Accounting Matrix
S–I	Saving–investment
SILC	Survey on Income and Living Conditions
SUT	Supply and Use Table
TFP	Total factor productivity
UK	United Kingdom
US	United States

EXECUTIVE SUMMARY

The objective of this *Economic Outlook* is to provide macroeconomic projections and scenarios of potential future paths for the economy over a ten-year horizon. Given the highly globalised nature of the Irish economy, the potential impacts associated with external shocks feature prominently. Current geopolitical tensions and ongoing developments in international trade relations raise concerns regarding the risks ahead for the global economy. These risks pose a great challenge for the Irish economy, given its reliance on multinational corporations and their significant contributions to the overall fiscal balances.

Before describing the macroeconomic projections and scenarios, it is important to stress that the *Economic Outlook* is not a forecast of future economic performance. Instead, it comprises projections of what might happen subject to a broad range of underlying assumptions. Understanding the economy's vulnerabilities and the dynamics of how economic shocks play out across sectors is an important input into the policymaking process.

An underlying assumption of our baseline projection is that the global economy continues to evolve along its current pathway without any further economic shocks; for example, related to tariffs, world demand or exchange rates. An assumption of no further shocks is unrealistic, but it enables us to project a 'business as usual' pathway for the economy from which we can assess the impacts of potential challenges or opportunities facing the economy. Our baseline projection is for an annual average economic growth rate of 2.3 per cent in modified gross national income (GNI*) out to 2030 and 2.1 per cent from 2031 to 2035. Despite recent international upheavals and substantial domestic challenges, the outlook for the economy appears relatively favourable in the absence of any unforeseen shocks. There is a cautionary note to be added, however. While headline public finance indicators are strong, budget surpluses are based on windfall corporation tax receipts. Windfall taxes by definition could disappear rapidly, meaning that a healthy headline general government surplus of €5 billion could become a

deficit of €13 billion if the windfall receipts disappeared, based on figures from Budget 2026. So while the baseline projects a potentially strong economic pathway over the coming decade, there is a fundamental vulnerability in public finances, in addition to other potential vulnerabilities, such as ongoing trade tensions. It is also the case that longer-term challenges, such as an ageing population and costs of climate change, are likely to become more binding in the years after our projection horizon.

History tells us that unanticipated events can have major impacts on the economy and society, with Brexit, the COVID-19 pandemic and the Russian invasion of Ukraine recent examples. Our task is to consider what kinds of shocks, events or policy initiatives (both positive and negative) could arise and how they might impact the economy. The implications of three potential external shocks are examined:

- A *Global Slowdown* scenario assesses the implications of a downturn in world trade via an across-the-board reduction in export demand
- A *Competitiveness* scenario examines a loss of competitiveness relative to our international trading partners
- A *Multinationals* scenario quantifies the impacts of reduced operations of multinational corporations in the pharma and information and communication technologies (ICT) sectors.

These risks are centred around foreign-owned multinational corporations, which contribute around half of the overall gross value added within the economy. The other half comes from the much more numerous domestically owned firms, which are characterised by significantly lower average productivity compared to the multinational sector. Improving productivity within the indigenous sector could improve their share of economic activity, which is examined in the following scenario:

- A *Domestic Productivity* scenario explores the potential outcomes associated with improving the productivity of indigenous firms.

TABLE ES: SCENARIO DESCRIPTIONS

Scenario	Motivation
Baseline	Economy evolves under its current structure with no shocks
Global Slowdown	Exploring the implications of a global trade shock due to the pivotal change in the US tariff policy
Competitiveness	Understanding the effects of a competitiveness loss vis-à-vis our trade partners
Multinationals	Quantifying the implications of employment reduction in two major foreign-owned-dominated sectors
Domestic Productivity	Examining the effects of gradually narrowing the productivity gap between foreign- and Irish-owned private sector firms

Overall, the scenario analysis shows that the external risks examined could have significant repercussions for domestic economic activity in Ireland. The significant reliance on multinational corporations for employment and for public fiscal balances magnifies the Irish economy's vulnerability under uncertain global conditions. Equally, the results show the large positive contributions of multinational corporations to the Irish economy. It should be clearly stated that the presence of these enterprises remains a tremendous positive for the Irish economy, and efforts to retain and expand foreign direct investment (FDI) must continue. However, the analysis shows the importance of strategies aimed at rebalancing the composition of economic activity between foreign- and Irish-owned firms. The main findings of the scenario analysis can be summarised as follows:

- In the *Global Slowdown* scenario, a 5 per cent reduction in export demand is projected to have a severe impact on the economy. GNI* is projected to be 3.2 per cent lower in 2030 compared to our baseline trajectory, whereas private and public consumption are projected to be 6.4 per cent lower than baseline. The unemployment rate is projected to be 3.5 percentage points higher than the baseline, with total employment also projected to decline. While a 5 per cent slowdown in export demand is plausible, a global downturn could be either more or less severe, with commensurate impacts on the Irish economy. The openness of the Irish economy means that a slowdown in world trade will have significant, direct effects on employment, incomes and spending in Ireland.

- Under our *Competitiveness* scenario, we model a relative decline in Ireland's competitiveness. The impact on the economy is quite significant, with GNI* declining by 3.1 per cent compared to the baseline by 2030. On the expenditure side, the greatest (relative) impact is on private consumption, which is 8.6 per cent lower than baseline.

- Under our *Multinationals* scenario, we explore the impact of future FDI flows declining and a gradual scaling back of activity levels among multinationals (rather than a full and immediate exodus). The projected impact on GNI* is relatively moderate, with a 1.5 per cent reduction in 2030 compared to baseline, but, by definition, this reflects the fact that much multinational activity falls outside GNI*. Impacts on the labour market are larger with a 2.5 per cent reduction in total employment and a 1.5 percentage points increase in the unemployment rate. While the immediate effect of a contraction in the foreign-dominated sector would be felt within the sector itself, its effects will ultimately be more widespread, initially channelled through labour market dynamics and finally impacting consumption and activity more generally.

- The results of the *Domestic Productivity* scenario provide insights on the benefits of narrowing the productivity gap between Irish- and foreign-owned private sector firms. The recently published Action Plan on Competitiveness and Productivity outlines several actions to improve productivity in Irish SMEs. Our scenario assumes a gradual productivity improvement starting in 2026, reaching 0.5 per cent per annum between 2030 and 2035, within Irish-owned private sector firms. Such an assumption may be quite ambitious, but its purpose is to demonstrate the positive impacts of improving productivity within the domestic sector. Overall, the scenario projects GNI* to reach 2.4 per cent above baseline by 2035. There are also substantial impacts in the labour market, with total employment projected to grow by 2.3 per cent and mean wages increasing by 1.2 per cent compared to the baseline. Increases in employment and wages are projected to lead to higher disposable income and consumption. Overall, improving productivity in the indigenous sector has the potential to raise living standards substantially.

While already well known, the analysis here reaffirms the importance of multinational corporations for the Irish economy in terms of employment, income and corporation tax revenues. They are a tremendous positive for the Irish economy, and efforts to retain and expand FDI should continue. Equally, the heavy reliance on multinational corporations for employment and public fiscal balances under uncertain global conditions means that there is an inherent vulnerability for the Irish economy. Strategies to mitigate that risk should centre around developing and supporting the contribution of domestically owned firms to the economy.

There are, and will always be, risks and uncertainties facing the Irish economy from outside. Irrespective of what those risks may be, increasing the productivity of our indigenous firms will help increase the resilience of the economy and society. Policies to improve the productive capacity of the economy – investments in education, public infrastructure, research and development – hold out the potential to increase national income and thereby provide the scope to improve social outcomes.

CHAPTER 1
Introduction

Ireland's economic growth experience has fluctuated widely over recent decades. The Celtic Tiger era was characterised by rapid growth, followed by a contractionary period which was both precipitated and exacerbated by the 2008 Global Financial Crisis. After a period of relative stability from 2015 to 2020, the economy was hit by the COVID-19 pandemic and the energy crisis following the Russian invasion of Ukraine. Understanding the long-run growth dynamics within these cycles is critical for informed policy discussion and strategic decisions on the future direction of the economy.

The objective of this *Economic Outlook* is to contribute to that discussion, providing detailed macroeconomic scenarios outlining the potential future evolution of the economy. We are not attempting to forecast economic growth, employment or government balances over the medium term. That is a futile exercise. External 'shocks', such as the COVID-19 pandemic or the recent energy crisis, are impossible to predict but can have profound and long-lasting impacts across the economy and society. Our economic history also shows that missteps can arise from within, with enduring impacts on the provision of infrastructure and services. The *Economic Outlook* is intended to guide analysis and policy discussion surrounding the implications of the economy's current trajectory. We have a growing and ageing population, with ongoing consequences for government revenues, welfare and pensions, housing, infrastructure, etc. In this report, we focus primarily on the economy, but the Economic and Social Research Institute (ESRI) will publish a series of accompanying themed reports on topics such as healthcare provision, housing, and climate change. These reports offer the opportunity to examine some sectoral issues in greater detail, whereas the current report focuses on the overall macroeconomy.

While our baseline projection may be the centre of attention, it represents our assessment assuming nothing major goes 'wrong', i.e., no large economic shocks. In practice, such an outcome is unlikely, as shocks and threats

to the economy continually arise. A key contribution of the *Economic Outlook* is to investigate the implications of major risks and opportunities facing the economy. The evolving stance of US trade policy and the geopolitical uncertainty in Europe, the Middle East and beyond will potentially have substantial impacts on the economy. We investigate those issues by examining scenarios related to deglobalisation and the potential downsizing by multinational firms. The National Competitiveness and Productivity Council recently highlighted the rising cost of doing business in Ireland and the need to enhance productivity, issues that we investigate through separate scenarios. Similar to the baseline, these scenarios are not forecasts; rather, they illustrate how the associated impacts percolate across the economy, affecting public finances and the standard of living.

A macroeconomic model is an essential tool to undertake such analyses of the Irish economy. The model we use is the Ireland Environment, Energy and Economy (I3E), which has been developed over several years in the ESRI. The I3E model is a small open economy, single-country intertemporal computable general equilibrium (CGE) model with a detailed representation of sectors and households, multiple commodities, as well as government, enterprise and the rest of the world accounts. The I3E model pays particular focus on the relationship between the economy, energy inputs, and environmental impacts in the form of greenhouse gas (GHG) emissions, a functionality not available in other macroeconomic models and that will be applied in the aforementioned themed reports.

The remainder of the report is structured as follows. In Chapter 2, we reflect on the economy over the last ten years in order to set the scene for our forward-looking projections. As will be seen, in spite of a number of significant economic shocks over this period, the economy registered significant growth. In Chapter 3, we first present our baseline scenario (the 'no shock' scenario) and then provide the projected results of four alternative scenarios to assess how economic shocks (both positive and negative) would likely impact the path of the economy in the decade ahead. The details of the I3E model and its data sources and calibration procedure are provided in Appendices A and B. Appendix C presents the annual projection results of our four alternative scenarios.

As referred to above, the main reason for undertaking a forward-looking exercise of this type is to prompt and facilitate discussion on what policies need to be implemented now so that potential negative events can be mitigated and so that advantage can be taken of possible opportunities. With this in mind, Chapter 4 concludes with our reflections on what the results of the scenarios imply for policy in the coming years.

CHAPTER 2

Development of the Irish economy, 2015–2024

2.1 SUSTAINED GROWTH IN DOMESTIC ECONOMY DESPITE REPEATED SHOCKS

The primary objective of this *Economic Outlook* is to look ahead to the next five to ten years and to project how the economy might evolve under various assumptions. But before looking ahead, it is important to look back and to assess how the economy evolved over the last ten years. In this chapter, we undertake this reflection. Our aim is to document the broad trends in macroeconomic variables such as national income and employment, but also to see how the structure of the economy has changed, or not.

A high-level and succinct summary of the last ten years would read as follows. The period 2015–2024 has seen sustained economic growth in Ireland, with measures such as modified gross national income (GNI*) increasing by close to 40 per cent over ten years. Real consumption per capita and a variety of measures of income per capita have seen strong growth. Employment growth has averaged 3.4 per cent per annum, while the unemployment rate has trended downwards over the period. Over the period as a whole, inflation has been in line with the target rate of 2 per cent, and real wages have increased. The headline figures show that government debt has declined and large general government surpluses have been generated despite substantial increases in public expenditure in recent years.

In any period, rates of growth such as those just mentioned would be viewed as impressive, but it is important to note that this economic progress has occurred despite three significant economic shocks and what might be termed a significant economic disruption. First, in the period 2016–2019, the exit of the United Kingdom from the European Union led to uncertainty about future trade relations between Ireland and the UK. Second, the onset of the COVID-19 pandemic in 2020 had a profound impact on society and on

the economy, with consumption affected in 2020 and 2021 by public health restrictions. Third, high inflation in materials and energy costs, which then fed into more generalised inflation in 2022 and 2023, represented a shock to both households and firms. This was followed by interest rate increases, which put further pressure on households and businesses. As regards the significant economic disruption, we refer here to the Trump administration's moves on tariffs. This has had a direct effect on Irish businesses, many of which are now subject to a 15 per cent tariff. However, the broader impact of Trump's trade policies on global trade and the global economy has also led to concerns and uncertainty about the future path of global growth. Given the well-understood globalised nature of Ireland's economy, the term 'disruption' seems appropriate, although the full extent of the Trump administration's intent and the implications are still evolving.

In addition, this decadal period should be considered in the context of the economic crisis that preceded it. Ireland formally exited its bailout programme in late 2013, but many of the difficulties of that period persisted. For example, FitzGerald and McQuinn (2024) shows that the investment rate, when appropriately adjusted for multinational distortions, fell sharply during the crisis period and did not recover to its pre-crisis level.

Dealing with distortions in the national accounts caused by the activities of large multinational firms has become increasingly important over the period. For example, the release of the national accounts for 2015 saw gross domestic product (GDP) growth of 26 per cent recorded, with the large shift attributable to firm-specific onshoring of intellectual property. Large, volatile flows of investment continued in the years that followed, while distortions to export and import figures further complicated the headline figures. As a result, we rely on several modified measures to more accurately capture the portion of the economy directly related to economic activity occurring in Ireland.

A further consequence of the activities of large multinational firms has been a growing dependence of the State on corporate tax revenue from a small number of firms. The latter part of the period has seen repeated warnings of the windfall nature of these receipts and the dangers of funding expenditure from such an unstable source of revenue.

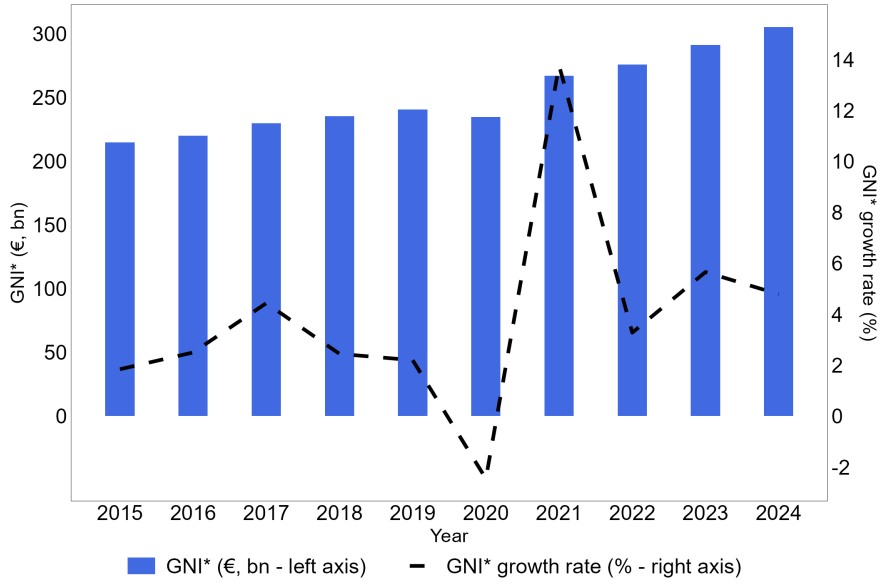
2.2 HEADLINE MEASURES

While many international comparisons continue to rely on GDP as a measure of economic activity in Ireland, the weaknesses in GDP as a measure of economic growth in Ireland have been well-documented. FitzGerald (2015) describes various issues arising from the treatment of patents in the pharmaceutical sector, the location of profits in multinational firms, the income of redomiciled public limited companies (PLCs), the assets of aircraft leasing firms, and exports that are produced and sold abroad.

Domestic analyses of the Irish economy now rely primarily on modified measures. Two such modified measures show that the economy has grown by approximately 40 per cent in real terms since 2015.

First, GNI*[1] has grown by 42 per cent in the decade. With the exception of the COVID-19 period, Figure 2.1 shows that growth in GNI* has been consistent, with slightly higher growth rates observed in the period since the pandemic.

FIGURE 2.1: MODIFIED GROSS NATIONAL INCOME AT CONSTANT (2023) PRICES, 2015–2024

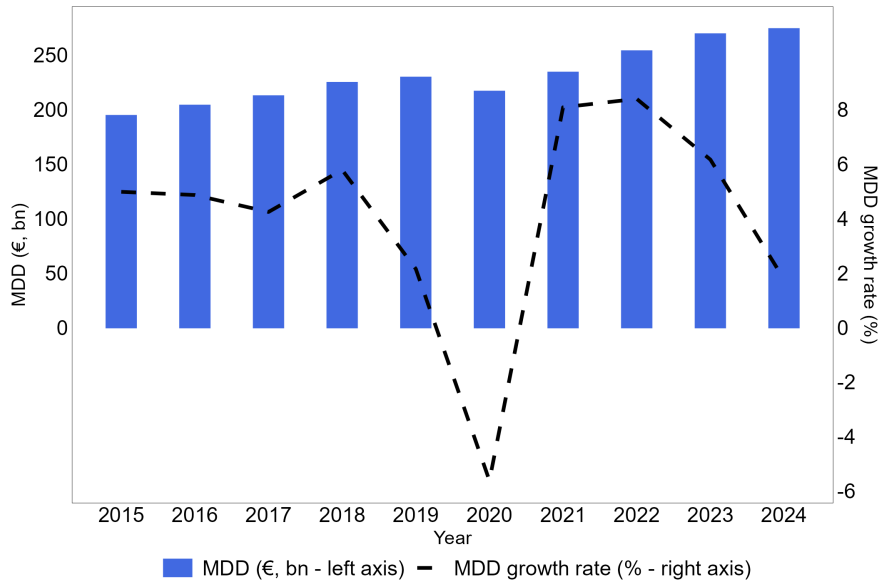


Source: CSO

[1] GNI* removes three elements of multinational activity from GDP, namely depreciation on intellectual property, depreciation on aircraft leasing assets, and the net factor income of redomiciled PLCs. For more information, see CSO (2024f).

Modified domestic demand (MDD) is an alternative headline measure that focuses explicitly on the domestic economy. It consists of consumption, modified investment, and expenditure by the government on goods and services. Figure 2.2 shows that the performance of MDD reflects a domestic economy that has grown strongly in the past decade, with cumulative growth equal to 40 per cent. The exception to this trend was in 2020, when a sharp drop in consumption led to a decline in MDD overall.

FIGURE 2.2: MODIFIED DOMESTIC DEMAND AT CONSTANT (2023) PRICES, 2015–2024

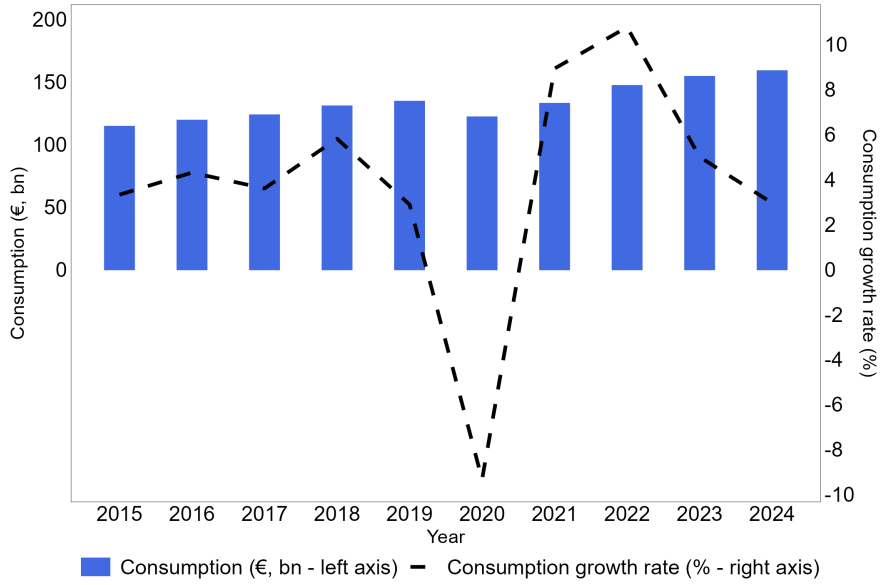


Source: CSO

2.3 COMPONENTS OF NATIONAL INCOME

Real consumption has increased by 39 per cent over the decade. Figure 2.3 contrasts the steady growth in the period before COVID-19 with more volatile year-on-year changes since the onset of the pandemic. However, the speed at which the recovery occurred in the level of consumption in the aftermath of the pandemic is notable, given the level of disruption to consumption patterns that occurred.

FIGURE 2.3: CONSUMPTION EXPENDITURE AT CONSTANT (2023) PRICES, 2015–2024

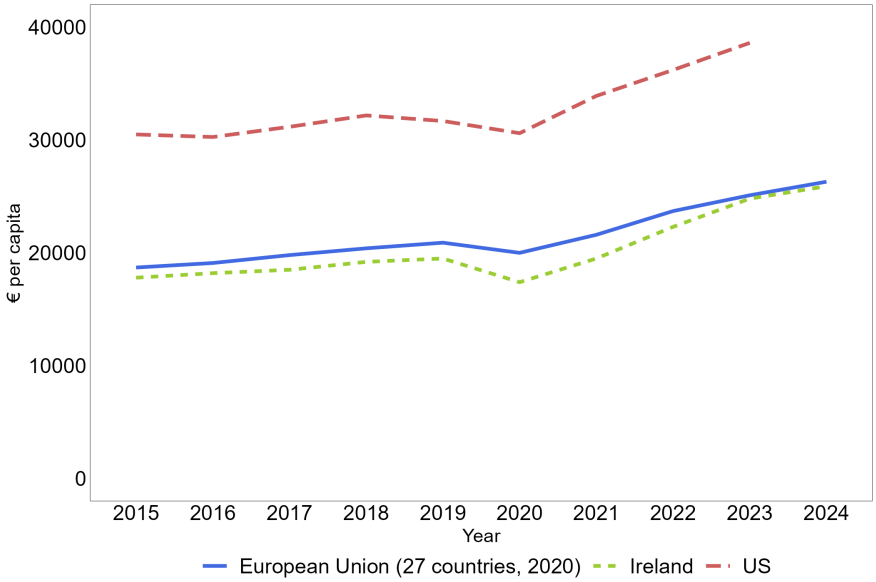


Source: CSO

On a per capita basis, Irish consumption is close to the European Union average when adjustments are made for the relative prices of goods and services in different jurisdictions. Figure 2.4 presents consumption per capita on a purchasing power parity basis, showing that consumption is substantially lower in Ireland and Europe on average than in the US.

Adjusting for the relative prices in Ireland substantively reframes any comparison between Ireland and other European countries. Irish consumption per capita in 2024 was the fourth-highest in the EU in nominal terms, but correcting for purchasing power parity puts Ireland in tenth place.

FIGURE 2.4: ACTUAL INDIVIDUAL CONSUMPTION AT PURCHASING POWER PARITY, 2015–2024

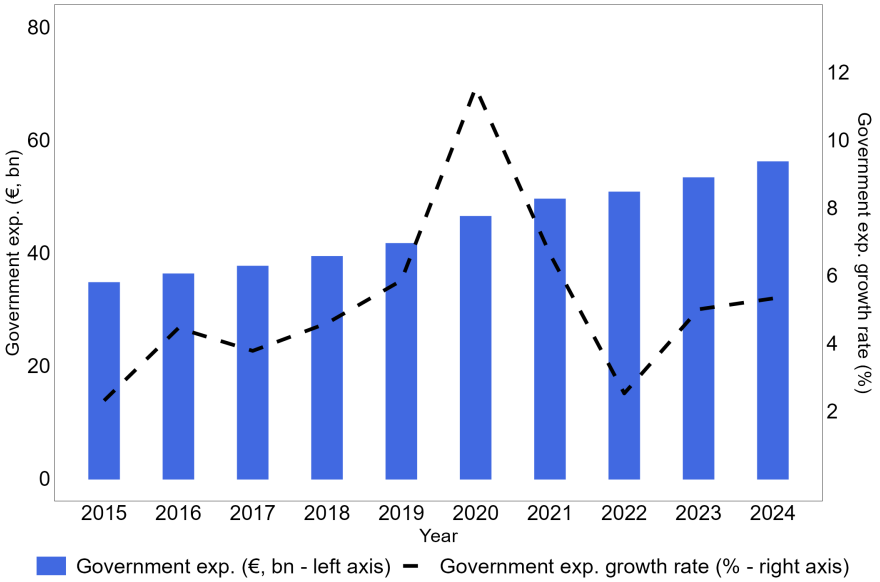


Source: Eurostat

As well as the importance of accounting for price differences in presenting such a comparison, it should be noted that Ireland has experienced much higher population growth than the European average since 2015. The Irish population has grown almost ten times faster than the EU population as a whole over the period, with an average annual growth rate of 1.5 per cent. Notwithstanding this population growth, consumption per capita growth in Ireland has tracked the EU average.

Government expenditure on current goods and services has also increased steadily year-on-year since 2015, with cumulative growth of 62 per cent. Figure 2.5 shows the development of this measure. This measure of government expenditure differs from total government expenditure, which would include investment expenditure and transfers.

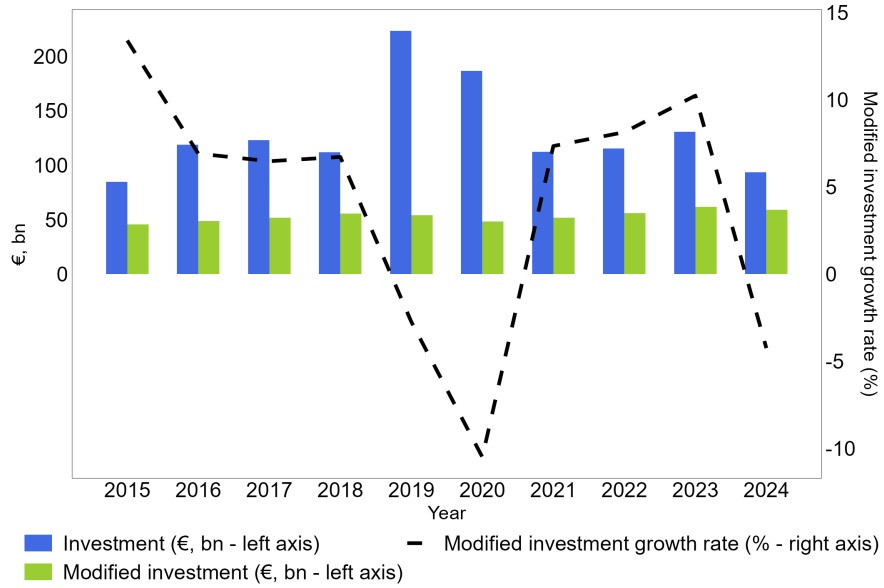
FIGURE 2.5: GOVERNMENT EXPENDITURE ON CURRENT GOODS AND SERVICES AT CONSTANT PRICES, 2015–2024



Source: CSO

As referenced above, investment statistics in Ireland are highly distorted by the activities of multinational firms. As a result, a modified investment indicator has been developed that focuses on increases to the capital stock that relate directly to production occurring in Ireland. Figure 2.6 contrasts the volatility in the path of headline investment since 2015 with the steadier growth in modified investment. The modified investment indicator has seen cumulative growth of 30 per cent.

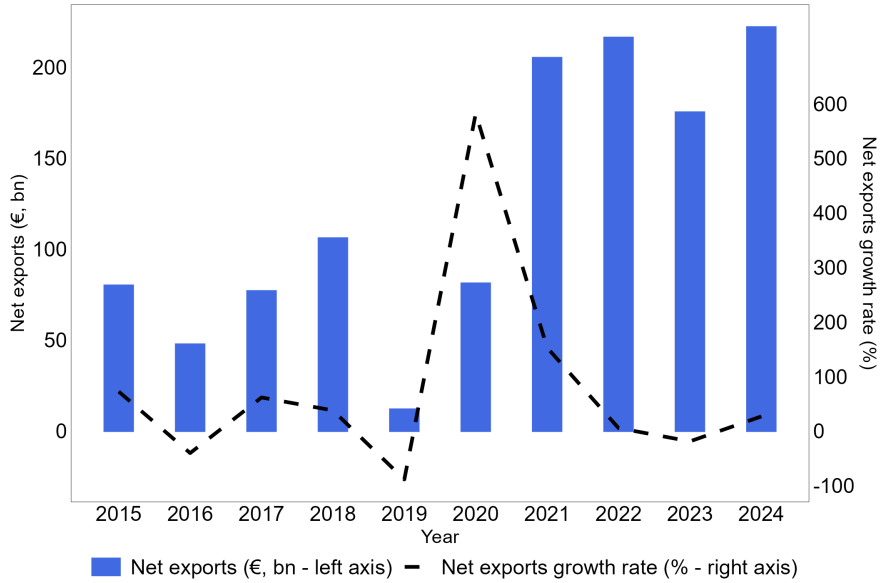
FIGURE 2.6: INVESTMENT AND MODIFIED INVESTMENT AT CONSTANT PRICES, 2015–2024



Source: CSO

Moving beyond the domestic economy, exports and imports have increased notably over the period. Figure 2.7 shows that there was a clear level shift in net exports after 2020. Having moved in a range between c.€50bn and c.€100bn in the period 2015–2019, net exports have averaged over €200bn since 2021. This increase has been driven by exports rather than by imports, with exports of computer services growing particularly quickly.

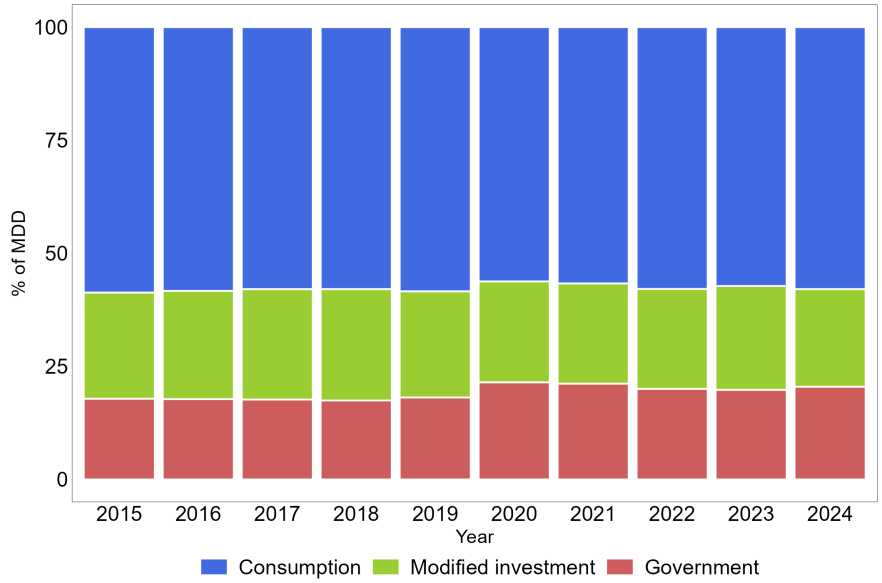
FIGURE 2.7: NET EXPORTS AT CONSTANT PRICES, 2015–2024



Source: CSO

In summary, each of the components of national income from an expenditure perspective has grown since 2015, with the exception of the COVID-19 period. Figure 2.8 shows the evolution of the share of MDD from each of the component parts. The share of MDD coming from consumption was stable at 58 per cent over the period. However, the share from modified investment declined by 2 per cent over the decade to 21.6 per cent in 2024, while the share from government expenditure increased by 3 per cent over the decade to 20.5 per cent in 2024. This shift between government expenditure on goods and services and modified investment, although modest, is noteworthy. Given investment needs such as in public capital and in domestic firms (where productivity levels lag behind the foreign-owned sector), it might have been expected that modified investment would have increased its share.

FIGURE 2.8: COMPONENTS OF MDD (SHARE OF TOTAL), 2015–2024



Source: CSO

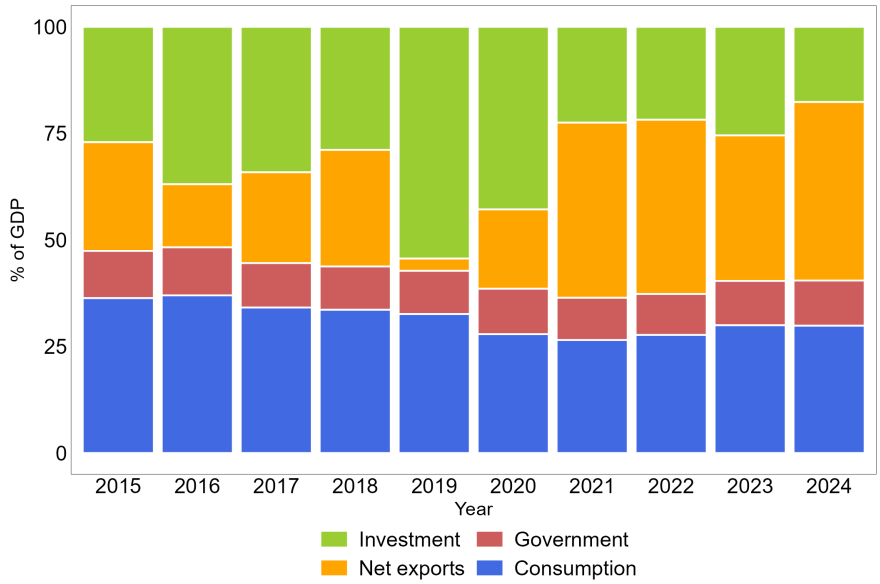
The evolution of the components of GDP, meanwhile, highlights the scale of growth in net exports and investment, in particular from 2021 onwards. Figure 2.9 shows that the share of GDP coming from consumption and government expenditure declined, despite robust growth in both. As well as the increase in the share of GDP attributable to net exports and investment, the volatility in these series reflects the role of distortions caused by the activities of multinational firms.

Figures 2.8 and 2.9 provide different perspectives on the components of economic output over the last decade based on official national accounts data. While net exports are not present in the MDD numbers in Figure 2.8, these exports underpin the economic activity which allows for the components of MDD to grow. In an article related to this point, a further perspective on the composition of economic activity is provided by FitzGerald (2023). Drawing on both the National Accounts and the Institutional Sector Accounts, FitzGerald sets out to quantify the relative contributions of the domestic sector and the multinational enterprise (MNE) sector to economic output, measured by net national product (NNP).

FitzGerald (2023) notes that foreign MNEs contribute to NNP through the wage bill and through corporate tax paid. Through his calculations, he

estimates that 29 per cent of national income arose from the MNE sector in 2021, an increase from 22 per cent in 2013. FitzGerald also estimates that a third of the wages paid in the Irish economy in 2021 came from MNEs.

FIGURE 2.9: COMPONENTS OF GDP (SHARE OF TOTAL), 2015–2024



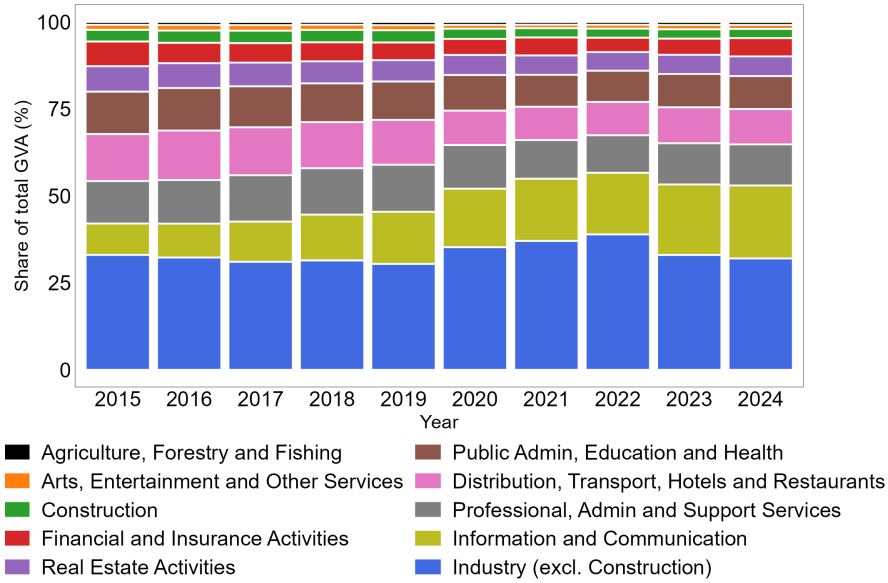
Source: CSO

2.4 SECTORAL STRUCTURE OF EMPLOYMENT AND OUTPUT

The period 2015–2024 has been characterised by a contrast between sweeping change in the sectoral structure of output and the relative stability of the sectoral structure of employment. In addition, non-Irish workers have played an increasing role in employment growth.

Figure 2.10 shows the share of total gross value added (GVA) from each sector. The increased importance of two sectors is clear, namely 'Information and communication' and 'Industry (excluding construction)', which primarily consists of manufacturing. Together, they now comprise 53 per cent of headline GVA, a significant increase on the 42 per cent share in 2015. As a result, the remaining sectors have been compressed as a share of the total despite experiencing positive growth in level terms.

FIGURE 2.10: GROSS VALUE ADDED BY SECTOR (SHARE OF TOTAL), 2015–2024



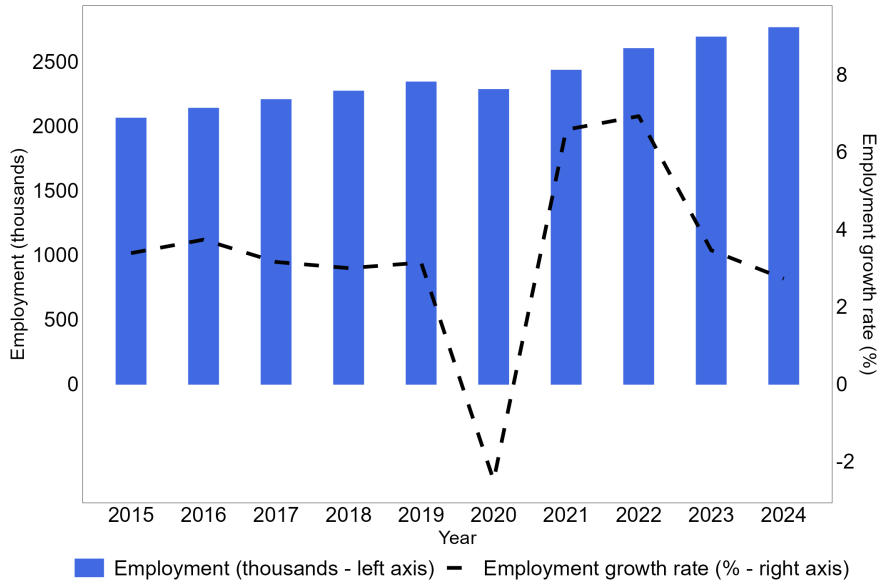
Source: CSO

Figure 2.11 shows the trend in employment over the period 2015 to 2024, and the strong rate of growth is notable. The total number employed in 2015 was 2.05 million; by 2024, this had reached 2.76 million, an increase of 34.6 per cent. As is well-recorded, the upward trajectory in employment was halted during the COVID-19 period and fell from 2.43 million in 2019 to 2.28 million in 2020, a fall of 2.5 per cent. At the time, concerns were expressed about the capacity of the labour market to bounce back, with fears that scarring effects could linger, whereby people who had lost jobs or who experienced a delayed entry into the labour force would find difficulties finding employment. This turned out to be largely unfounded. Employment growth returned in 2022 at a rate of 6.6 per cent. Employment has continued to grow. Figure 2.11 shows how total employment reached 2.76 million in 2024, and the latest data has confirmed that employment is now over 2.8 million (Labour Force Survey, Quarter 2, 2025).

In order to put Ireland's rate of employment growth into context, it is useful to draw on Eurostat data on comparing employment growth over time. Based on data from 2014 to 2024, Eurostat reports that Ireland had the second-highest rate of employment growth over the period (38.9 per cent) across EU countries. Only Malta had a higher rate at 63.1 per cent. For the EU as a whole, employment grew by 11.5 per cent between 2014 and 2023; the

corresponding figure for the euro area was 12.5 per cent. In this context, the scale of employment growth in Ireland over the last decade is striking.

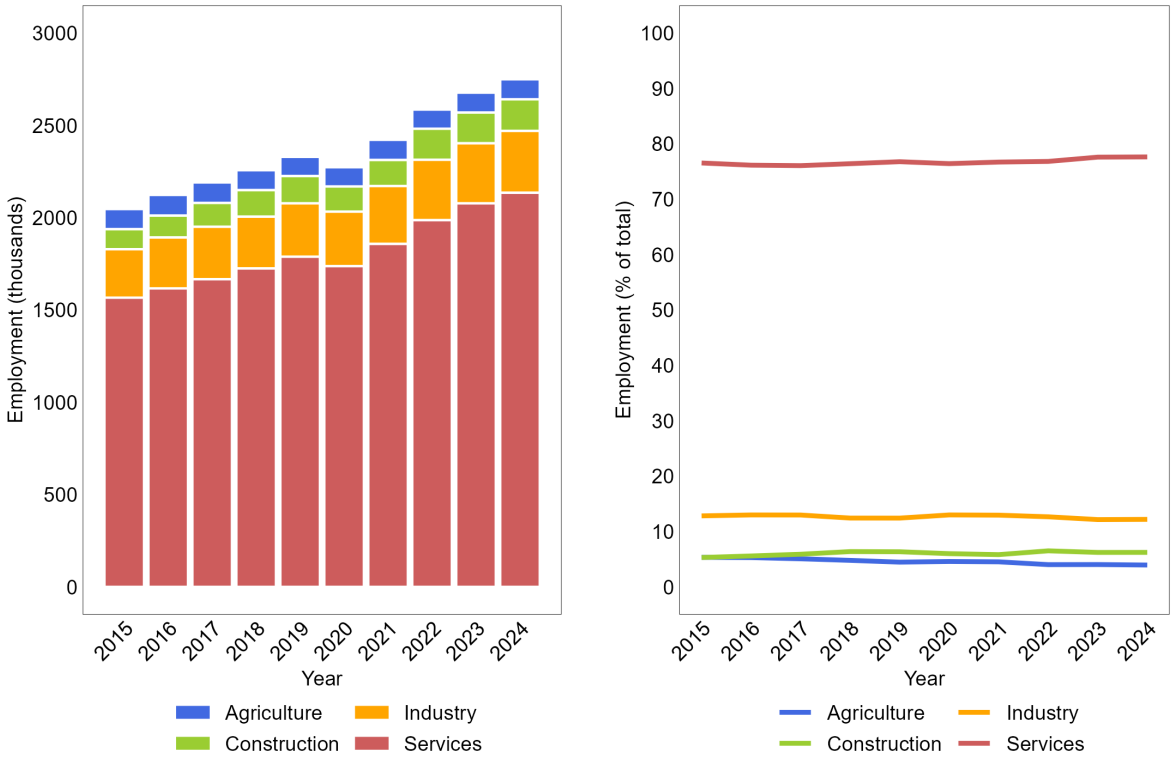
FIGURE 2.11: EMPLOYMENT, 2015–2024



Source: CSO

Given the rapid increase in employment over the decade, it might be expected that shifts in the structure of employment across sectors would also be observed. Figure 2.12 shows the proportionate breakdown of total employment across sectors, and it can be seen that such shifts did not occur. In fact, there is a remarkable constancy in the shares of employees across the sectors shown. In 2015, 76.2 per cent of people employed in Ireland were working in services. Fast-forward to 2024, and we find that 77.4 per cent were employed in this sector. Also in 2024, 12.2 per cent were working in industry, 6.2 per cent were in construction, and 3.9 per cent were employed in agriculture, forestry and fishing. Referring back to the discussion on the structure of the economy based on GVA, it will be recalled that industry made up over 30 per cent of the economy since 2015 (see Figure 2.10). With 12.2 per cent of employees and over 30 per cent of GVA, the productivity advantage in industry is clear (although complicated by the presence of MNEs).

FIGURE 2.12: EMPLOYMENT BY BROAD SECTORS, 2015–2024



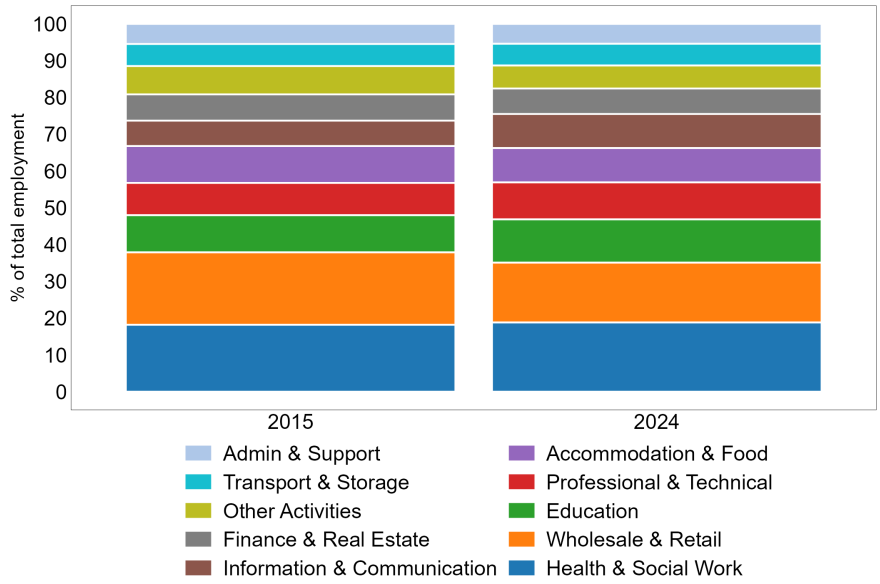
(a) Employment **(b) Share of total (%)**

Although the structure of employment across services, industry, etc. has remained constant over the last decade, the question arises of whether the structure within the dominant sector – services – has changed. This issue is explored in Figure 2.13, where the breakdown in services across 11 sub-sectors is shown. As with Figure 2.12, the most striking point is relative constancy over time as opposed to change. The sub-sector showing the largest proportionate change in absolute terms is 'Wholesale and retail trade, repair of motor vehicles and motorcycles' – its share fell from 18.7 per cent in 2025 to 15.1 per cent in 2024. Much of this drop occurred after 2017 (in that year, the sector still had a share of over 18 per cent). While it is beyond the scope of this report to be definitive on the reason for the decline, it seems likely that the shifting of retail online might have contributed.

The sub-sector with the second largest proportionate change over the decade is 'Information and communication', increasing from 6.5 per cent in 2015 to 8.6 per cent in 2024. This is followed by 'Education' (increasing from 9.5 per

cent to 10.9 per cent over the decade). After 'Other NACE activities', public administration and defence ranks next in terms of absolute change, increasing from 5.9 per cent to 7 per cent. From the figure, it appears that 'Human health and social work activities' was very stable over the period (17.1 per cent in 2015 and 17.5 per cent in 2024). However, this obscures some movement within the period because health's proportion declined to 16.4 per cent in 2019 before climbing back to 17.5 per cent in 2024. Combining health, education and public administration, a mild upward movement in the public sector share is evident, especially from 2019.

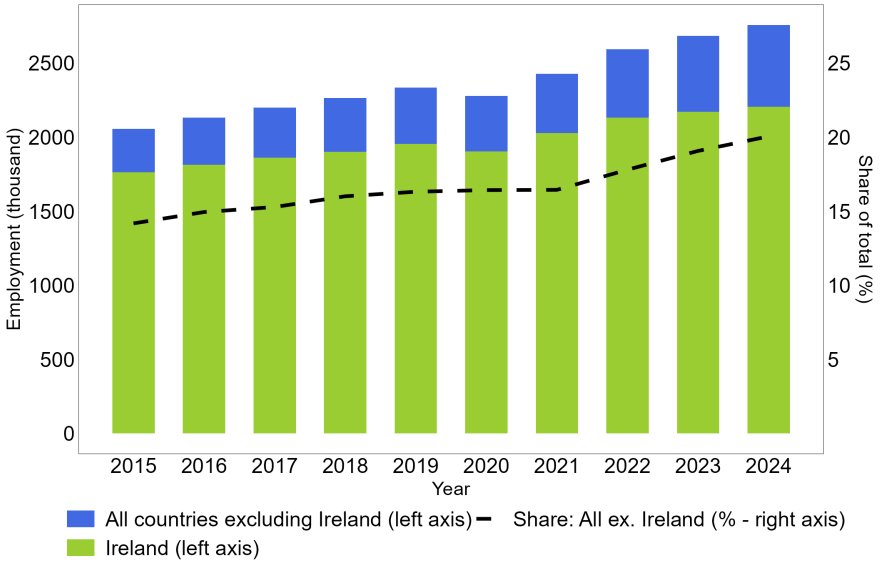
FIGURE 2.13: EMPLOYMENT IN SERVICES SECTORS – SHARE OF TOTAL, 2015 AND 2024



Source: CSO

Figure 2.14 looks at another dimension of the increase in employment over the last decade, namely, the increasing proportion of migrants in employment. In 2014, 14.2 per cent of people employed were non-Irish, and this rose to 20.1 per cent by 2024. Another way to think about the increasing importance of migrants in Ireland's workforce is to note how total employment grew by just over 34 per cent over the decade, but the number of migrants employed grew by 97 per cent (from 281,000 in 2015 to 552,000 in 2024). We should also note that the proportion of women in the workforce also rose, from 45.7 per cent in 2015 to 47.2 per cent in 2024.

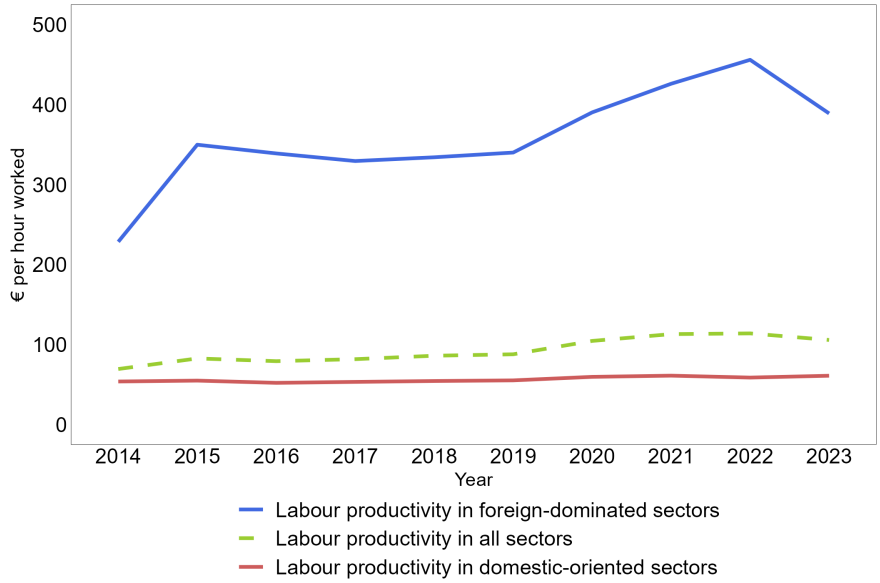
FIGURE 2.14: EMPLOYMENT BY CITIZENSHIP/NATIONALITY, 2015–2024



Source: CSO

Figure 2.15 considers one further issue under employment, and this is productivity. The lines in the figure show output per hour worked at constant prices from 2014 through 2023 (not 2024 as in other figures due to data availability) for the foreign- and domestic-dominated sectors and for the economy in total. In the case of the domestic sector, this is subdivided into all sub-sectors and those with a market orientation, but the values are very similar. The main points from the figure are the substantially higher rates of productivity in the foreign sector compared to the domestic sector, and also the step-wise changes in the foreign sector. Although all of the other figures in this chapter start in 2015, here we start in 2014 so that we capture the step-wise jumps between 2014 and 2015, which were likely associated with accounting changes as opposed to actual changes in output per hour worked, with similar effects later. But even accepting this, there is a clear productivity difference between the foreign and domestic-dominated parts of the Irish economy, which is important for understanding the structure of the economy and also for identifying policies which can boost overall productivity.

FIGURE 2.15: LABOUR PRODUCTIVITY BY GROUP OF SECTORS, 2014–2023

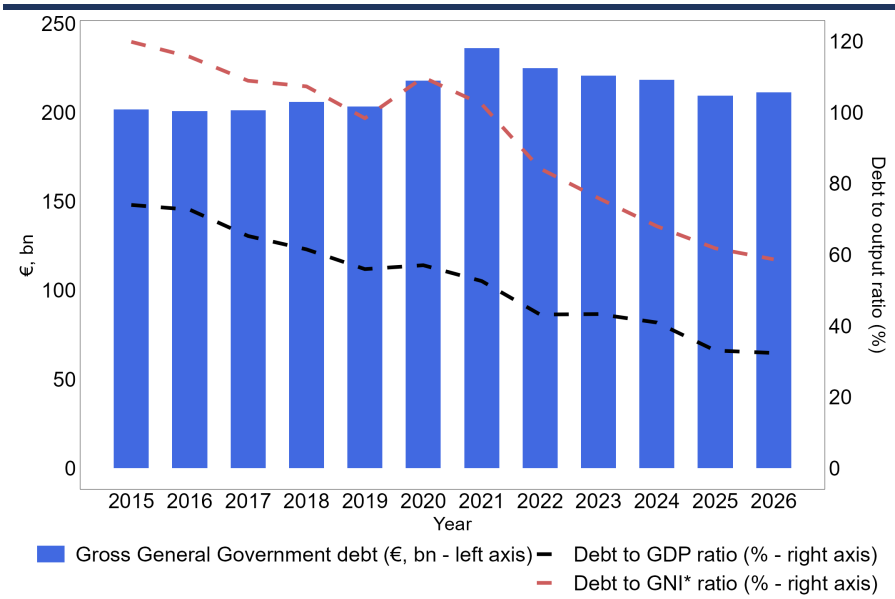


Source: CSO

2.5 PUBLIC FINANCES

Figure 2.16 provides a very broad overview of trends in the public finances between 2015 and 2024 by focusing on general government debt, with projected outcomes for 2025 and 2026 included. As can be seen, debt levels had been broadly constant in the run-up to the pandemic and so were falling as percentages of both GDP and GNI*. The pandemic saw a spike in public expenditure and a fall in revenues, with the consequent surge in public borrowing around 2020 and 2021. Since the peak in 2021, the stock of debt has declined. General government debt is now 32 per cent of GDP and 59 per cent of GNI*. Judged against comparator countries or against Ireland's fiscal history, these figures point to overall health in the public finances, but with a major caveat.

FIGURE 2.16: GROSS GENERAL GOVERNMENT DEBT, 2015–2024

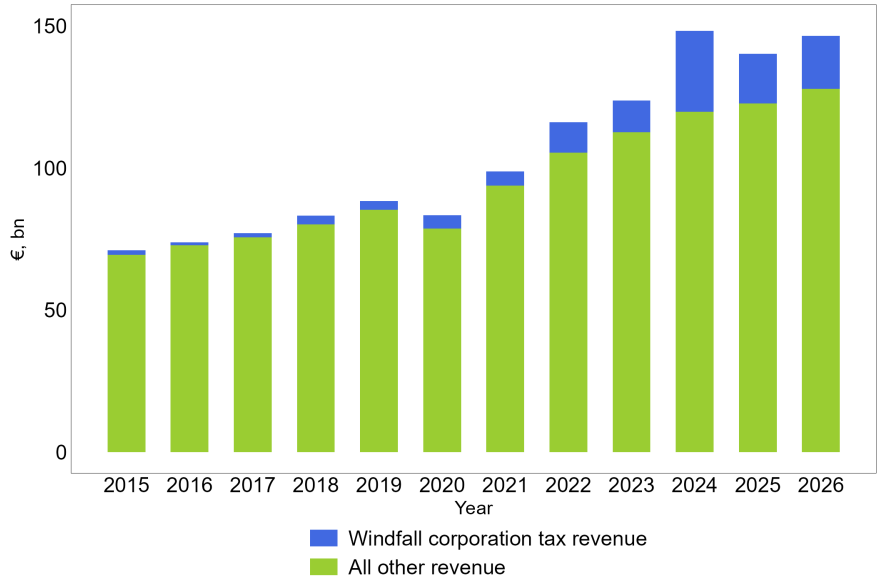


Source: CSO and Department of Finance

The caveat is shown in Figure 2.17, which presents total tax revenues from 2014 to (estimated and projected values for) 2025 and 2026. The blue bars from 2015 show 'windfall' corporate tax revenues, which come from two sources. The first source is the revenue which accrued from the decision of the Court of Justice of the European Union in the Apple case. This amounted to €14 billion and was counted in the 2024 receipts. The second source is receipts, which are part of total corporate tax receipts but which the Department of Finance views as not being linked to the domestic economy. These windfall receipts first appeared in 2015 at the relatively modest level of €1.7 billion. By 2020, the figure had reached €4.7 billion, and it is projected to climb to €18.7 billion in 2026. If the projected outcomes are realised in 2026, windfall revenues will make up almost 13 per cent of total revenue.

Although the government has run a budget surplus since the end of the pandemic, the surplus is based on the windfall receipts. Taking 2026 as an example, while a headline general government surplus of €5.1 billion is projected (1.4 per cent of GNI*), a deficit of €13.5 billion (3.6 per cent of GNI*) would appear if the windfall receipts disappeared. In this way, the true health of the public finances is exaggerated, and there is a fundamental vulnerability present.

FIGURE 2.17: REVENUE FROM WINDFALL CORPORATION TAXES, 2015–2026



Source: Department of Finance (2021–2026), Irish Fiscal Advisory Council (2015–2020)

2.6 CONCLUSION

This look-back over the last ten years has revealed a number of points. In spite of the various shocks, the economy has grown strongly, with indicators such as GNI* and MDD growing by about 40 per cent over the period. An examination of the components of GDP shows how net exports accounted for an increased share after 2021. Although net exports do not contribute directly to modified domestic demand, the employment and corporate tax supported by exports would have fed into private consumption and government consumption, both of which grew strongly over the decade. The increasing importance of net exports is also seen in a shift in the sectoral composition of the economy by gross value added, with the combined share of industry and information and communications technology (ICT) growing.

Despite the rapid growth in output, the shares of the components in modified domestic demand remained broadly constant. To the extent that there was a shift, this was between government consumption (which saw a modest rise) and modified investment (which saw a modest fall). Employment also grew strongly over the period, with an increasing share of migrants in the workforce.

By many measures, the Irish economy from 2015 to 2024 can be viewed as a success story, but it is important to recognise the failures and vulnerabilities too. Although housing did not feature in our analysis above, the ongoing failure to meet targets on housing supply is well-documented, as are the broader issues around the adequacy of public infrastructure (e.g., IFAC, 2024). An ongoing failure to make sufficient progress towards our 2030 climate objectives should also be noted. We drew attention to the possible over-reliance on windfall corporation taxes above, and this is a serious potential vulnerability. Finally, the ongoing gap in productivity between the foreign and domestic sectors raises questions about the balance between the two for the long-term sustainability of the economic wellbeing of the country.

CHAPTER 3

Baseline and scenario projections 2025–2035

3.1 INTRODUCTION

In this chapter, we present the projected results for the baseline and four scenarios that represent both potential risks and opportunities for the economy. The baseline projection is not a forecast but provides a plausible profile of the growth path for the economy over the medium term to 2035. It is subject to a series of underlying assumptions about the world economy and domestic factors, including demographics and migration. The four scenarios, entitled *Global Slowdown*, *Competitiveness*, *Multinationals* and *Domestic Productivity*, examine deviations from the baseline, each with a different set of underlying assumptions, representing potential opportunities and challenges facing the economy. Table 3.1 provides a brief overview of the assumptions underlying each scenario, with each explained in greater detail in the following subsections.

The first three scenarios have adverse effects on the Irish economy. Although the magnitudes of the shocks on key economic indicators differ in these scenarios, the similarities in the results stem from the current multinational-dominated, export-oriented nature of the Irish economy. Any negative shock affecting these two pillars on which the Irish economy has relied over the last decade, especially during and after the COVID-19 pandemic, would have significant repercussions for the domestic economy. The current global economic context, geopolitical risks and pivotal changes in the US trade and industry policies raise concerns about the potential realisation of the risks considered in these three scenarios. Predicting whether such shocks will arise, their timing, and their precise scale is impossible; however, making the economy more resilient to such shocks is possible. In this respect, our fourth scenario examines how improving domestic productivity leads to increased growth, more jobs and higher wages.

TABLE 3.1: POLICY SCENARIOS

Scenario	Motivation	Implementation
Baseline		Economy evolves under its current structure with no shocks
Global Slowdown	Exploring the implications of a global trade shock due to the pivotal change in the US tariff policy	Gradual reduction in export demand (reaching 5% in 2030)
Competitiveness	Understanding the effects of a competitiveness loss vis-à-vis our trade partners	Gradual reductions in both real per capita wage income abroad and world prices of non-energy commodities (reaching 5% in 2030)
Multinationals	Quantifying the implications of employment reduction in two major foreign-owned-dominated sectors	Gradual reduction in employment in the pharma and ICT sectors (reaching 10% in 2030)
Domestic Productivity	Examining the effects of gradually narrowing the productivity gap between foreign- and Irish-owned private sector firms	Gradually increasing additional capital and labour productivity growth between 2026 and 2035 among Irish-owned private sector firms (reaching 0.5% per annum in 2030)

Full details of the model underpinning our analysis are provided in Appendices A and B for interested readers. However, before proceeding, we give a broad overview of the methodology applied. The *Economic Outlook* utilises the ESRI's Ireland Environment, Energy and Economy (I3E) model. In a nutshell, the I3E model is a small open economy, single-country intertemporal computable general equilibrium (CGE) model comprising 69 production sectors producing 67 commodities and 10 households representing heterogeneity in the residential sector by area of residence (urban and rural) and disposable income. The model also comprises the government, which collects taxes and redistributes income through welfare payments, and the rest of the world, to (from) which Ireland exports its outputs (imports commodities).

3.2 BASELINE PROJECTION

The baseline can be thought of as a possible trajectory for the economy in a business-as-usual, no-shocks setting, subject to the underlying assumptions, as outlined below.[2] With the baseline in place, it is then possible to investigate the risks and opportunities potentially facing the economy by estimating the extent to which shocks lead the economy to deviate from the baseline. In particular, we focus on scenarios related to global slowdown, competitiveness, and productivity.

The baseline projection reflects the potential implications of global economic uncertainty due to recent changes in US tariff policy. In April 2025, the US began imposing tariffs on all imported goods from all trade partners, ranging from 10 per cent to 67 per cent. As part of the US–EU deal reached in July 2025, the tariff rate for imports of cars, pharmaceuticals, semiconductors and beverages from the EU to the US was set at 15 per cent (EC, 2025). The immediate implication was likely to be a decline in global economic activity, following the experience of earlier trade wars and curtailments of free trade. Some commentators have forecast a relatively significant negative impact for Ireland, but the channels of impact are nuanced. A trade war between the US and China would have overall manageable costs for Europe, but countries that export more to the US will be hit harder (Hinz et al., 2025). While the US market represents 5.8 per cent of Europe's total exports, it is 11.6 per cent for Ireland, dominated by pharma and beverage products. CBI (2025b) have already suggested that the impacts of the US tariffs on the Irish economy will be moderately low overall, but concentrated in the multinational-dominated sectors. With the I3E model differentiating between 69 sectors producing 67 commodities, the baseline projection incorporates the differing impacts of US tariffs across sectors.

In addition, the I3E baseline incorporates other recent developments affecting the Irish economy, including post-COVID-19 changes in demand, supply and public balances, carbon pricing adjustments (both Emissions Trading System (ETS) and non-ETS sectors), and the ongoing transition of electricity production from fossil fuels to renewable resources.

[2] Appendix B provides more technical details about the calibration and baseline.

TABLE 3.2: BASELINE PROJECTION – MACROECONOMIC ENVIRONMENT

Variable	2026–2030	2031–2035
Real GDP	2.4	2.2
Real GNI*	2.3	2.1
Modified Domestic Demand	2.3	2.1
Private Consumption	2.2	2.1
Government Consumption	2.2	2.1
Modified Investment	2.6	2.3
Exports	2.4	2.2
Imports	2.4	2.2
Trade Balance	2.4	2.2
Trade Balance, % of GDP	20.6	20.5
Disposable Income	2.3	2.2
Contributions to MDD Growth, Consumption	1.3	1.1
Contributions to MDD Growth, Modified Investment	0.7	0.5
Contributions to MDD Growth, Government	0.5	0.4

Notes: The figures are annual average (compound) growth rates (per cent) in the corresponding period for the real values of monetary aggregates and annual averages in the corresponding period for the ratios.

Table 3.2 provides the key macroeconomic aggregates for the baseline projection. The annual average growth rate of gross domestic product (GDP) is projected to be 2.4 per cent between 2026 and 2030, and then 2.2 per cent between 2031 and 2035. Over the first five years, two components of GDP are projected to grow at higher rates than GDP: modified investment[3] (2.6 per cent) and net exports (2.4 per cent). Despite the increase in tariffs on major export commodities, the contribution of net exports is associated with inelastic demand for some export commodities, especially pharma (CBI, 2025b), and due to high levels of contract manufacturing (Barrett et al., 2025).[4] Although the growth rate of disposable income is projected to be quite strong (2.3 per cent), growth in private consumption is slightly lower (2.2 per cent), reflecting the continuation of a high savings rate in the near future (Barrett et al., 2025; CBI, 2025a). In the second half of the forecast horizon (2031–2035), however, disposable income and consumption growth are projected to converge. After a strong growth of 3 per cent in 2026,

[3] As capital in the model is considered as physical capital stock, modified investment is reported rather than total investment, since it purely reflects the additions to the physical capital stock.

[4] In contract manufacturing, an Ireland-based entity contracts the production of a commodity in another country (e.g., in Asia) and sells the commodity in a third country (e.g., in North America) without the commodity ever entering Ireland, but the transaction is recorded as Irish exports.

modified domestic demand (MDD) growth is projected to moderate through to 2035. Private consumption expenditures are projected to account for nearly half of MDD growth, followed by modified investment. The very close growth rates in the key macroeconomic aggregates stem from the balanced growth path assumption of CGE modelling. In the policy scenarios, model outcomes deviate from their baseline levels depending on the shock considered, as explained in greater detail in Appendix A. In the medium- to long-term, the growth rates of all variables converge to the long-term potential economic growth rate.

TABLE 3.3: BASELINE PROJECTION – LABOUR MARKET

Variable	2026–2030	2031–2035
Labour Force	0.9	0.6
Total Employment	0.8	0.6
Real Wage Rate	1.4	1.5
Output per Worker	1.6	1.5
Net Migration, '000	60.3	33.4
Unemployment Rate, % of Labour Force	5.8	5.3

Notes: The figures for Net Migration and Unemployment Rate are annual averages in the corresponding period and annual average (compound) growth rates (per cent) in the corresponding period for the other variables.

The labour market dynamics of the baseline are summarised in Table 3.3. The annual average net migration figure is projected to be 60,300 between 2026 and 2030, 20 per cent lower than the CSO (2024h) M2 assumption.[5] The projected reduction in net migration stems from a lower rate of economic growth than in the last decade, which is associated with slower labour force and employment growth. As a result, the unemployment rate is projected to increase slightly through 2030. Between 2031 and 2035, net migration is projected to decline to approximately 33,400 and real wage rates are expected to grow moderately. The projected reduction in the unemployment rate (from 5.8 per cent to 5.3 per cent) in the early 2030s is the result of a sharp decline in net migration inflows, which reduces labour force growth (from 0.9 per cent to 0.6 per cent) more than the employment growth (0.8 per cent vs 0.6 per cent).

[5] This is the medium migration scenario. Appendix B provides more details about the assumptions.

Despite slower projected economic growth than in the last decade, fiscal indicators suggest that the government is expected to maintain a positive general government balance equal to 0.4 per cent of modified gross national income (GNI*) over the next decade (Table 3.4). However, when windfall corporation tax (CT) collection, assumed to be half of the total corporation tax collection, is deducted from the general balance, the government deficit is projected to reach 7.4 per cent of real GNI*. In the same period, the projections indicate that the debt stock-to-GNI* ratio will be 74.3 per cent, stemming from lower economic performance.

TABLE 3.4: BASELINE PROJECTION – PUBLIC FINANCE

Variable	2026–2030	2031–2035
Revenues	2.3	2.2
Expenditures	2.2	2.1
GGB, % of GNI*	0.4	0.5
GGB (exc. windfall CT), % of GNI*	-7.4	-7.2
Debt Stock, % of GNI*	74.3	72.5

Notes: The figures are annual average (compound) growth rates in the corresponding period for the real values of monetary aggregates and annual averages in the corresponding period for the ratios. GGB stands for General Government Balance, and GGB (excl. windfall CT) stands for General Government Balance excluding windfall Corporation Tax, which is assumed to be half of the total CT collection.

It should be noted that the public expenditure profile along the baseline, and thus in all policy scenarios, does not include potential implications of ageing-related expenditures, climate change-related shocks, the public investment expenditures outlined in the National Development Plan (NDP), and the transfers from the government to the Future Ireland Fund and the Infrastructure, Climate and Nature Fund. Examining the potential public finance implications of ageing-related expenditures requires an analysis with an extensively disaggregated demographic structure, as in the recently published Department of Finance (2025) report. Climate change-related expenditures will be covered in a themed report, and analysing the NDP-related expenditures is beyond the scope of the *Economic Outlook*. As evident in Department of Finance (2025), demographic- and climate-related spending pressures are expected to mainly affect the Irish economy and public finances after 2035, beyond the horizon of this report.

3.3 GLOBAL SLOWDOWN

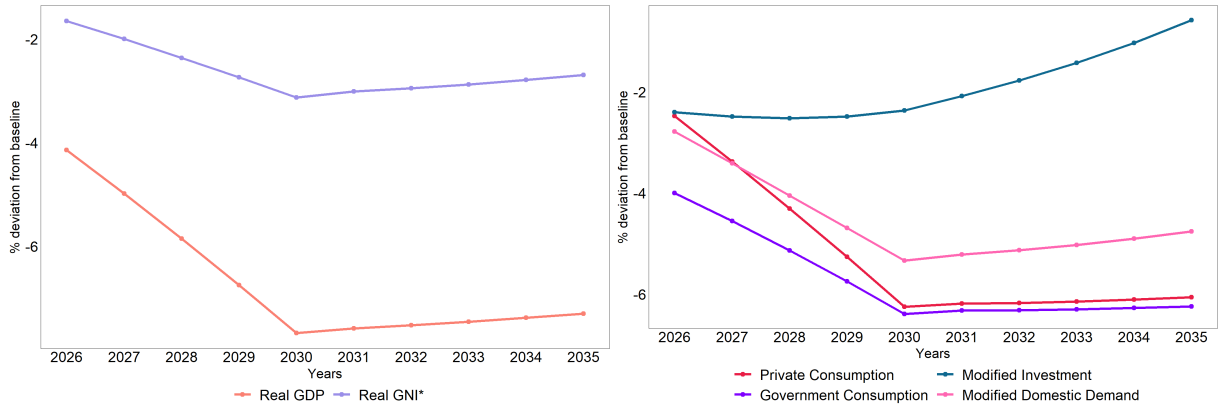
The US administration's actions on trade policy in April 2025, increasing tariffs on all trading partners, marked a potential turning point in the globalisation of the world economy. Many countries and trading blocs responded quickly by attempting to conclude 'deals' to ameliorate the impacts of the US's unilateral action. China countered with commensurate tariffs and measures, which risked an escalation into a trade war between two of the world's largest economies. What has characterised the period since April is uncertainty, discord and the willingness of the US to adjust its policies arbitrarily. While expectations of a global trade war have dissipated somewhat, the ongoing fickleness and unpredictability of global geopolitical and trade relations mean that the probability of a trade war is substantially higher now than at any time in the past 20 years.

A key consequence of a wider trade war would be a reduction in global economic activity. As a small open economy with significant net exports relative to its GDP, Ireland would be particularly vulnerable. Potential impacts operate through a number of channels. A reduction in world trade would immediately affect exporting firms. The impact of rising import costs (e.g., via higher tariffs) would be more widespread, affecting domestic manufacturing and services, as well as consumption. With lower revenue and rising costs, jobs would be at risk. Migration plays an important role as a cushion in the Irish labour market through counter-cyclical adjustments in labour supply. When the Irish economy performs well, higher net migration increases labour supply and reduces pressure on wages and production costs, in turn preserving international competitiveness. During an economic contraction, lower net migration reduces labour supply and mitigates against larger declines in wage rates and increases in unemployment.

While the scale of impacts through various channels will depend on the specific measures that might arise in a trade war, we develop a *Global Slowdown* scenario to provide some insight into the relative scale of potential impacts. As the baseline projection already incorporates recent US tariff increases, including on pharma and beverages exports, this scenario quantifies the adverse effects of further escalation into a wider global

trade war. A global slowdown shock is simulated via a decline in global trade volume, as outlined in Table 3.1, reflected in a gradual reduction in export demand for Irish export commodities reaching 5 per cent in 2030. This scenario considers an across-the-board reduction in the export share parameters of all export commodities. The reduction in Irish exports due to the Global Financial Crisis was 3.8 per cent in 2008 compared to 2007, when the exports-to-GDP ratio was 0.8. As summarised above, the Irish economy has become more export-oriented over the last decade, with the exports-to-GDP ratio reaching 1.5 in 2024. In this respect, given the current structure of the Irish economy, a 5 per cent gradual reduction in export demand is a plausible assumption in the context of a highly volatile global economic landscape.

FIGURE 3.1: MACROECONOMIC AGGREGATES – GLOBAL SLOWDOWN



(a) GDP and GNI*

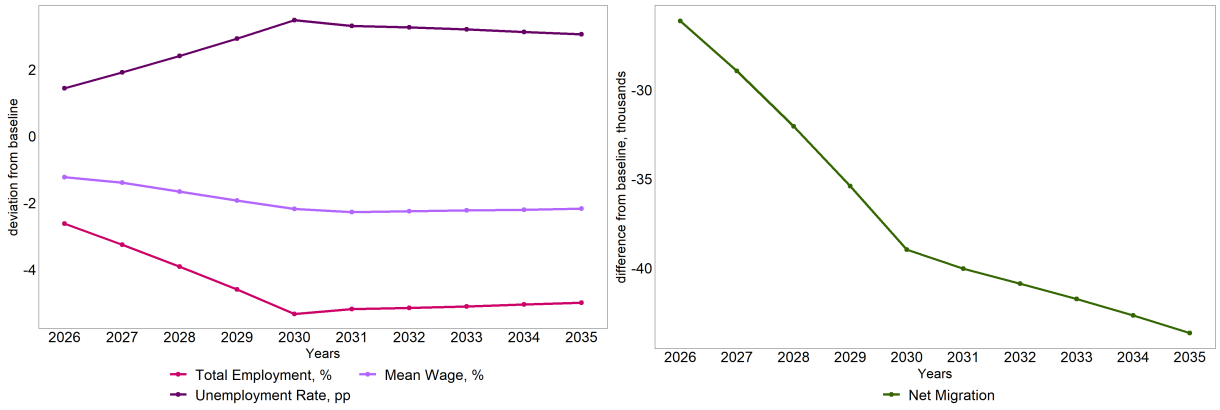
(b) MDD and Components

Figure 3.1a shows the percentage deviations in real GDP and GNI* from the baseline between 2026 and 2035. The *Global Slowdown* scenario is projected to lower real GDP by around 4 per cent in 2026, compared to the baseline. Out to 2030, the GDP decline is projected to reach 8 per cent, and then to remain roughly at that level compared to the baseline until 2035. The projected evolution of GNI* is relatively more muted compared to GDP, a 3 per cent deviation from the baseline in 2030 with a slight improvement thereafter. As multinational corporations (MNCs) are affected more than Irish-owned firms operating in traditional sectors concentrated in the domestic market, resource reallocation lessens the negative impact of a global shock on the domestic economy. As labour employed in the MNC-dominated sectors

becomes unemployed due to a reduction in the output of those sectors, wage rates decrease, which, in turn, increases labour demand among Irish-owned firms.

Figure 3.1b displays the projected evolution of modified domestic demand (MDD) and its components. As GNI* and MDD represent domestic economic activity under the production and expenditure approaches, respectively, their evolution follows similar patterns, but the impact on MDD is greater. The *Global Slowdown* scenario affects MNCs' operations in the country through lower employee compensation, production taxes and investment in physical capital. Additionally, projected reductions in both private and government consumption further lower MDD quite significantly throughout the projection period. Though a *Global Slowdown* scenario would have a significant impact on modified gross national income (2–3 per cent), the impact on modified domestic demand is anticipated to be substantially greater (declining by as much as 5 per cent compared to the baseline).

FIGURE 3.2: LABOUR MARKET – GLOBAL SLOWDOWN



(a) Employment and wage **(b) Migration**

Figure 3.2 depicts the labour market implications of the *Global Slowdown* scenario. In line with the macroeconomic aggregates, the labour market is projected to be adversely affected by a 5 per cent reduction in total employment, a 2 per cent reduction in real mean wages, and a more than 3 percentage point increase in the unemployment rate. Due to projected adverse labour market conditions, migration is expected to decline by 40,000, shifting from a net inward flow of 33,000 per annum to a net outward flow of

more than 7,000 per annum after 2030. The migration channel is expected to play a key role in shaping labour market outcomes by substantially reducing labour supply, thereby reducing the number of unemployed and, thus, the unemployment rate.

FIGURE 3.3: PUBLIC FINANCE – GLOBAL SLOWDOWN

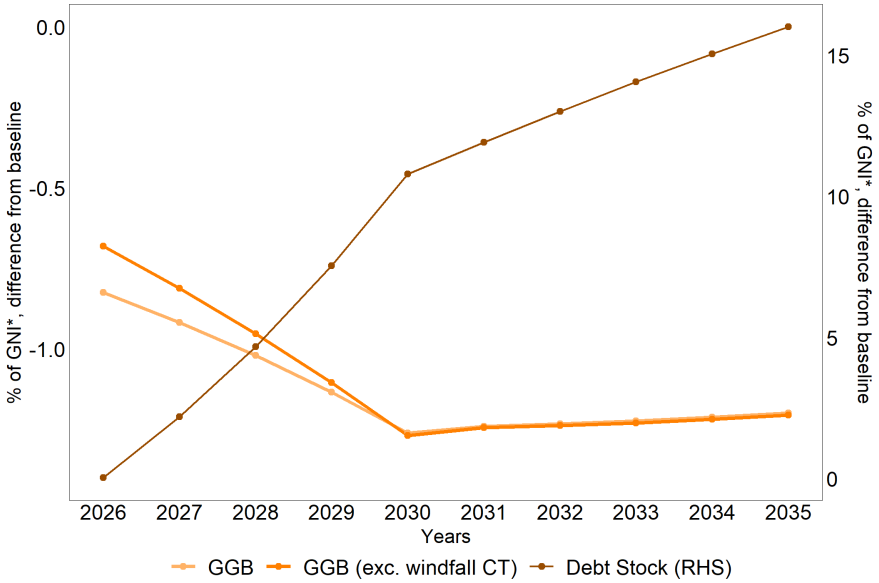


Figure 3.3 shows three public finance indicators, where GGB represents general government balance, and GGB (exc. windfall CT) is the GGB but excluding 50 per cent of the total corporation tax collection by the government. The results indicate a deterioration in the general government balance (as a percentage of GNI*) of 1.3 percentage points in both indicators relative to the baseline by 2030. In the years to 2030, the deterioration in the GGB (exc. windfall CT) is slightly better than that of GGB, reflecting the gradual decline in MNCs' economic activity due to lower export demand. After 2030, in line with steady economic activity, as measured by GDP and GNI*, public balance indicators are projected to be stable, though worse than the baseline.

3.4 COMPETITIVENESS

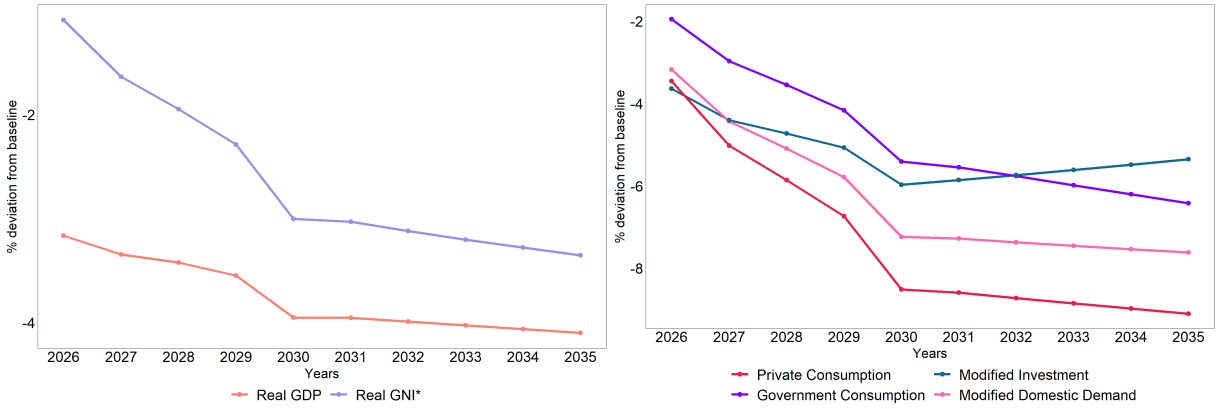
The National Competitiveness and Productivity Council (2025) recently highlighted the rising cost of doing business in Ireland. Among the issues it emphasised are a sharp rise in labour costs, both through wage increases and new working conditions measures; the highest electricity prices in Europe and high insurance costs. In addition, domestic infrastructure constraints in transportation, energy and housing, as well as skills shortages, especially in emerging technologies (Whelan et al., 2024), are important factors affecting production costs and, thus, the competitiveness of Irish firms. The government's Action Plan on Competitiveness and Productivity (Government of Ireland, 2025) describes competitiveness as central to driving sustainable growth, supporting employment, and improving living standards. It identifies competitiveness as an issue within our domestic sphere of influence, rather than factors on the global landscape. We consider a *Competitiveness* scenario to explore the effects of a loss in the competitiveness of the Irish economy relative to international trading partners, illustrating how our competitiveness is central to maintaining a vibrant economy. We implement a competitiveness shock through two channels: prices and the labour market. Starting with the labour market, if Irish firms become uncompetitive, it has a direct impact on employment: both labour demand and net inward migration decline. In modelling the scenario, we implement this mechanism as an exogenous 5 per cent reduction in real wage income abroad, which equates to a relative decline in Ireland's competitiveness.[6] (see Table 3.1). For the price mechanism, we implement a 5 per cent reduction in export prices, i.e., the prices received by Irish exporter firms.[7] Since export prices, relative to domestic prices, are the major determinant of supply to international markets, a reduction in these prices lowers export supply.

The headline impact of a deterioration in competitiveness is a downward trend in real GDP; it is projected to be 4 per cent lower than its baseline from 2030. The primary channel of the reduction in competitiveness is through the

[6] Wages are endogenous within the I3E model. From a modelling perspective, exogenously adjusting wage income abroad is equivalent to an increase in wages.

[7] CGE models have two international prices exclusive of any taxes for each commodity. The purpose is to differentiate the price received by an exporter (due to an export tax) and the price paid by an importer (due to any tariffs and excise taxes).

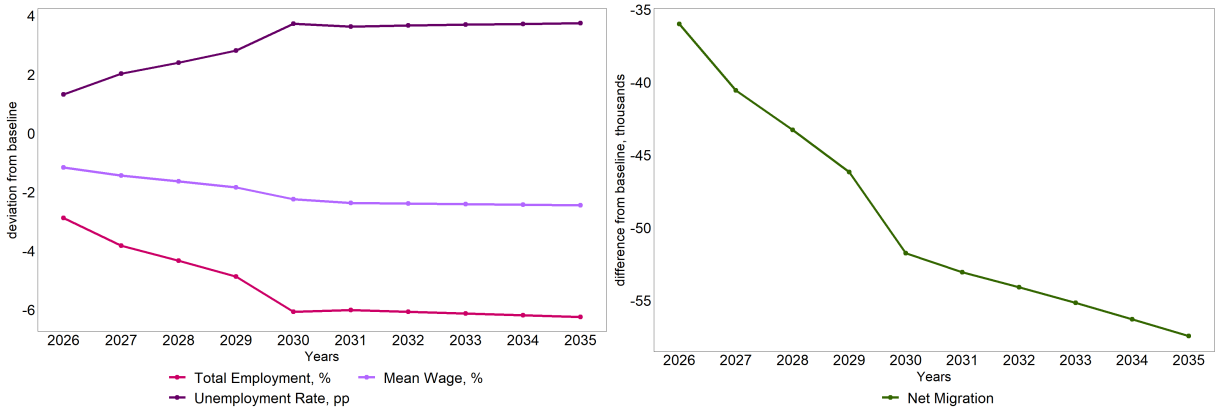
FIGURE 3.4: MACROECONOMIC AGGREGATES – COMPETITIVENESS



(a) GDP and GNI* **(b) MDD and Components**

main export sectors dominated by MNCs. The projected impact through this channel is a steep decline in GNI* over the years to 2030. On the expenditure side, the most significant relative impact is on private consumption, with a projected 8 per cent reduction from baseline by 2030, as shown in Figure 3.4b. All components of MDD are projected to be negatively impacted relative to baseline, with modified investment expenditures the least affected by the end of the projection horizon, though they remain 5 per cent below baseline.

FIGURE 3.5: LABOUR MARKET – COMPETITIVENESS

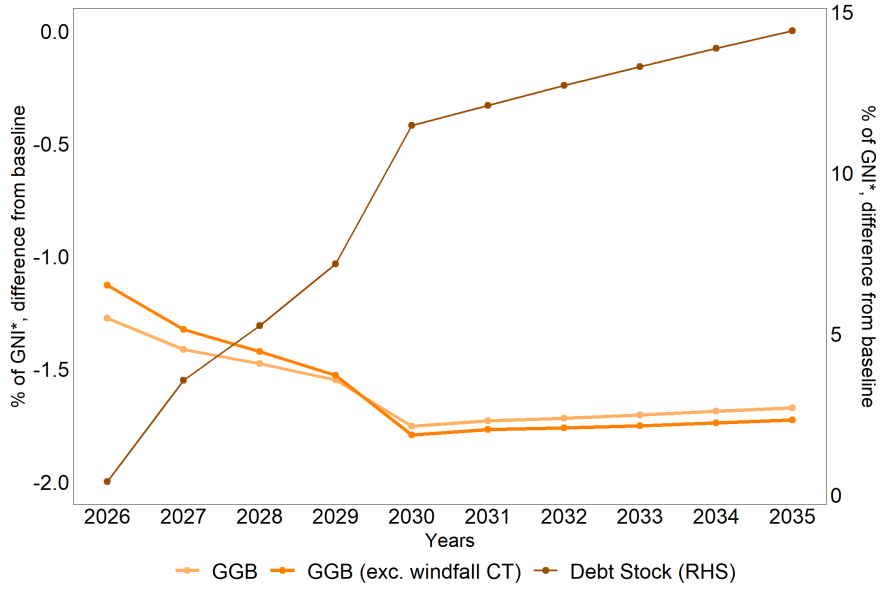


(a) Employment and wage **(b) Migration**

The reduction in export prices suppresses output, and a substantial decrease in domestic economic activity is projected. As illustrated in Figure 3.5a, the

employment decline in this scenario is projected to reach 6 per cent in 2030 and to remain at that level thereafter. The reduction in competitiveness is also projected to reduce the real mean wage by more than 2 per cent. The unemployment rate is projected to rise by 4 percentage points in 2030, compared to its baseline level. Given these adverse labour market impacts, net migration into Ireland is projected to decrease by between 36,000 and 57,000 during the projection horizon. The slump in migration figures indicates that net migration into Ireland will turn to net emigration, with a range of 3,000 to 24,000. With projected net emigration, a reduction in labour supply is anticipated, which is an outlet that offsets a potentially larger increase in the unemployment rate.

FIGURE 3.6: PUBLIC FINANCE – COMPETITIVENESS



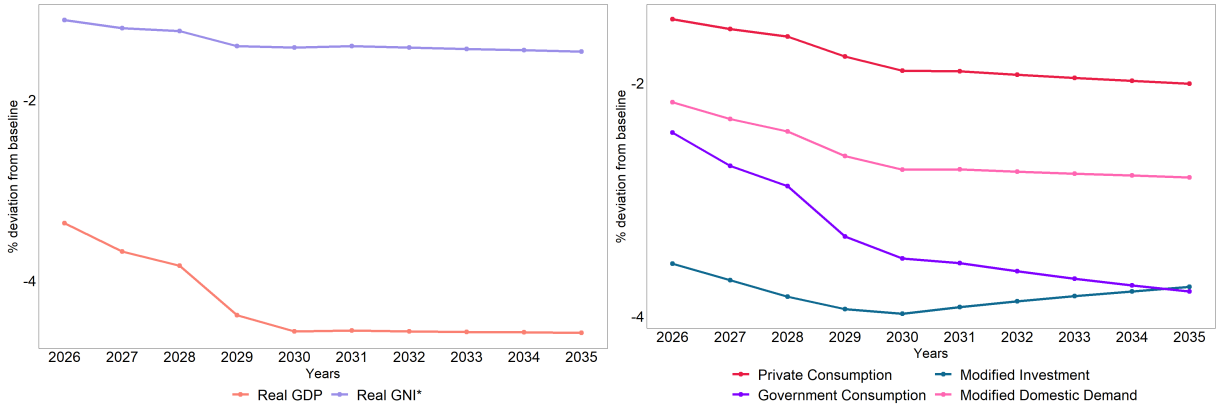
The implications of losing competitiveness vis-à-vis the rest of the world on public balances are depicted in Figure 3.6. The results indicate a worsening public fiscal stance over the projection horizon. Both public balance indicators are expected to be lower than their baseline levels by around 1.8 percentage points at the end of the projection horizon. After 2030, the public balance indicators are projected to remain lower than baseline levels but to follow a stable pattern. The debt-to-GNI* ratio is projected to increase by 12 percentage points in the 2030s compared to the baseline.

3.5 MULTINATIONALS

Multinational corporations (MNCs) make significant contributions to the Irish economy. Over 87 per cent of gross value added in industry in 2022 was attributable to MNCs, 61 per cent in services, and 18 per cent in construction (CSO, 2024b). Although Ireland's low corporation tax regime was successful in attracting MNCs, especially those based in the US, Gunnigle and McGuire (2001) argue that their reasons for locating and investing here are broader, including the supply, quality, and flexibility of labour. This is supported quantitatively in Lawless et al. (2014), which also finds that infrastructure, market potential, and geography play a role in firm location decisions. Nonetheless, there are fears of an exodus of US MNCs due to the US's stance on tariffs and the America First trade and investment policies. For instance, on 26 September 2025, the US President announced the imposition of a 100 per cent tariff, effective 1 October 2025, on pharmaceutical products, with an exemption for manufacturers that have been building a production unit in the US.[8] With substantial levels of physical capital investment and an exit tax of up to 33 per cent on the transfer of assets, it is unlikely that there would be an abrupt exodus of US companies from Ireland. Where US policies could have a more immediate effect is on future foreign direct investment (FDI) flows into Ireland, gradually scaling back economic activity. While such a situation may arise in the context of ongoing global trade trends and the international environment, we develop our *Multinationals* scenario to investigate it in isolation. Specifically, the MNC scenario explores the implications of a gradual decline (reaching 10 per cent in 2030) in the pharma and information and communication technologies (ICT) sectors, relative to their baseline employment levels. Since these sectors are highly capital-intensive, gradually reducing their employment in Ireland is expected to affect their investment expenditures and, in turn, their capital accumulation. A lower capital stock is expected to affect their output at a larger magnitude over time, which has repercussions on their exports, profits and thus corporation tax payments. Other sectors with close economic relations with them will face secondary impacts.

[8] As part of the US–EU trade deal, MNCs operating in Ireland are exempt from this additional measure.

FIGURE 3.7: MACROECONOMIC AGGREGATES – MULTINATIONALS



(a) GDP and GNI*

(b) MDD and Components

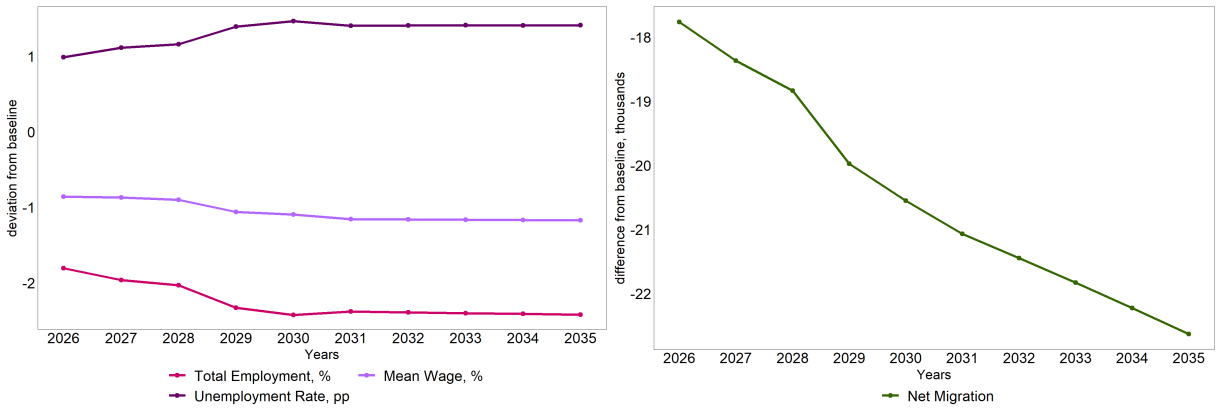
In the *Multinationals* scenario, where MNCs operating in the pharma and ICT sectors reduce their employment, the reduction in real GDP is projected to be 4.6 per cent in the 2030–2035 period, compared to the baseline. However, the implication on domestic economic activity, as measured by real GNI*, is projected to be more moderate, with a -1.5 per cent deviation from the baseline in 2035.

MDD is projected to fall by around 2.8 per cent relative to baseline by 2030 and thereafter, largely driven by declining modified investment. The impact of the employment shock on modified investment is projected to persist throughout the projection period, with a -3.8 per cent deviation from its baseline level. As noted, the projected decline in capital accumulation is expected to negatively impact employment and wage incomes, which, in turn, is projected to lead to a downward trend in private consumption over the next decade. While the immediate effect of a contraction in the MNC sector will be felt within the sector itself, its effects will ultimately be more widespread, initially channelled through labour market dynamics and finally impacting consumption and activity more generally.

As employee composition within the sectors impacted in the *Multinationals* scenario is dominated by high-skilled labour, reductions in their labour demand affect the high-skilled segment of the labour market more than the low- and medium-skilled segments. Since the labour force participation of high-skilled labour is less elastic than that of other groups (e.g., Doris, 2001;

Mastrogiacomo et al., 2013, for Ireland and the Netherlands, respectively), they remain in the labour market and are hired by Irish-owned firms. The reallocation of high-skilled labour from the highly productive MNC-dominated sectors to lower productivity Irish-owned sectors limits the reduction in real GNI*.

FIGURE 3.8: LABOUR MARKET – MULTINATIONALS

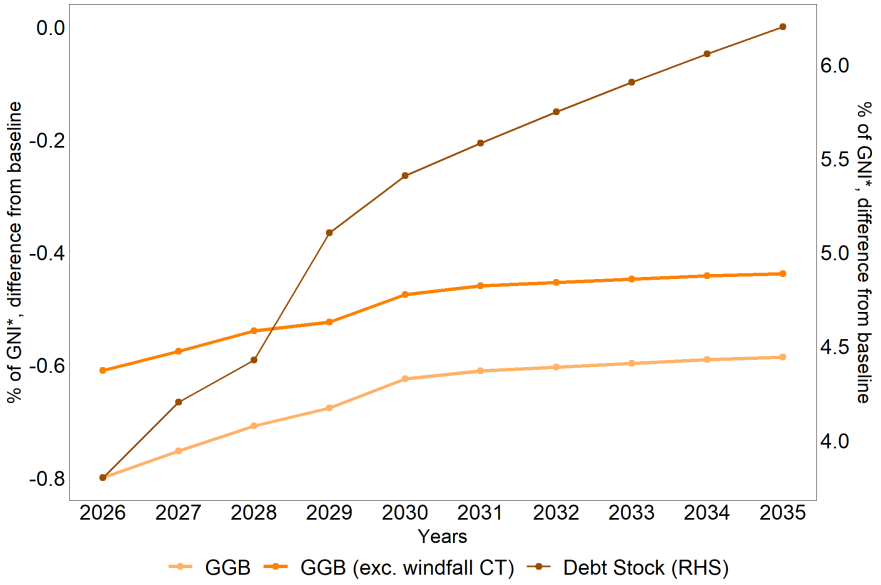


(a) Employment and wage **(b) Migration**

The shift in the employee composition of Irish-owned traditional sectors, which are dominated by medium-skilled labour, towards high-skilled labour, affects the medium-skilled segment the most. In other words, a shrinking in the MNC sector is anticipated to lead to the replacement of medium-skilled labour by high-skilled labour at lower wages elsewhere in the economy. Irish-owned firms will not have capacity to hire all unemployed high-skilled labour, so the increase in the aggregate unemployment rate is largely driven by high-skilled labour. Their low unemployment rate within the baseline projection, however, keeps the aggregate unemployment rate effect moderate, which is projected to be around 1.4 percentage points above its baseline level, as shown in Figure 3.8a. Less favourable labour market conditions are projected to lower net migration flows into Ireland by approximately 23,000 per annum by the end of the projection horizon, as illustrated in Figure 3.8b.

The effects of a potential contraction in the multinationals sector on the public fiscal stance are provided in Figure 3.9. The immediate implication of the shock on the general government balance, as a percentage of GNI*, is projected to be a 0.8 percentage point reduction relative to the baseline. The general government balance, excluding the windfall corporation tax as a

FIGURE 3.9: PUBLIC FINANCE – MULTINATIONALS



percentage of GNI*, is projected to decrease by 0.6 percentage points in 2026. After the initial impact, deviations in both indicators from their baseline levels are expected to remain negative but stable until the end of the projection horizon. Resource reallocation (e.g., labour) from the two MNC sectors to all other sectors is the main channel driving this moderation in public fiscal stance. In line with these flow indicators, the debt stock-to-GNI* ratio is expected to rise; the projected 2026 ratio is 3.6 percentage points above its baseline level. As the debt stock results from cumulative government dissaving, its ratio to GNI* is projected to rise to 6.2 percentage points in 2035 relative to its baseline level.

3.6 DOMESTIC PRODUCTIVITY

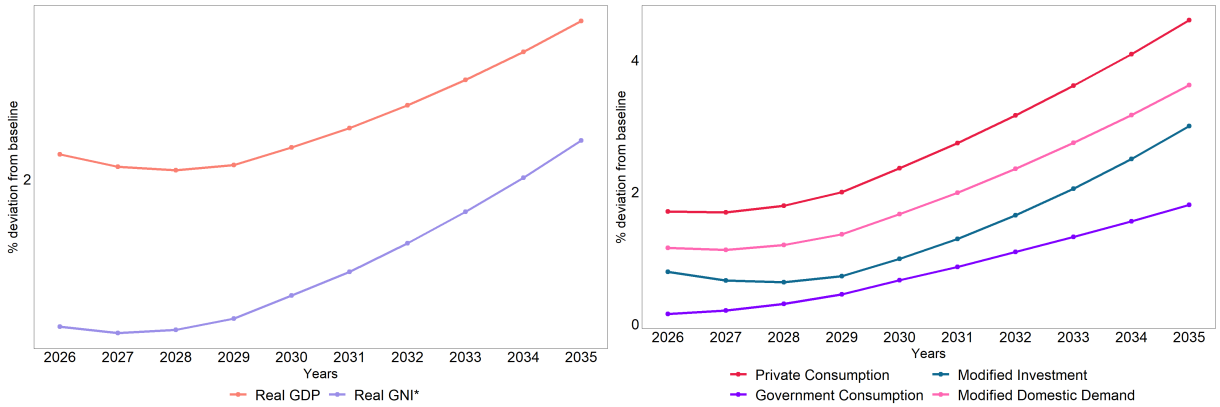
A notable characteristic of the Irish economy is its dual industrial structure: foreign-owned MNCs with high levels of productivity contribute around half of overall gross value added, while the other half comes from domestically owned firms, with significantly lower average productivity. In addition to differences in levels, productivity growth rates also differ. Between 2011 and 2024, the compound growth rate of output per worker was 6.1

per cent, whereas the rates for the sectors dominated by domestic and foreign-owned firms were 2.9 per cent and 11.7 per cent, respectively (CSO, 2024i). The labour productivity differential between Irish- and foreign-owned firms widened between 2014 and 2021, especially in the chemicals, pharma, computer, electronic and optical products, and software and computer programming sectors (Lawless, 2025). Furthermore, even in sectors that are not traditionally foreign-dominated (e.g., food, beverages), labour productivity in domestic-owned firms substantially lags that of foreign-owned firms (Lawless, 2025). Possible reasons for such a productivity differential are: the labour-intensive nature of Irish-dominated sectors; their limited capacity for innovation (both financial and technical); and their risk aversion (Lawless, 2025). The National Competitiveness and Productivity Council (2025) has also emphasised the significant investment gap between MNCs and SMEs in research, development and innovation (RD&I), and that existing tax incentives are relatively less accessible to SMEs. Data from CSO (2025a) show that non-Irish firms' research and development (R&D) expenditure is now 5.5 times that of Irish firms. Similarly, with respect to firm size, SMEs and large firms spent about the same on RD&I in 2013, but the gap has widened since, with large firms now spending almost 3.5 times as much as SMEs (CSO, 2025b).

The recently published Action Plan on Competitiveness and Productivity outlines several actions to improve productivity in Irish SMEs (Government of Ireland, 2025). Priority actions on productivity include increasing expenditure on research activity in the higher education sector to boost basic and applied research and innovation; scaling Enterprise Ireland and IDA-backed technology centres to drive collaborative RD&I in SMEs; and developing options, including new tax-based supports, to encourage the adoption of innovative technologies by the SME sector. While the wider Action Plan should deliver domestic productivity dividends, it is useful to examine the issue here to demonstrate the importance of this policy initiative in terms of potential benefits to the economy, as well as a hedge against over-reliance on FDI. For clarity, this scenario is not an assessment of the Action Plan itself, as that would be materially beyond our modelling capacity. Its purpose is to demonstrate, in an abstract sense, the importance of improving productivity within the domestic sector.

To implement a *Domestic Productivity* scenario, we assume an additional increase in capital and labour productivity among Irish-owned sectors, excluding the public-dominated sectors (public administration, education and health), beginning in 2026. The additional productivity growth rate gradually increases until 2030, reaching 0.5 per cent per annum. This corresponds to cumulative additional productivity growth of 4 per cent by 2035, compared to the baseline scenario. Irish-owned sectors can achieve this productivity growth through digitalisation and the upskilling and reskilling of labour, as outlined in Government of Ireland (2025). If the policies focusing on domestic firms could narrow the productivity gap between Irish- and foreign-owned private sector firms, the value added generated by these sectors would grow at a faster rate, which is expected to result in an increase in their share of total economic activity, including in employment creation and corporation tax. In this respect, we explore the implications of rebalancing the composition of economic activity between Irish- and foreign-owned sectors through productivity improvement.

FIGURE 3.10: MACROECONOMIC AGGREGATES – DOMESTIC PRODUCTIVITY



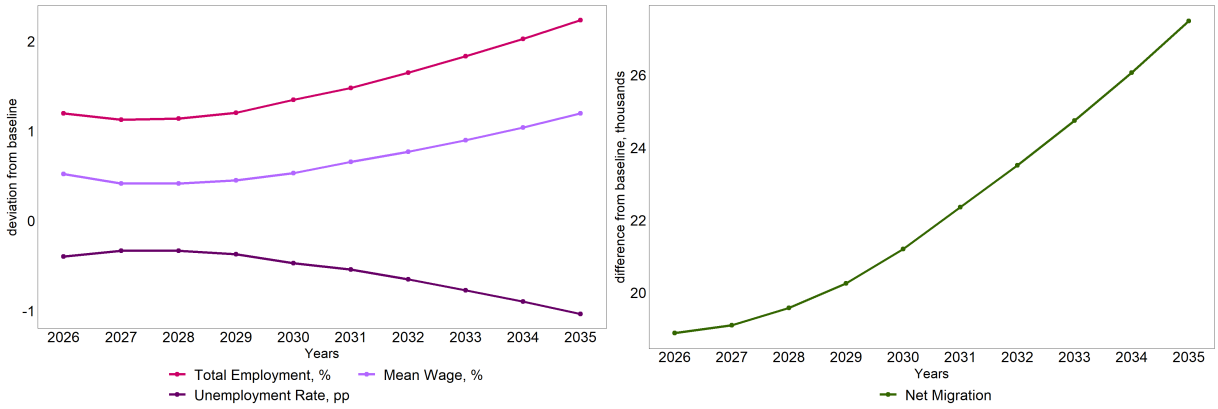
(a) GDP and GNI*

(b) MDD and Components

The *Domestic Productivity* scenario is projected to boost real GDP by 2.3 per cent to 3.4 per cent over the 2026–2035 period. Its positive impact on real GNI* is projected to start at 0.8 per cent in 2026 and to reach 2.4 per cent in 2035. As is evident in Figure 3.10a, the deviation from the baseline becomes stronger in the second half of the forecast horizon as the cumulative effects of the productivity increase in Irish-owned sectors take place, and the projected GNI* growth rate is expected to converge to that of GDP.

Figure 3.10b displays the deviations in MDD and its components from the baseline. In line with the macroeconomic aggregates, it is projected that MDD and its components will deviate from their baseline levels following a robust path. The projected deviation on MDD starts from 1.2 per cent in 2026 and reaches 3.7 per cent in 2035. The main driver of MDD growth in this scenario is private consumption. The path of modified investment expenditures underscores the importance of productivity improvements for capital accumulation. The deviation in modified investment expenditures is projected to be approximately 3 per cent in 2035.

FIGURE 3.11: LABOUR MARKET – DOMESTIC PRODUCTIVITY

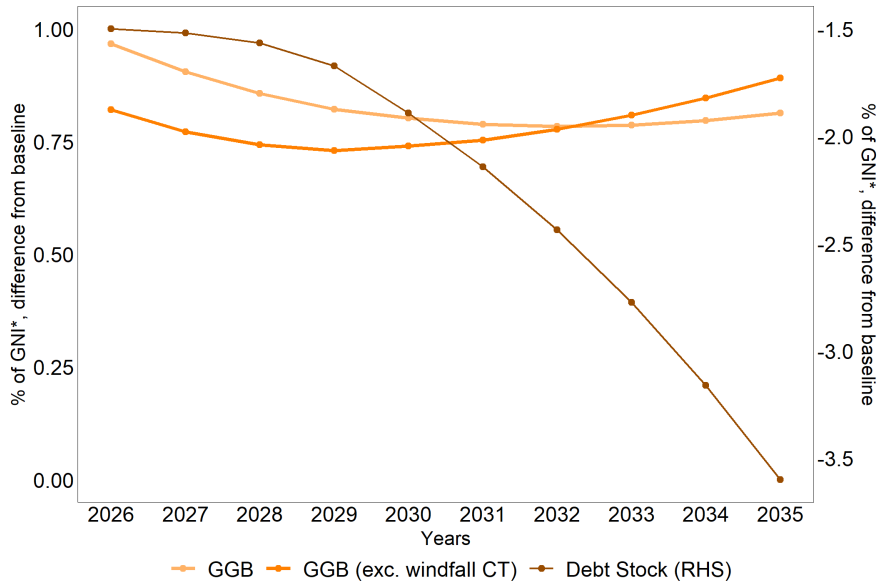


(a) Employment and wage **(b) Migration**

The repercussions of such a productivity shock on the labour market are also projected to be favourable: around a 2 per cent increase in total employment, more than 1 per cent increase in real mean wage, and around a 1 percentage point reduction in the unemployment rate in the second half of the next decade, as shown in Figure 3.11a. In line with these, annual net migration is projected to steadily increase to 27,500 by 2035, compared to the baseline (Figure 3.11b). In this scenario, employment and wage growth are expected to be driven by high-skilled labour until 2030, as the pace of narrowing the productivity gap is slow between 2026 and 2030. Beyond 2030, Irish-owned firms employ relatively more low- and medium-skilled than high-skilled labour as a consequence of the productivity improvements. The immediate favourable conditions in the economic aggregates, especially in labour market outcomes, stem from the I3E model's perfect foresight

assumption: all economic agents are assumed to know the future path of productivity growth and to adjust their decisions accordingly.

FIGURE 3.12: PUBLIC FINANCE – DOMESTIC PRODUCTIVITY



The productivity improvement in Irish-owned firms is projected to generate a favourable public fiscal stance over the projection horizon, as depicted in Figure 3.12. The results indicate that the general government balance, as a percentage of GNI*, is projected to improve by 1 percentage point in 2026 relative to its baseline level and then gradually decline to 0.8 percentage points above that level. As domestic firms become more productive over time, their contributions to the government's total corporation tax revenues increase. As a result, the general government balance is projected to improve towards the end of the projection horizon. The favourable projections for the general government balance indicators are reflected in a declining debt stock-to-GNI* ratio throughout the scenario horizon.

3.7 INCOME DISTRIBUTION

The discussion of the scenarios in the previous subsections focused on aggregate national-level metrics, such as income and private consumption. When examining issues related to the household sector, such as household

income, greater granularity is useful for policy purposes. The I3E model facilitates analysis of the household sector by income quintiles, enabling examination of the distributional implications of policy shocks. Table 3.5 shows the projected percentage change in each income quintile's real disposable income from the baseline in the scenarios considered. For simplicity, three years are presented. In the table, household groups are sorted from the poorest 20 per cent of households (i.e., the 1st quintile) to the richest 20 per cent of households (i.e., the 5th quintile). The initial insight from the table is that the relative scale of impact due to the various scenarios differs considerably. It is worth repeating here that the outcomes are based on the scenario assumptions, meaning that they are projections rather than forecasts. Nonetheless, they provide a sense of relative scale and distribution of effects across household groups.

TABLE 3.5: CHANGE IN REAL DISPOSABLE INCOME ACROSS HOUSEHOLD QUINTILES

Year	Quintile	Global Slowdown	Competitiveness	Multinationals	Domestic Productivity
2026	1st	0.8	0.3	0.7	-0.5
	2nd	-0.1	-0.6	0.1	-0.1
	3rd	-1.9	-1.8	-1.3	1.0
	4th	-4.4	-3.2	-3.3	2.5
	5th	-6.8	-4.5	-5.3	4.1
2030	1st	1.2	0.0	0.6	-0.2
	2nd	-0.5	-1.6	-0.2	0.2
	3rd	-3.5	-3.4	-1.7	1.0
	4th	-7.3	-4.8	-3.6	2.1
	5th	-10.8	-5.5	-5.4	3.1
2035	1st	1.0	0.0	0.6	0.0
	2nd	-0.5	-1.7	-0.2	0.6
	3rd	-3.3	-3.6	-1.7	1.4
	4th	-6.8	-5.1	-3.6	2.2
	5th	-10.1	-6.1	-5.5	2.8

Note: The figures are projected percentage deviation from the baseline in each quintile's real disposable income. The 1st quintile represents the poorest 20% of households, and the 5th quintile represents the richest 20%.

The channels of impact on household income are broadly similar in the *Global Slowdown*, *Competitiveness* and *Multinationals* scenarios. The scale of impact is most significant under the *Global Slowdown* scenario, with the highest quintile proportionately the most affected. In 2030, their real disposal income is projected to decline by almost 11 per cent compared to the baseline

scenario, whereas in the 2nd quintile, the projected decline is just 0.5 per cent. In contrast, disposable income is projected to increase in the 1st quintile, reflecting a shift towards lower-skilled workers in the labour market, and a relatively high proportion of households that are in receipt of welfare payments.

Given that the MNC and domestic export-oriented sectors are both high-skills and high-wage employers, it is not surprising that the most significant proportional impacts on disposable incomes occur in the higher income quintiles across the *Global Slowdown*, *Competitiveness* and *Multinationals* scenarios. However, the impacts are projected to occur across household groups, though proportionately less at lower incomes. Real disposable incomes across all household groups are intricately linked to our ability to participate competitively and trade in the international economy. While the projected impacts from the *Global Slowdown* scenario are greatest, those from the *Competitiveness* scenario demonstrate why competitiveness affects both businesses and households. It would be remiss not to mention the impact on and of the housing crisis in this context. A business sentiment survey by Golden and Carr (2023) revealed that 63 per cent of respondents found it challenging to recruit and retain staff, with housing seen as the most significant barrier. This forces businesses to pay higher wages, thereby increasing labour costs and hurting competitiveness (Duffy et al., 2005). Losing competitiveness against our trading partners is projected to have a substantial impact on incomes across the income distribution.

The implication of a productivity boost in Irish-owned firms is a projected boost in income across the distribution. As described earlier, employment and wage growth in the *Domestic Productivity* scenario are anticipated to be initially driven by more highly skilled labour, but as the productivity gap narrows, Irish-owned firms are projected to employ relatively more low- and medium-skilled than high-skilled labour as a consequence of the productivity improvements. In Table 3.5, this is evident by the projected higher growth in incomes of the 1st–3rd income quintiles compared to baseline in 2035 versus earlier.

CHAPTER 4

Conclusion and policy recommendations

The objective of this *Economic Outlook* is to provide analysis to inform policy discussion about the strategic direction of the economy. To facilitate that discussion, we provide detailed macroeconomic projections for the economy out to 2035, in the form of a baseline and potential deviations from that path under different scenarios. The projected results are based on the ESRI's Ireland Environment, Energy and Economy (I3E) model, a fully dynamic, single-country, small open economy computable general equilibrium (CGE) model with multiple sectors and households, the government, and the rest of the world.

We began this forward-oriented exercise by looking back at the last ten years, which allowed us to develop our baseline projection and facilitated our discussions of the scenarios we explored. The ten-year look-back showed an economy that has grown rapidly over the period despite a number of economic shocks – Brexit, COVID-19, Russia/Ukraine. Economic growth also led to employment and population growth, all of which should be celebrated. However, it has to be recognised that the speed of population growth, coming after a period of low public investment following the Great Recession, has contributed to the housing crisis.

In broad terms, our baseline projection takes the current trajectory of the economy and assesses how the major economic aggregates – modified gross national income (GNI*), modified domestic demand (MDD), employment, the fiscal balance, etc. – would evolve in the absence of significant events (or shocks) which would move the economy off that trajectory. As discussed throughout the report, the assumption that nothing will move the economy from its current trajectory is unrealistic. Our task was then to think about what sorts of shocks, events or policy initiatives (both positive and negative) could potentially arise and how these might impact the economy.

Two broad areas arose. First, given Ireland's exposure to international developments, we decided to assess shocks that captured *(a)* a slowdown in global economic activity, *(b)* a fall in Ireland's competitiveness relative to the rest of the world and *(c)* a reduction in activity among multinational corporations in Ireland. Second, like others, we thought it important to look to the policy levers within Ireland's control, and so we assessed how productivity growth in Irish-owned firms could impact the economy.

Under the assumptions considered in the scenarios, the projected results clearly show that external risks to the Irish economy would have significant repercussions for economic activity. The heavy reliance on multinational corporations for employment and public fiscal balances under uncertain global conditions leads to vulnerability for the Irish economy. It should be clearly stated that the presence of multinational corporations (MNCs) remains a tremendous positive for the Irish economy, and efforts to retain and expand foreign direct investment (FDI) must continue. However, strategies to mitigate economic risk in the face of international uncertainty highlight the importance of domestically owned firms.

The projected results of the *Domestic Productivity* scenario provide important evidence to support policies, such as those outlined in the Action Plan on Competitiveness and Productivity (Government of Ireland, 2025), to improve productivity of Irish-owned firms, including small- and medium-sized enterprises and start-ups. As discussed in the Action Plan, investment in a number of areas is critical. First, research-oriented firms are typically found to be more productive and more likely to innovate, but financing such investments can be difficult for smaller and younger firms. Hence, policy supports can be very valuable. Second, investment in human capital is typically associated with productivity improvements, and this is increasingly the case in a time of rapid technical change. The funding of primary, secondary, further and higher education is critical in this context, both for first-time students and for lifelong learners. This latter group will become all the more important as the population ages. A third area of investment which can boost productivity is public infrastructure. To take one example, the economy's capacity to attract and retain people of all skill levels will be partly dependent on the quality of life in Ireland, covering areas such as housing, healthcare and transport.

Such policies hold out the prospect of generating significant dividends for the Irish economy through several channels. First and most importantly, the results in our *Domestic Productivity* scenario showed strong increases in modified investment expenditures, suggesting rapid capital accumulation in the economy, with Irish-owned sectors contributing more. Higher investment expenditures and a higher capital stock of domestic-oriented sectors expand the tax base. This reduces the relative contribution of windfall revenues and generates a more stable tax base. The stronger revenue flows would generate more fiscal space for the government to tackle the structural social problems Ireland is facing today, including housing and healthcare delivery, and climate risks. Second, the projected convergence in the growth rates of GNI* and GDP toward the end of the projection horizon indicates an increase in the share of Irish-owned firms in total economic activity. This has two important repercussions: a relatively lower reliance on MNCs for employment creation and a substantial improvement in the corporate tax base.

A key advantage of using a CGE model for the type of analysis conducted in this report is that it can uncover the full set of implications of shocks. Among the set of implications, which are reported upon, are those related to the distribution of income. The external shocks considered are projected to have negative macroeconomic and labour market outcomes but to lead to a slight narrowing of the income distribution. Domestic policies to improve productivity in Irish-owned firms are projected to benefit the Irish economy but could widen income inequality as high-skilled workers benefit more.

The latter case is a good reminder of the interactions of economic policies and social outcomes and the fact that positive economic developments do not always translate readily into improved social outcomes. But as is always the case when national income rises, the scope to improve social outcomes expands. In the *Domestic Productivity* scenario, any widening in the income distribution could be addressed by increasing the market income of low- and medium-skilled labour by reskilling and upskilling to better adapt to new technologies, such as artificial intelligence (AI). Another tool to address the income distribution issue would be to improve welfare policies to better cover those who will be affected more by the policy change.

In choosing the scenarios discussed above, we had to limit ourselves to a set of plausible shocks which are within reasonable bounds of possibility. However, there are many other plausible shocks which we have not analysed but which featured in our internal discussions. At the time of writing, AI is being discussed extensively in both positive and negative terms. The positivity centres on the productivity-enhancing possibilities. Recently, some negative sentiments have been expressed about the possibility of unrealistic expectations around AI artificially boosting investment levels and stock valuations. It is impossible to know how this will unfold in the coming years, but AI is likely to feature prominently. Another modern development whose full impact is not yet fully understood is the rise of cryptocurrencies. Fears around financial instability are keenly felt by Ireland's economists in the wake of the Great Recession, and so a close eye is maintained on financial innovation.

There are other factors which provide threats. The climate crisis is a source of great concern. Investment will be needed in an effort to reduce emissions and also to adapt to climate change. Population ageing is also occurring and will accelerate as the effects of both reduced fertility and mortality combine to alter our age structure.

While AI, crypto, climate change, etc. may pose threats (or offer opportunities), we will end by returning to the theme that permeates this *Economic Outlook*. There are, and will always be, risks and uncertainties facing the Irish economy from outside. We can only control domestic policy, and so the onus remains on Irish governments to manage policy effectively. History tells us that imprudence in the management of public finances can be very damaging. In that context, running (windfall-adjusted) deficits is concerning. History also tells us that policies that have improved the productive capacity of the economy – investments in education, public infrastructure, research and development – have typically been successful. As illustrated in the *Domestic Productivity* scenario, policies to boost productivity hold out the potential to increase national income and to rebalance the economy towards domestic firms.

REFERENCES

Acemoğlu, D. (2009). *Introduction to Modern Economic Growth*. Princeton University Press. https://www.theigc.org/sites/default/files/2016/06/acemoglu-2007.pdf.

Barrett, A., O'Toole, C., and O'Shea, D. (2025). *Quarterly Economic Commentary* (QEC, No. Summer 2025). ESRI. doi:10.26504/QEC2025SUM

Bergin, A., and Egan, P. (2024). *Population projections, the flow of new households and structural housing demand* (Research Series, No. 190). ESRI. doi:10.26504/rs190

Böhringer, C., Keller, A., Bortolamedi, M., and Seyffarth, A. R. (2016). Good things do not always come in threes: On the excess cost of overlapping regulation in EU climate policy. *Energy Policy*, *94*, 502-508. doi:https://doi.org/10.1016/j.enpol.2015.12.034

Böhringer, C., and Löschel, A. (2006). Computable General Equilibrium Models for Sustainability Impact Assessment: Status Quo and Prospects. *Ecological Economics*, *60*, 49-64. doi:10.1016/j.ecolecon.2006.03.006

Central Bank of Ireland. (2025a). *Early signs of resilience as headwinds remain* (Quarterly Bulletin). Central Bank of Ireland. https://www.centralbank.ie/publication/quarterly-bulletins/quarterly-bulletin-q3-2025.

Central Bank of Ireland. (2025b). *On the fault line? The Irish economy in a time of geoeconomic fragmentation* (Signed Article). Central Bank of Ireland. https://www.centralbank.ie/docs/default-source/publications/quarterly-bulletins/quarterly-bulletin-signed-articles/on-the-fault-line-irish-economy-in-a-time-of-geoeconomic-fragmentation.pdf?sfvrsn=144e6e1a_14.

Central Statistics Office. (2021). *Survey on Income and Living Conditions (SILC) 2020*. https://www.cso.ie/en/releasesandpublications/ep/p-silc/surveyonincomeandlivingconditionssilc2020/.

Central Statistics Office. (2024a). *Actual and Projected Labour Force from 2022*. https://data.cso.ie/table/PEC24.

Central Statistics Office. (2024b). *Business in Ireland - Insights on Multinationals*. https://www.cso.ie/en/releasesandpublications/ep/p-biiim/businessinireland2022-insightsonmultinationals/.

Central Statistics Office. (2024c). *Estimates of Capital Stock*. https://ws.cso.ie/public/api.restful/PxStat.Data.Cube_API.ReadDataset/CSA02/XLSX/2007/en.

Central Statistics Office. (2024d). *Expenditure on Gross and Net National Income at Constant Market Prices*. https://data.cso.ie/table/NA008.

Central Statistics Office. (2024e). *ILO Participation and Unemployment Rates*. https://data.cso.ie/table/QLF02.

Central Statistics Office. (2024f). *Modified GNI*. https://www.cso.ie/en/interactivezone/statisticsexplained/nationalaccountsexplained/modifiedgni/.

Central Statistics Office. (2024g). *Population and Labour Force Projections 2023-2057*. https://www.cso.ie/en/releasesandpublications/ep/p-plfp/populationandlabourforceprojections2023-2057/migrationassumptions/.

Central Statistics Office. (2024h). *Projected Population based on Census 2022*. https://data.cso.ie/table/PEC19.

Central Statistics Office. (2024i). *Seasonally adjusted quarterly productivity indicators*. https://data.cso.ie/table/PIQ02.

Central Statistics Office. (2025a). *Actual and Estimated Business Expenditure on Research and Development*. https://data.cso.ie/table/BSA02.

Central Statistics Office. (2025b). *Actual and Estimated Business Expenditure on Research and Development*. https://data.cso.ie/table/BSA01.

Conefrey, T., Keenan, E., Staunton, D., and Walsh, G. (2024). *Long-Term Growth Prospects for the Irish Economy* (Signed Article). Central Bank of Ireland. https://www.centralbank.ie/docs/default-source/publications/quarterly-bulletins/quarterly-bulletin-signed-articles/long-term-growth-prospects-for-the-irish-economy.pdf.

Congressional Budget Office. (2018). *Estimating and Projecting Potential Output Using CBO's Forecasting Growth Model* (Working Paper, No. 53558). https://www.cbo.gov/system/files/115th-congress-2017-2018/workingpaper/53558-cbosforecastinggrowthmodel-workingpaper.pdf.

Cuadrado, P., Izquierdo, M., Montero, J. M., Moral-Benito, E., and Quintana, J. (2022). *The potential growth of the Spanish economy after the pandemic* (Occasional Paper, No. 2208). Banco de España. https://www.bde.es/f/webbde/SES/Secciones/Publicaciones/PublicacionesSeriadas/DocumentosOcasionales/22/Files/do2208e.pdf.

de Bruin, K. C., and Yakut, A. M. (2021). *Technical Documentation of the I3E Model, v4.0* (ESRI Survey and Statistical Report Series, No. 109). Economic and Social Research Institute (ESRI). doi:10.26504/sustat109

de Mooij, R. A., and Devereux, M. P. (2011). An applied analysis of ACE and CBIT reforms in the EU. *International Tax and Public Finance*, *18*, 93-120. doi:10.1007/s10797-010-9138-8

Delzeit, R., Beach, R., Bibas, R., Britz, W., Chateau, J., Freund, F., … Wojtowicz, K. (2020). Linking Global CGE Models with Sectoral Models to Generate Baseline Scenarios: Approaches, Challenges, and Opportunities. *Journal of Global Economic Analysis*, *5*(1), 162–195. doi:10.21642/JGEA.050105AF

Department of Finance. (2023). *Horizon Scanning – calibrating medium to long-term economic projections* (Report). https://assets.gov.ie/static/documents/horizon-scanning-calibrating-medium-to-long-term-economic-projections.pdf.

Department of Finance. (2024a). *Population Ageing and The Public Finances in Ireland – Changing Demographics* (Report). https://assets.gov.ie/static/documents/population-ageing-and-the-public-finances-in-ireland-changing-demographics.pdf.

Department of Finance. (2024b). *Stability Programme Update* (Report). https://assets.gov.ie/static/documents/stability-programme-update-2024.pdf.

Department of Finance. (2025). *Future Forty: A Fiscal and Economic Outlook to 2065* (Report). Government of Ireland. https://assets.gov.ie/static/documents/4687e5e7/Future_Forty_-_Full_Online_Version_311025_V2.pdf.

Department of Finance and Department of Enterprise, Trade and Employment. (2024). *Artificial Intelligence: Friend or Foe? Summary and Public Policy Considerations* (Report). https://assets.gov.ie/static/documents/artificial-intelligence-friend-or-foe-summary-and-public-policy-considerations.pdf.

Diao, X., Roe, T. L., and Yeldan, A. E. (1999). How Fiscal Mismanagement May Impede Trade Reform: Lessons From An Intertemporal, Multi-Sector General Equilibrium Model For Turkey. *The Developing Economies*, *37*(1), 59-88. doi:10.1111/j.1746-1049.1999.tb00865.x

Doorley, K., Callan, T., and Savage, M. (2021). What drove income inequality in EU crisis countries during the Great Recession? *Fiscal Studies*, *42*(2), 319-343. doi:10.1111/1475-5890.12250

Doris, A. (2001). *The Changing Responsiveness of Labour Supply during the 1990s* (QEC Special Article, ESRI). Economic and Social Research Institute. https://www.esri.ie/publications/the-changing-responsiveness-of-labour-supply-during-the-1990s.

Duffy, D., FitzGerald, J., and Kearney, I. (2005). *Rising House Prices in an Open Labour Market* (Working Paper, No. 166). ESRI. https://www.esri.ie/publications/rising-house-prices-in-an-open-labour-market.

Duval, R., and de la Maisonneuve, C. (2009). *Long-Run GDP Growth Framework and Scenarios for the World Economy* (Report). Organisation for Economic Co-operation and Development. doi:10.1787/227205684023

Egan, P., and McQuinn, K. (2024). *Demographics, higher investment and the future potential growth rate of the Irish economy* (Working Paper, No. 795). ESRI. https://www.esri.ie/publications/demographics-higher-investment-and-the-future-potential-growth-rate-of-the-irish.

Egan, P., and Roche, F. (2025). *The Impact of Deglobalisation and Protectionism on a Small Open Economy: The Case of Ireland* (Working Paper, No. 698). ESRI. https://www.esri.ie/publications/the-impact-of-deglobalisation-and-protectionism-on-a-small-open-economy-the-case-of.

European Commission. (2025). *EU-US trade deal explained*. https://ec.europa.eu/commission/presscorner/detail/en/qanda_25_1930.

FitzGerald, J. (2015). *Problems interpreting National Accounts in a globalised economy - Ireland* (QEC Special Article, ESRI). Economic and Social Research Institute.

FitzGerald, J. (2023). *Understanding the Irish economy* (QEC Special Article, ESRI). Economic and Social Research Institute. doi:https://doi.org/10.26504/QEC2023SUM_SA_Fitzgerald

FitzGerald, J., and McQuinn, K. (2024). What is the investment share of output in the Irish economy? In *The Quarterly Economic Commentary Spring 2024* (p. 29-32). Economic and Social Research Institute. doi:https://doi.org/10.26504/QEC2024SPR

Foure, J., Aguiar, A., Bibas, R., Chateau, J., Fujimori, S., Lefevre, J., … Valin, H. (2020). Macroeconomic Drivers of Baseline Scenarios in Dynamic CGE models: Review and Guidelines Proposal. *Journal of Global Economic Analysis*, *5*(1), 28–62. doi:10.21642/JGEA.050102AF

Golden, S., and Carr, E. (2023). *Mid-west business sentiment survey: Summer 2023*. https://limerickchamber.ie/cms_files/wp-content/uploads/2023/09/Business-Sentiment-Survey-Summer-2023-Final.pdf.

Government of Ireland. (2025). *Action Plan on Competitiveness and Productivity* (Report). https://enterprise.gov.ie/en/publications/publication-files/action-plan-on-competitiveness-and-productivity.pdf.

Gunnigle, P., and McGuire, D. (2001). Why Ireland? A Qualitative Review of the Factors Influencing the Location of US Multinationals in Ireland with Particular Reference to the Impact of Labour Issues. *The Economic and Social Review*, *32*(1), 43-67. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1557844.

Herm, A., and Poulain, M. (2012). Economic Crisis and International Migration. What the EU Data Reveal? *Revue européenne des migrations internationales*, *28*(4), 145-169. doi:https://doi.org/10.4000/remi.6171

Hinz, J., Méjean, I., and Schularick, M. (2025). *The consequences of the Trump trade war for Europe* (Policy Brief, No. 190). Kiel Institute for the World Economy. https://ideas.repec.org/p/zbw/ifwkpb/317795.html.

Irish Fiscal Advisory Council. (2024). *Ireland's Infrastructure Demands* (Fiscal Council Working Paper, No. 23). https://www.fiscalcouncil.ie/wp-content/uploads/2024/10/Irelands-Infrastructure-Demands.pdf.

Jorgenson, D. W., and Vu, K. M. (2017). The outlook for advanced economies. *Journal of Policy Modeling*, *39*(4), 660-672. doi:10.1016/j.jpolmod.2017.05.013

Kaldor, N. (1961). Capital Accumulation and Economic Growth. In F. A. Lutz and D. C. Hague (Eds.), *Proceedings of a conference held by the international economics association*. London, Macmillan. doi:https://doi.org/10.1007/978-1-349-08452-4_10

Lawless, M. (2025). Hare or Tortoise? Productivity and Growth of Irish Domestic Firms. *The Economic and Social Review*, *56*(1), 139-161.

Lawless, M., McCoy, D., Morgenroth, E., and O'Toole, C. (2014). *The Importance of Corporation Tax Policy in the Location Choices of Multinational Firms*. Department of Finance. https://www.esri.ie/publications/the-importance-of-corporation-tax-policy-in-the-location-choices-of-multinational.

Loayza, N. V., and Pennings, S. M. (2022). The Standard Long Term Growth Model. In *The Long Term Growth Model: Fundamentals, Extensions, and Applications* (pp. 1–20). Washington, D.C.: World Bank Group. https://documents1.worldbank.org/curated/en/099627211072228496/pdf/IDU052ad90a40e67f040f80ab3b0cfbec815be8d.pdf.

Mastrogiacomo, M., Bosch, N. M., Gielen, M. D., and Jongen, E. L. (2013). *A structural analysis of labour supply elasticities in the Netherlands* (Discussion Paper, No. 235). CPB. https://www.cpb.nl/system/files/cpbmedia/publicaties/download/cpb-discussion-paper-235-structural-analysis-labour-supply-elasticities-netherlands.pdf.

National Competitiveness and Productivity Council. (2025). *Ireland's Competitiveness Challenge 2025* (Report). https://www.competitiveness.ie/media/3y4kcpus/irelands-competitiveness-challenge-2025.pdf.

Nishimizu, M., and Hulten, C. R. (1978). The Sources of Japanese Economic Growth: 1955-71. *The Review of Economics and Statistics*, *60*(3), 351–361. doi:https://doi.org/10.2307/1924160

Pedersen, E. H. (2000). *Demography and Growth in Denmark* (Report). Danmarks Nationalbank. https://www.nationalbanken.dk/media/ntokomqc/2000-mon1-demo-47.pdf.

Privalko, I., Russell, H., and Maitre, B. (2019). *The Ageing Workforce in Ireland Working Conditions, Health and Extending Working Lives* (ESRI Research Series, No. 92). ESRI. doi:https://doi.org/10.26504/rs92.pdf

Solow, R. M. (1956). A Contribution to the Theory of Economic Growth. *The Quarterly Journal of Economics*, *70*(1), 65-94. doi:10.2307/1884513

Stiroh, K. J. (1998). Long-run Growth Projections and the Aggregate Production Function: A Survey of Models Used by the U.S. Government. *Contemporary Economic Policy*, *16*(4), 467-479. doi:https://doi.org/10.1111/j.1465-7287.1998.tb00534.x

Susskind, D. (2020). *A World Without Work: Technology, Automation, and How We Should Respond*. Penguin.

Swan, T. W. (1956). Economic Growth and Capital Accumulation. *Economic Record*, *32*(2), 334-361. doi:10.1111/j.1475-4932.1956.tb00434.x

van der Eng, P. (2010). The sources of long-term economic growth in Indonesia, 1880–2008. *Explorations in Economic History*, *47*(3), 294-309. doi:https://doi.org/10.1016/j.eeh.2009.08.004

Whelan, A., McGuinness, S., Staffa, E., and Redmond, P. (2024). *Skill requirements for emerging technologies in Ireland* (ESRI Research Series, No. 191). Economic and Social Research Institute. doi:10.26504/rs191

Yakut, A. M., and de Bruin, K. C. (2023). The importance of having a more realistic welfare transfer determination rule: A CGE analysis for Ireland. *Economic Analysis and Policy*, *80*, 1310-1325. doi:10.1016/j.eap.2023.10.021

APPENDICES

APPENDIX A: METHODOLOGY

In a non-technical manner, this appendix presents the details of the Ireland Environment, Energy, and Economy (I3E) model. A more technical description of the model is available in de Bruin and Yakut (2021).

A.1 Computable general equilibrium modelling

The purpose of the *Economic Outlook* is to provide a trajectory for Ireland's medium-term economic dynamics, which requires an extensive analysis encompassing multiple sectors. To this end, the ESRI's Ireland Environment, Energy and Economy (I3E) model is used. The I3E model is a fully dynamic, i.e., intertemporal, single-country, small open economy computable general equilibrium (CGE) model designed to understand the economic relationships between various economic agents, including multiple sectors, heterogeneous representative household groups, a government, an enterprise (the owner of all firms) and the rest of the world. CGE models are a class of economic models that analyse economic 'shocks' in a counterfactual manner by comparing the outcomes of policy scenarios, compared to a baseline outcome with no policy change (Böhringer and Löschel, 2006, p. 53). The scenarios provide an understanding of the direction of policy impact and their order of magnitude, rather than focusing on the informational value of precise numbers (Böhringer et al., 2016, p. 503). In this respect, a 'baseline' scenario, along which the economy evolves without any change in resource allocation (i.e., labour, capital), is constructed, and the results of a policy scenario are presented as deviations from this path.

The baseline is a path calibrated using data collected over a single year, representing the economy in both accounting and economic equilibrium. The economy is in an accounting equilibrium, with total expenditure equal to total income for each agent. Along the baseline path, with the exogenous economic growth rate, the modelled economy follows 'a balanced growth

path', where per capita economic aggregates grow, but the capital-to-labour ratio and the income distribution between them remain constant (Kaldor, 1961; Acemoğlu, 2009). Growth rate projections generally rely on production functions that incorporate total factor productivity (TFP). However, in many CGE models, such as I3E, technical change is labour-augmented to achieve a balanced growth path.[9] A modelling problem arises at this point: the TFP-based economic growth rate needs to be converted into labour-augmented technical change. To make the two models consistent with each other, labour productivity growth is obtained as a residual during CGE model calibration (Delzeit et al., 2020; Foure et al., 2020).

The baseline reproduces the path of the economy, imposed by exogenous growth rates for gross domestic product (GDP), population, and labour productivity, under the balanced growth path assumption. However, as CGE models are used to make counterfactual comparisons, the growth rates of macro- and micro-level variables deviate from exogenously specified growth rates in the short- and medium-term. In this case, as the value added of some sectors grows at a higher rate than others, resources are allocated from declining (or slowly growing) sectors to (relatively) expanding sectors until relative prices become stable, a process known as price adjustment. In the long run, however, the growth rate in the model economy converges to its long-run 'potential' growth rate.

Several entities publish economic growth projections for Ireland. The growth metrics commonly used by the Department of Finance and other independent institutions include GDP, modified gross national income (GNI*) or net national product (NNP) (DFIN, 2023, 2024a,b; Conefrey et al., 2024; Egan and McQuinn, 2024). As CGE models operate on the accounting principle, which ensures that the income of each agent in the model economy equals its expenditures, excluding income received by foreign entities from domestic economic activity is not immediately feasible. Following the CGE literature, we need to estimate a projected GDP growth rate to calibrate the I3E model's baseline. However, as GNI* is the primary macroeconomic aggregate that represents activity in the Irish economy, we calculate it using the production approach by excluding payments to capital made by foreign-

[9] Acemoğlu (2009) provides a detailed discussion on the relationships between types of production function and technical growth.

owned dominated sectors, as the leftover value from GDP represents the amount of resources that can be used for consumption and investment purposes by residents of Ireland (CSO, 2024f). Based on the I3E model's assumptions about the share of foreign-owned firms across all sectors, GNI* is incorporated as an endogenous variable in the model's post-simulation calculations. Using a similar approach, the I3E model also tracks evaluations of modified investment and modified domestic demand (MDD).

A.2 I3E model

A.2.1 Production

The production side of the model comprises 69 sectors that produce 67 commodities, categorised into two broad groups based on their investment-determination rules. Dividend maximisers choose investment to maximise the present discounted value of their dividend streams, subject to the capital accumulation function, whereas investment of non-dividend maximisers is a fixed fraction of their net-of-tax profits. Unlike static or recursive dynamic CGE models, endogenising firms' investment decisions through a dividend maximisation problem is crucial in intertemporal models for two reasons. First, under the assumption of perfect foresight and rational expectations, a policy-induced resource reallocation across sectors is endogenised, as the firm's dividend stream depends on future factor prices, tax rates, and the depreciation rate. Secondly, the model's dynamics depend not only on household consumption smoothing but also on firms' investment decisions. Our investment modelling strategy induces sector-specific capital stocks, similar to dynamic CGE models in the literature, in which firms can finance investment expenditures using three funding sources: retained earnings, foreign/domestic borrowing, and issuing new shares. In the current version of the model, firms can only use their retained earnings; our approach is similar to that of Diao et al. (1999).

Each firm combines value added, energy and other materials to produce its output using a constant elasticity of substitution (CES) type nested production function. The value-added nest is a CES aggregate of capital and labour, which itself is a CES aggregate of three labour types. The bundle of other materials is also a CES aggregate of non-energy inputs. The composite energy input is

a CES aggregate of all energy commodities (coal, peat, diesel, marked diesel, gasoline, kerosene, jet kerosene, fuel oil, liquid petroleum gas, natural gas and electricity), but the elasticity of substitution takes three different values to introduce heterogeneity across sectors by considering the differences in their energy demand composition and substitution possibilities.[10] NACE sector D35 (electricity, gas, steam and air conditioning supply) is disaggregated into eight sectors: conventional (using fossil fuels), hydro, onshore wind, offshore wind, other renewables, natural gas production, distribution and transmission, and hydrogen. These sectors, except for distribution and transmission, have distinct production nests for their composite energy inputs. The conventional electricity production sector combines its primary inputs (natural gas, coal and electricity) with other energy sources (i.e., auxiliary inputs), with limited elasticity of substitution. The remaining sectors use electricity as their only energy input.

One notable characteristic of the I3E model is that it allows producers to fully internalise the costs of the EU Emission Trading System (ETS) and carbon tax exemptions, as sectoral ETS emissions are not subject to the Irish carbon tax to avoid double taxation. Exogenous changes in EU ETS prices, its legislation (such as sectoral allowances), and the carbon tax, alter the sector-specific *incurred* unit cost of an energy input depending on the sectoral EU ETS emissions-to-total emissions and the allowances-to-ETS emissions ratios. This affects the optimal combination of capital, labour, energy and other inputs to minimise production costs. The emissions of the energy production, petroleum refining, mineral and aviation sectors are fully covered by the EU ETS. These firms pay the EU ETS costs and are fully exempt from the carbon tax. On the contrary, land transportation (road or rail), agriculture, waste and the residential sector are subject only to the Irish carbon tax. For the other sectors, EU ETS coverage varies based on the average combustion capacity of firms.

[10] Certain sectors, e.g., textile, trade and professional services, can easily alter their energy input composition, whereas the aviation sector does not have any alternative energy input beyond using jet kerosene.

A.2.2 Labour market

Within the I3E model, there are three types of labour based on educational attainment: low-, medium-, and high-skilled. The CSO's Labour Force Survey is used to determine the composition of sectoral demand across labour types. The demand for each type of labour stems from firms' cost-minimisation problem, which treats labour types as imperfect substitutes for one another.

The supply of labour is determined endogenously by net migration and the labour force participation rate (LFPR). Net migration is a function of the net-of-tax wage income differential between Ireland and the rest of the world. The LFPR is a negative (positive) function of the unemployment rate (the net-of-tax real wage rate). The total labour supply, including net migration, is adjusted by the exogenously set working-age population ratio. Converting population projections into labour force projections is not a trivial task, as their growth rates can differ due to several factors, e.g., rising female labour force participation, and consequently, using the working-age population as a proxy for the labour force is not recommended (Foure et al., 2020). In this respect, Foure et al. (2020) argue that a distinction should be made between the population, the working-age population and the labour force. The endogenous LFPR in the model directly addresses this issue using calibrated parameters from the Labour Force Survey.

The difference between total supply and demand for each labour type determines the level of involuntary unemployment and the unemployment rate, both of which play an important role in shaping the model's dynamics. The labour-type-specific unemployment rate determines the equilibrium real wage rate in each labour market through a wage equation calibrated using Labour Force Survey data. The aggregate unemployment rate, on the other hand, allows the I3E model to incorporate unemployment benefits into government welfare transfers to households.

Another important element in the labour market is that each labour type disaggregates its total employment across sectors by maximising wage income, treating sectors as imperfect substitutes for one another. This is an important feature, as it enables the model to replicate the changes in the sectoral composition of employment, particularly in response to asymmetric shocks across sectors, such as the COVID-19 crisis.

A.2.3 Households

The I3E model has ten representative household groups (RHG), defined by income quintiles, across an urban–rural divide. Within the limitations of CGE modelling, the aim is to quantify the implications of policies on the between-group income distribution. Each RHG maximises its present discounted value of intertemporal utility subject to its budget constraint, which equates disposable income to the sum of consumption expenditures and savings. Disposable income has five components: net-of-tax wage and dividend income, government welfare transfers and pensions, and non-means-tested transfers.

Each household disaggregates its total consumption across several composite commodities, including transportation, energy, nourishment, services and remaining commodities. In the detailed consumption nest, each composite commodity has sub-composite commodities. For instance, at the top level, households first choose how much composite energy they will consume, then, at the meso-level, choose which heating commodity to use among natural gas, electricity, solid or liquid fuels, and then further disaggregate solid (between coal and peat) and liquid (across kerosene, LPG, and marked diesel) sub-composite commodities.

A.2.4 Government

The government collects direct taxes on labour incomes and sectoral profits (i.e., corporation tax), indirect taxes on sales of commodities, carbon tax on energy commodities, export and import tax on trade of commodities,[11] and production tax on production activities. Half of the total ETS revenue is allocated to the government, and the other half to the European Commission. The government allocates its total revenues to consumption, to transfers to households in the form of welfare and pensions, and to interest payments on its outstanding foreign debt stock. Government demand for public commodities has two components: an autonomous part (fixed in nominal terms) and an induced part (a function of nominal GDP). The budget for

[11] Only electricity is subject to an export tax, as it is exempt from the carbon tax.

pensions is fixed in real terms and adjusted by the Consumer Price Index (CPI). Government transfers have three components: a fixed autonomous component and two induced components that respond to changes in the aggregate unemployment rate and the CPI. Hence, the welfare system plays an automatic stabiliser role, which is crucial in Ireland (Doorley et al., 2021; Yakut and de Bruin, 2023). The total nominal values of these two government transfers are distributed across households based on fixed fractions calibrated using the Survey on Income and Living Conditions (SILC) (CSO, 2021). The difference between the government's total revenue and expenditure constitutes public savings, which determines the change in the government's foreign debt stock.

For the *Economic Outlook*, an additional set of macroeconomic aggregates has been introduced into the I3E model: GNI* and MDD, as summarised below, and two public finance indicators, as a fraction of GNI*, general government balance and general government balance (excluding windfall corporation tax). General government balance is the difference between the total revenues and total expenditures of the government, and general government balance (excluding windfall corporation tax) is general government balance minus half of the total corporation tax receipts. As all items of the government revenues and expenditures are linked to economic activity, their values are calculated endogenously along all scenario paths. In dynamic CGE models, ensuring convergence to a new equilibrium relies on a set of conditions imposed on the model's last period. The condition for the government budget is zero savings, which keeps its debt stock constant after the terminal period. In all policy scenarios, therefore, the model follows a path to achieve zero public savings.

A.2.5 Enterprise

The I3E model includes an 'enterprise' account, which is assumed to own all firms. Such an assumption simplifies modelling and avoids the need for detailed data that are not available. This enterprise agent collects all gross sectoral profits and the net factor income from the rest of the world and pays corporation tax to the government. A portion of net-of-corporate-tax profits is defined as enterprise savings. The difference between the enterprise's total income and savings is distributed to households as dividends.

A.2.6 Endogenising GNI* and MDD

The I3E model endogenously provides numerous macroeconomic aggregates, either within the core model or in the post-simulation phase. The post-simulation element facilitates a reduction in the model's size and improves its tractability in terms of variables and equations. Although GDP is a key aggregate within the I3E model, GNI* and MDD are important macroeconomic metrics for the Irish economy. To this end, the assumptions provided in Table A.2.1 on the sectoral gross operating surplus shares are applied. GNI*, following CSO's (2024f) production approach definition, is calculated as the sum of compensation of employees paid by all sectors, indirect taxes on products (i.e., production, sales, and carbon), and the gross operating surplus of each sector multiplied by the shares of domestically owned firms in Table A.2.1. Therefore, GNI* is GDP minus the gross operating surplus of foreign-owned sectors, calculated under the assumptions. The same ownership shares are also used to obtain the sectoral modified investments, which in turn are used to calculate MDD.

TABLE A.2.1: ASSUMPTIONS ON SECTORAL GROSS OPERATING SURPLUS SHARES

Sector	NACE Code	Domestically-owned	Foreign-owned
Manufacture of petroleum products	C19		100
Manufacture of chemical products	C20		100
Manufacture of basic pharmaceutical products	C21		100
Manufacture of high technology products	C26-C28	10	90
Other manufacturing	C31-C33	80	20
Construction	F	82	18
Trade	G	70	30
Air transport	H51	75	25
Hotels & Restaurants	I55-I56	70	30
Broadcasting	J58-J60	20	80
Telecommunications	J61	25	75
Data Centres	J62-J63		100
Financial Services	K	20	80
Real estate activities	L	70	30
Professional Services	M	60	40
Rental & Leasing	N77	60	40

APPENDIX B: DATA SOURCES AND CALIBRATION

This appendix explains the data sources and the model's calibration procedure, including details of the growth accounting exercise used to estimate Ireland's potential economic growth rate until 2050.

B.1 Data sources and calibrating model parameters

Calibrating the computable general equilibrium (CGE) model parameters requires forming a Social Accounting Matrix (SAM), an organised matrix representation of all transactions between the agents of the economy. A SAM is thus a comprehensive accounting framework within which the full circular flow of an economy occurs: households use their disposable income for consumption, which generates revenue for producers, which, in turn, generates income for the factors of production received by households – the owners of these factors. SAMs are constructed from input-output (IO) tables derived from the Supply and Use Tables (SUTs). The supply table provides information on which sectors produce which commodities, imports by commodity, trade margins and net indirect taxes by commodity. The use table comprises information on inputs to production, payments to the factors of production, net taxes on products, and final demand components (consumption, government, gross fixed capital formation, and exports).

As the I3E model is used to examine energy- and climate-related policies, an extended version of the SAM – an Energy SAM (ESAM) – is required. In this respect, the energy-related sectors and commodities in the SAM are further disaggregated. The disaggregation process requires not only obtaining information on the intermediate-input demand composition of production activities and the composition of value added by factors of production, but also on the distribution of final consumption across private (household) consumption, public consumption, investment consumption and exports. As the data provided by the SUTs are insufficient to construct an ESAM, additional macroeconomic data, such as government transfers to households, government savings and net factor income from the rest of the world, are obtained from government and national accounts. In addition, analysing the distributional impacts of policy changes requires disaggregating the private household sector into several distinct representative household groups based

on disposable income. To better understand labour market dynamics, the total labour force is also disaggregated into low-, medium- and high-skilled labour based on educational attainment. Disaggregation of the household sector and the labour force requires calibrating a large number of parameters. For instance, the labour income of households, which is a single number in the SAM, must be disaggregated across both households and labour types. Therefore, the Household Budget Survey 2022–2023 (HBS), for the composition of consumption across household groups, the Survey on Income and Living Conditions 2020 (SILC), for the composition of disposable income, and the Labour Force Survey 2020 (LFS), for the sectoral composition of employment by skill type, are used extensively. As the latest SUTs for the Irish economy are based on 2020, the ESAM is constructed for that year, despite the unique characteristics of the COVID-19 pandemic.

The ESAM provides all the relevant information needed to calibrate the initial values of all model variables and parameters. Sector-specific variables (parameters) such as capital stock (production tax rate) are calibrated using gross operating surplus (production tax payments to the government). The model does not distinguish between tangible and intangible capital/assets and assumes that all capital stock is tangible. Although such a distinction would be plausible in the case of Ireland, modelling the production and trade of intangible assets is not a trivial task. Using a multi-country CGE model that assumes a fixed global supply of intangible assets is the general practice in the literature (e.g., de Mooij and Devereux, 2011). Commodity-specific parameters, such as the value-added tax rate, are calibrated using the government's tax collections and total expenditures by commodity. The wage income (corporate) tax rate by type of labour (enterprise) is calibrated by dividing direct tax payments by each type of labour's (enterprise's) total income. In calibrating the composition parameters for private consumption, household expenditures by commodities are used with the given elasticity of substitution parameters. For public consumption, expenditures by commodities are divided by the government's total expenditures. Along any scenario paths, unless otherwise stated, all parameters are assumed to be constant at their initial calibrated values.

B.2 Obtaining economic growth rate path

Another important element of the model calibration is determining the path of the economic growth rate, which reflects the economy's potential and provides crucial information for calibrating the dynamics of CGE models, as discussed in Appendix A.1. To this end, a growth accounting framework assuming an aggregate production function is utilised, often referred to as the 'Solow–Swan growth model' (Solow, 1956; Swan, 1956). For the given sequences of gross domestic product (GDP), capital stock and employment, the production function is used retrospectively to disentangle the contribution of total factor productivity (TFP). TFP growth relates to both factors of production and is generally calculated as a residual (e.g., Solow, 1956; Nishimizu and Hulten, 1978; van der Eng, 2010).

The same growth accounting methodology can be used to project future paths for GDP and other macroeconomic aggregates, such as gross national product (GNP) and gross national income (GNI), under specific assumptions about capital stock, employment and TFP. The growth accounting approach provides a set of 'potential' economic growth paths conditional on assumptions about the trajectories of capital stock, employment and TFP. Employment projections are based on working-age population figures from population projections, along with different assumptions on labour force participation rates and unemployment rates. Deriving the capital stock series requires a saving rate (savings-to-GDP ratio) or, equivalently, an investment rate (investment expenditures-to-GDP ratio). These rates can be calculated based on the available historical data on savings, investment expenditures and GDP.[12] The last element required to conduct projections is the future level of TFP. Since it is calculated as a residual in the retrospective analysis, determining its sequence from external resources is challenging. Therefore, its historical annual average growth rate is applied to its calculated initial level. This approach is widely used for academic purposes (e.g., Stiroh, 1998; Jorgenson and Vu, 2017) and plays an integral part in the growth projections of many international and national institutions (Loayza and Pennings, 2022; Duval and de la Maisonneuve, 2009; CBO, 2018; Pedersen, 2000; Cuadrado et al., 2022). The prime usefulness of the methodology lies in its ability to set

[12] Since the methodology works with a closed economy, which is not the case in any country, the savings and investment rates cannot be considered equivalent. Therefore, the investment rate is generally used.

different sequences of capital stock, labour force and TFP, thereby obtaining various economic growth rate patterns and identifying the contributions of each component. Its main limitation, however, is not considering the composition of economic activity across sectors, which plays a crucial role in growth dynamics (Delzeit et al., 2020, p. 176).

We apply the Solow–Swan model to project Ireland's potential economic growth rate, using assumptions about demographic change and investment. Multiple cases are considered to better understand the implications of different combinations of assumptions on the investment rate, i.e., the share of investment expenditures in output (low, medium and high), and the population growth rate, which varies depending on migration levels (low, medium and high) assumptions.[13]

The cases we consider are mixes of different assumptions on investment rate and net migration, as summarised in Table B.2.1. For migration, we adopt the CSO's M1, M2 and M3 assumptions, representing high, medium, and low net migration (CSO, 2024h). Our investment rate assumptions are based on deviations from the historical average rate of 23 per cent. Our low investment rate is inspired by the 2008–2015 period, where the average investment rate was 20 per cent of GDP (CSO, 2024d). Hence, we assume a gradual decrease in the investment rate from 23 per cent in 2023 to 20 per cent in 2030, and maintain this rate thereafter. This case replicates Ireland's adverse experiences after the 2008 crisis. In contrast, we also adopt an optimistic investment case in which the rate increases to 26 per cent by 2030, and maintains this rate thereafter. This replicates the 2000s era up to 2008 to a certain extent. A medium investment assumption is a constant 23 per cent throughout.

For the assumption combinations in Table B.2.1, we implicitly assume that a high investment rate is a signal of an improving economy and thus attracts more immigration. Thus, we are not coupling a high investment rate path with a low migration assumption. A low investment rate in Ireland is often seen as an indicator of a weak Irish economy, which could reduce

[13] Unemployment and labour force participation rates determine the labour force dynamics based on the population dynamics. As a sensitivity analysis, we additionally investigated changes in the profiles of these variables. However, they have a limited impact on the calculated growth paths, with the underlying demographic dynamics being the primary factor in determining growth.

TABLE B.2.1: GROWTH ACCOUNTING CASES

	Population	Investment rate
MedInv MedMig	CSO M2	Fixed at 23% of GDP
LowInv MedMig	CSO M2	Decreases from 23% in 2023 to 20% in 2030
LowInv LowMig	CSO M3	Decreases from 23% in 2023 to 20% in 2030
HighInv HighMig	CSO M1	Increases from 23% in 2023 to 26% in 2030

immigration. On the other hand, if it reflects a struggling global economy, Ireland, as an EU member and a relatively advanced economy, could attract international migrants. Herm and Poulain (2012) review the relationship between investment levels and international migration, which is complex and challenging to predict, but considering both medium- and low-migration assumptions, coupled with a low investment rate, is appropriate.

B.2.1 Growth accounting methodology

The macroeconomic model underlying growth projections is a Solow-type growth model based on a Cobb–Douglas production function using capital (K_t) and labour (L_t) inputs as given in eq. (B.2.1).

$$Y_t = A_t K_t^{\alpha} L_t^{1-\alpha} \tag{B.2.1}$$

where A_t is the TFP growing at the rate of g_t:

$$A_{t+1} = (1 + g_t)A_t \tag{B.2.2}$$

Capital accumulation is based on existing capital stock less depreciation at the rate of δ_t plus investment expenditures I_t:

$$K_{t+1} = (1 - \delta_t)K_t + I_t \tag{B.2.3}$$

where investment expenditures are a portion of the output, with rate s_t:

$$I_t = s_t Y_t \tag{B.2.4}$$

The employment is replaced with the labour force, which is calculated based on assumptions about the working-age population, $WorkPop_t$, the labour force participation rate, $LFPR_t$, the unemployment rate, U_t, and, finally,

hours worked, H_t. Hence, labour utilised in production is defined as:

$$L_t = (1 - U_t)[LFPR_t \; WorkPop_t] \; H_t \tag{B.2.5}$$

B.2.2 Data for growth accounting exercise

The model is simulated for the period from 2024 by using 2023 as the base year, t_0. The assumed parameter values are presented in Table B.2.2. The GDP and the capital stock values for 2023 are taken from CSO (2024d) and CSO (2024c), respectively. Following the standard practice in the literature (e.g., Egan and McQuinn, 2024), the share of capital in output, α, and the depreciation rate are taken as $\alpha = \frac{1}{3}$ and δ=0.06, respectively.

Demography and labour

Understanding potential population and labour dynamics is crucial, as labour depends on the working-age population, unemployment rate, and LFPR. The working-age population includes individuals aged 15 to 74, with the expectation that the population will age and that labour force participation by older cohorts will increase in the future. Privalko et al. (2019) finds that Ireland has a higher retention rate of older workers compared to the rest of the Organisation for Economic Co-operation and Development (OECD) and that the rate has increased steadily since 2012, from 55 per cent to 71 per cent in 2018. Declining fertility rates and increased longevity will lead to the Irish population ageing rapidly in the coming decades (DFIN, 2024a), such that the share of the population over the age of 65 will increase from 15 per cent in 2022 to 21 per cent in 2040 (Bergin and Egan, 2024).

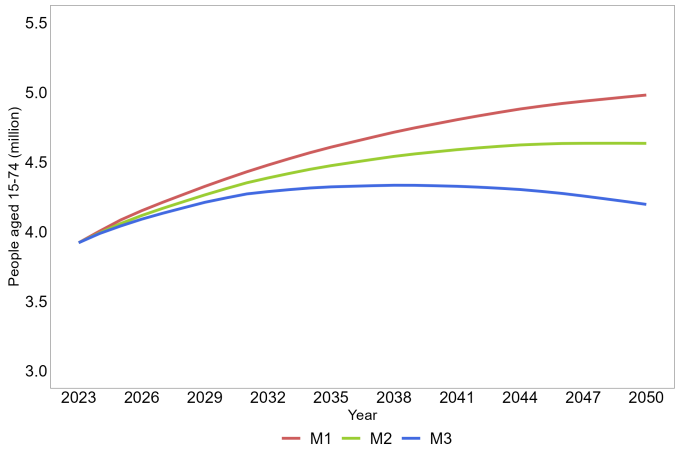
The demographic projections aggregated for ages 15–74 are presented in Figure B.2.1. CSO (2024g) provides three projections, M1, M2 and M3, based on different net migration assumptions. The working-age population is around 3.9 million in 2023. Under the high migration scenario, M1, the working-age population increases at a decreasing rate, reaching around 5 million by 2050. Under the medium migration scenario, M2, the working-age population exhibits a similar trend, reaching approximately 4.6 million by 2045 before levelling off by 2050. Under the low net migration scenario, M3, the working-age population behaves similarly until it reaches a peak of 4.3 million by 2040, before falling to 4.2 million by 2050. Under M3, net

TABLE B.2.2: PARAMETER VALUES USED IN GROWTH ACCOUNTING CASES

Parameter	Value	Data source	Notes
Y_0	492,128	CSO (2024d)	2022 base, million euros
K_0	798,765	CSO (2024c)	2022 base, million euros
α	1/3	Assumed	
δ_t	0.06	Assumed	
g_t	0.0075		See in text for details
$WorkPop_t$		CSO (2024h)	Age 15–74, M1, M2 and M3 projections
$LFPR_t$	0.7	CSO (2024a,e,h)	See in text for details
U_t		CSO (2024e)	See in text for details
H_t	1,656	Assumed	34.5 hours x 48 weeks = 1,656 hours/year
L_0	4.35	Calibrated	See in text for details
s_t	0.23	CSO (2024d)	See in text for details
A_0	0.00199	Calibrated	See in text for details

immigration is assumed to decrease to 10,000 by 2032 and remain constant thereafter. The decreasing trend in M3 indicates that the rate of declining fertility exceeds the relatively low net migration.

FIGURE B.2.1: DEMOGRAPHIC PROJECTIONS (MILLION PEOPLE, AGE 15–74)

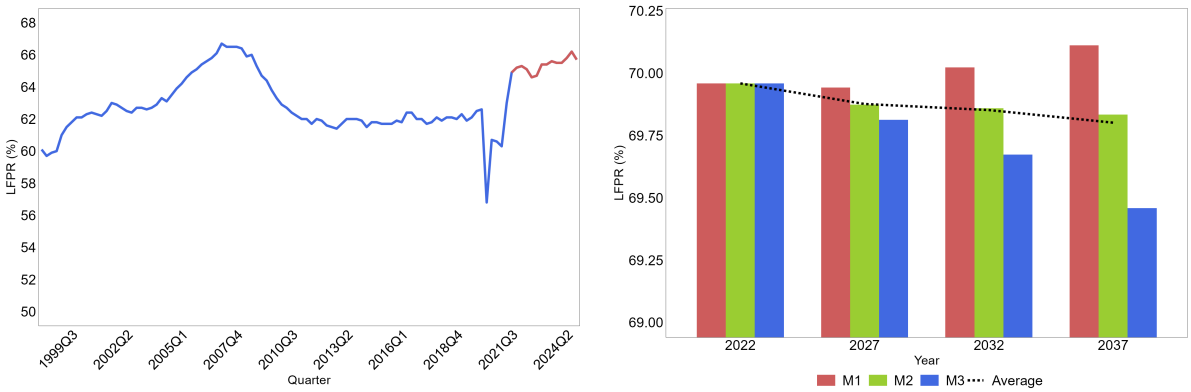


Source: CSO Projected Population based on Census 2022, CSO (2024h)

Labour supply is obtained by applying the LFPR to the associated demographic cohorts. The evolution of the LFPR in Ireland is presented in Figure B.2.2a, which shows that the LFPR increased steadily until 2008. After that, there is a decline to about 62 per cent, and it remained stable at this rate until the COVID-19 pandemic. After the COVID-19 pandemic, the rate increased to the

mid-60s. The red portion of the line shows the recent developments. LFPR maintains a slight but persistent positive trend. This generates the expectation that the LFPR will be higher in the coming decades.

FIGURE B.2.2: LABOUR FORCE PARTICIPATION RATE

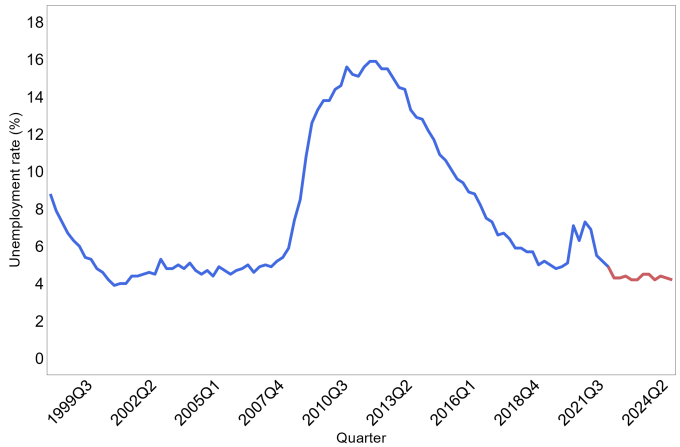


(a) Historical **(b) CSO Projection**

Source: Authors' calculations based on CSO Actual and Projected Labour Force from 2022 (CSO, 2024a) and CSO Population Projection based on Census 2022 (CSO, 2024h)

Figure B.2.2b shows the projected path of LFPR based on the CSO's population and labour force projections. Under the three demographic scenarios, variations in LFPR appear over time, albeit negligibly. In 2037, LFPR under M1, M2, and M3 scenarios is 70.1 per cent, 69.8 per cent, and 69.5 per cent, respectively, with the average of 69.8 per cent. On this basis, we assume that a 70 per cent LFPR is acceptable for a baseline.

FIGURE B.2.3: UNEMPLOYMENT RATE, PER CENT OF LABOUR FORCE



Source: ILO Participation and Unemployment Rates (CSO, 2024e)

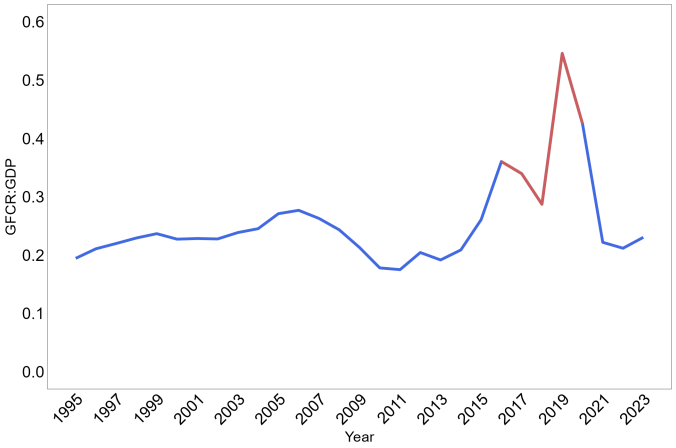
Next, consider the unemployment rate. Given the labour supply, the unemployment rate determines the number of people in actual employment, as implied by eq. (B.2.5). The unemployment rate for Ireland is presented in Figure B.2.3, which shows the decrease in the late 1990s and the stable path it followed until 2008. Then the jump during the 2008 crisis is observed. After a second jump during the COVID-19 era, the unemployment rate appears to have settled by 2022. The average unemployment rate from 2022Q1 to 2024Q4 is 4.3 per cent. We assume that this is the initial value of the unemployment rate. We also assume that by 2030, this rate will increase to 4.75 per cent. This reflects the universal expectation that the adoption of new technologies, especially artificial intelligence (AI), will lead to an increase in the unemployment rate (Susskind, 2020). In the Irish context, research published by DFIN and DETE (2024) finds that occupations accounting for 63 per cent of employment are exposed to AI, with 30 per cent of these at risk of being substituted. The existing trade policy uncertainty further complicates the issue. For example, Egan and Roche (2025) finds adverse impacts on the level of employment in Ireland as a consequence of tariff actions between the US and the rest of the world. However, we do not expect the unemployment rate to increase to high levels. Along the baseline, the unemployment rate is assumed to start at 4.3 per cent in 2023, increase to 4.75 per cent in 2031, and remain constant thereafter. Finally, we assume the working hours, H_t, to be constant at 1,656 labour hours (34.5 hours per week $\times$ 48 working weeks). These assumptions enable the calculation of the time path of labour supply using eq. (B.2.5).

Capital stock and investment rate

The initial capital stock is based on CSO (2024c). The data from the CSO is available for several items. Among these, those directly related to the production process are included in the capital stock figure. For example, dwellings are excluded from the data because they are not a physical input to the production process. Roads are similarly excluded. This implies a capital stock-to-GDP ratio of approximately 1.62.

A key item in the model regarding growth dynamics is investment. Equation (B.2.4) relates investment expenditures and GDP by using the investment rate. This ratio can be calibrated using data on investment expenditures and GDP,

FIGURE B.2.4: GROSS FIXED CAPITAL FORMATION-TO-GDP RATIO



Source: Authors' calculations based on CSO (2024d)

as depicted in Figure B.2.4. During the 2015–2020 period, exceptionally high investment-to-GDP ratios were observed. The ratio fluctuates between 0.2 and 0.3 from the mid-1990s to the mid-2010s. The rate jumps up to 0.36 in 2016 and remains exceptionally high until 2021. If one excludes this period, an average ratio of 0.23 is obtained. This ratio is adopted as the baseline.

Total factor productivity

Finally, we consider the initial value for TFP, A_0. By rewriting the production function given in eq. (B.2.1) at $t = 0$:

$$A_0 = \frac{Y_0}{K_0^{\alpha} L_0^{1-\alpha}} \tag{B.2.6}$$

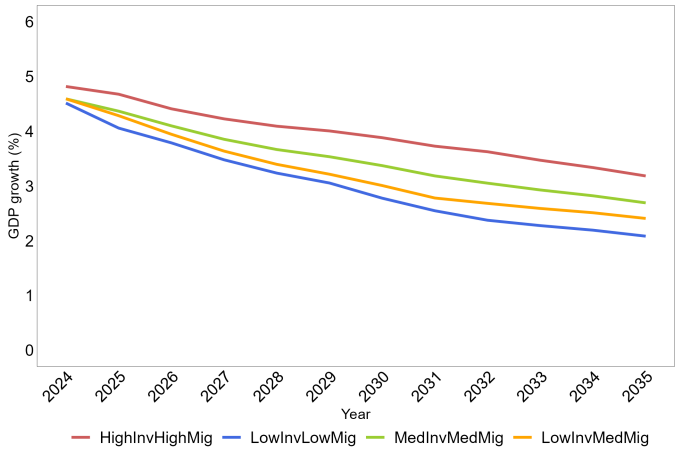
For the obtained values of K_0 and L_0 and the assumption on the parameter α, A_0 is calibrated to 0.002.

By eq. (B.2.2), TFP grows at the rate g_t. The production function is used to calculate a historical path for A_t, and its growth rate is calibrated based on this path. Utilising the historical values of Y_t, K_t and L_t from the CSO and assuming α=1/3, the resulting series for A_t displays an average annual growth rate of 0.75 per cent during the 1998–2019 period.

B.2.3 Growth accounting results

The potential GDP growth rates for the economy, based on the assumptions outlined in Table B.2.1 (and model parameter assumptions in Table B.2.2), are illustrated in Figure B.2.5. Only four of the cases considered in this analysis are presented for clarity of illustration. One is the medium investment rate coupled with medium migration (*MedInv-MedMig*), representing an average case. A low investment medium migration case (*LowInv-MedMig*) was subsequently adopted as a foundation for the calibration of the I3E model. The figure also presents an optimistic case with high investment and high migration (*HighInv-HighMig*) and a pessimistic case with low investment and low migration (*LowInv-LowMig*).

FIGURE B.2.5: GROWTH UNDER CASES, Y-O-Y PER CENT CHANGE



Higher investment rates tend to generate higher growth, as can be seen from a comparison of the *LowInvMedMig* case and the *MedInvMedMig* case. Also, demographic dynamics with a higher net migration lead to a higher growth path as can be seen via the *LowInvLowMig* and *LowInvMedMig* cases. The variations through time are due to the investment and population assumptions for various cases. In the case of a low investment, the investment rate falls towards 2030 and dominates the growth dynamics. After 2030, demographic dynamics take over and become the dominant factor in determining growth. By 2035, the growth rate in the *HighInv-HighMig* case is 3.2 per cent, whereas the *LowInv-MedMig* case remains at 2.4 per cent. The worst outcome is observed in the combination of low migration and a falling investment rate case, *LowInv-LowMig*. In 2035, this

case results in a growth rate of 2.1 per cent. Although the underlying drivers of growth vary across these cases, they share a common overall narrative. Potential growth rates are expected to have a downward trend towards 2035. The economy is anticipated to continue to grow, but at a slower rate. To calibrate the I3E model, we use the low-investment, medium-migration case (*LowInv-MedMig*), which represents a long-run growth pathway. Within the model, growth rates of macro- and micro-level variables deviate from the exogenously specified growth rate in the short- and medium-term out to 2035, but the growth rate in the model converges to this long-run 'potential' growth pathway.

Several domestic and international institutions produce long-term economic projections for the Irish economy. Table B.2.3 summarises some recent studies, along with the compound average growth rates obtained in this study for *LowInvMedMig*. The *LowInvMedMig* case assumes a decrease in the investment rate from 23 per cent in 2023 to 20 per cent in 2030, along with the M2 population projection from the CSO. This case is used to calibrate the I3E Model. All of the estimates presented in the table are produced using a Solow growth model framework, but they vary in their primary growth metric (GDP or GNI*) and the projection timeframe, making precise comparison difficult. The general narrative across all the growth projection exercises presented in Table B.2.3 is that, subject to various caveats (e.g., on tariffs), economic growth is projected to average 2–3 per cent out to 2030 and thereafter is expected to moderate.

TABLE B.2.3: OTHER GROWTH PROJECTIONS

Period	GNI*			NNP	GDP	
	DFIN (2024b)	DFIN (2023)	Conefrey et al. (2024)	Egan and McQuinn (2024)	DFIN (2024b)	LowInv-MedMig†
2025–2027	2.4					
2025–2027					3.5	
2023–2030		2.5				
2024–2030			2.3	2.0		3.6
2030–2040			1.7	1.5		2.4
2040–2050			1.4	1.0		1.7
2030–2050		1.3				

† The LowInv-MedMig case is the one used for the calibration of the I3E Model.

Growth rates presented in Table B.2.3 are based on Solow-type modelling, which does not account for the coexistence of multiple sectors and consumer types. What makes the projections in this *Economic Outlook* novel and distinctive is that we provide insights into growth dynamics by accounting for sectoral and household-level complexities. The growth rates presented in this section are inputs to the calibration of the I3E model, which then generates growth dynamics that account for the interrelations among economic agents. By analysing the scenarios using the I3E model, it is possible to identify a 'potential' pathway for the Irish economy under the impacts of various risks and opportunities it faces.

B.3 Technical details for the baseline

Merging national accounts with sector-specific details from the SUTs enables us to construct the ESAM, which is used to calibrate model parameters. The potential growth path of the Irish economy is then projected using a well-known growth-accounting approach, under assumptions about demographics, the labour market and capital accumulation. This exercise is based on a quite restrictive structure, which does not allow us to understand other potential effects, e.g., changes in the international economic context, that would lead the economy to deviate from its potential growth. Therefore, the next step is to form the baseline path, incorporating other factors ignored in the previous stage within the model's limitations.

The most important limitation of a single-country CGE model is that the rest of the world is not modelled as a separate economic agent. Therefore, in addition to international prices (in line with the small-open-economy assumption), another important variable is treated as exogenous: foreign savings, i.e., the current account balance. International prices are crucial determinants of the domestic price movements as they transmit changes in external conditions into the domestic economy. As mentioned, CGE models use two international prices for each commodity, exclusive of taxes: the export price received by an exporter and the import price paid by an importer. The export price, relative to the domestic market price, drives producers' supply decisions between domestic and international markets, whereas the import price, relative to the domestic market price, determines import flows.

The value of fixed foreign savings plays an important role in driving the foreign balances; the difference between net exports (revenues in foreign currency) and the government's interest payments (expenditures in foreign currency) must be fixed. The equilibrium is restored through the real exchange rate adjustment.

An important limitation of CGE modelling is its reliance on the balanced growth path assumption, which requires all macroeconomic aggregates to grow at the same rate to keep per capita values constant, along the baseline. An implication of this assumption is that there will be no resource reallocation either within the economy or between the domestic economy and the rest of the world. Therefore, it is assumed that foreign savings will grow at the exogenously specified economic growth rate, keeping the current account balance-to-GDP ratio constant along the baseline.

Apart from these external conditions, the assumptions provided in the previous subsections in this appendix are not necessarily reproduced along the baseline of the dynamic modelling exercise. For instance, the I3E model, as an intertemporal model, does not rely on fixed values of the investment-to-GDP ratio, unemployment rate, labour force participation rate, or net migration. All these variables are endogenous in the model, which consistently calculates them across scenarios, including the baseline. As the baseline of the I3E model deviates from the single-year calibration by incorporating economic realisations between 2020 and 2024 and the increase in tariff rates for pharma and beverage products, these variables take on values different from their assumed levels. The most striking example would be the level of net migration. Although the CSO's central (M2) scenario, which assumes 75,000 annual net migration until 2030, is used to calibrate the migration function, the baseline projection suggests that net migration will average 60,000 between 2026 and 2030. The difference stems from economic realisations, such as capital accumulation driven by volatile investment behaviour between 2020 and 2024, and from tariffs.

APPENDIX C: ANNUAL RESULTS

TABLE C.1: BASELINE

Variable	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
GDP[a]	2.9	2.4	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2
GNI*[a]	3.2	2.2	2.3	2.3	2.3	2.1	2.2	2.2	2.2	2.2
Modified Domestic Demand[a]	3.8	2.2	2.3	2.3	2.3	2.1	2.2	2.2	2.2	2.2
Private Consumption[a]	3.5	2.0	2.3	2.2	2.3	2.0	2.2	2.2	2.2	2.1
Government Consumption[a]	3.6	2.0	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.1
Modified Investment[a]	3.5	3.0	2.5	2.4	2.3	2.6	2.4	2.3	2.3	2.4
Disposable Income[a]	3.5	2.3	2.3	2.3	2.3	2.1	2.2	2.2	2.2	2.2
Employment[a]	0.3	0.3	0.9	0.8	0.9	0.4	0.7	0.7	0.6	0.6
Mean Wage[a]	1.5	1.2	1.4	1.4	1.4	1.9	1.5	1.5	1.5	1.5
Net Migration[b]	61.5	60.9	60.0	58.5	57.8	33.4	33.8	34.2	32.7	33.0
Unemployment Rate[c]	5.4	5.9	5.9	5.8	5.8	5.4	5.4	5.3	5.3	5.3
GGB[d]	0.4	0.3	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5
GGB (exc. windfall CT)[d]	-7.3	-7.4	-7.3	-7.3	-7.3	-7.3	-7.3	-7.2	-7.2	-7.2
Debt Stock[d]	75.2	74.6	74.2	73.9	73.5	73.3	72.9	72.6	72.2	71.9

Notes: GGB (CT) stands for the General Government Balance (Corporation Tax). ***a:*** Percentage deviation from the baseline in constant prices. ***b:*** Difference from the baseline in thousands. ***c:*** Percentage point difference from the baseline. ***d:*** As per cent of GNI*, percentage point difference from the baseline.

TABLE C.2: GLOBAL SLOWDOWN

Variable	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
GDP[a]	-4.1	-5.0	-5.9	-6.8	-7.7	-7.6	-7.5	-7.5	-7.4	-7.3
GNI*[a]	-1.7	-2.0	-2.4	-2.7	-3.1	-3.0	-2.9	-2.9	-2.8	-2.7
Modified Domestic Demand[a]	-2.8	-3.4	-4.1	-4.7	-5.3	-5.2	-5.1	-5.0	-4.9	-4.8
Private Consumption[a]	-2.5	-3.4	-4.3	-5.3	-6.2	-6.2	-6.2	-6.1	-6.1	-6.1
Government Consumption[a]	-4.0	-4.6	-5.1	-5.7	-6.4	-6.3	-6.3	-6.3	-6.3	-6.2
Modified Investment[a]	-2.4	-2.5	-2.5	-2.5	-2.4	-2.1	-1.8	-1.4	-1.0	-0.6
Disposable Income[a]	-4.1	-4.7	-5.3	-6.0	-6.7	-6.6	-6.6	-6.5	-6.4	-6.3
Employment[a]	-2.6	-3.3	-3.9	-4.6	-5.3	-5.2	-5.1	-5.1	-5.0	-5.0
Mean Wage[a]	-1.2	-1.4	-1.7	-1.9	-2.2	-2.3	-2.3	-2.2	-2.2	-2.2
Net Migration[b]	-26.1	-28.9	-32.1	-35.4	-39.0	-40.1	-40.9	-41.8	-42.7	-43.7
Unemployment Rate[c]	1.4	1.9	2.4	2.9	3.5	3.3	3.3	3.2	3.1	3.1
GGB[d]	-0.8	-0.9	-1.0	-1.1	-1.3	-1.2	-1.2	-1.2	-1.2	-1.2
GGB (exc. windfall CT)[d]	-0.7	-0.8	-1.0	-1.1	-1.3	-1.2	-1.2	-1.2	-1.2	-1.2
Debt Stock[d]	4.2	5.8	7.7	9.8	12.2	13.0	13.8	14.6	15.4	16.1

Notes: GGB (CT) stands for the General Government Balance (Corporation Tax). ***a:*** Percentage deviation from the baseline in constant prices. ***b:*** Difference from the baseline in thousands. ***c:*** Percentage point difference from the baseline. ***d:*** As per cent of GNI*, percentage point difference from the baseline.

TABLE C.3: COMPETITIVENESS

Variable	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
GDP[a]	-3.2	-3.3	-3.4	-3.5	-4.0	-4.0	-4.0	-4.0	-4.1	-4.1
GNI*[a]	-1.1	-1.6	-1.9	-2.3	-3.0	-3.0	-3.1	-3.2	-3.3	-3.4
Modified Domestic Demand[a]	-3.2	-4.4	-5.1	-5.8	-7.2	-7.3	-7.4	-7.5	-7.5	-7.6
Private Consumption[a]	-3.5	-5.0	-5.9	-6.7	-8.5	-8.6	-8.7	-8.9	-9.0	-9.1
Government Consumption[a]	-2.0	-3.0	-3.5	-4.2	-5.4	-5.5	-5.8	-6.0	-6.2	-6.4
Modified Investment[a]	-3.6	-4.4	-4.7	-5.1	-6.0	-5.9	-5.7	-5.6	-5.5	-5.4
Disposable Income[a]	-2.9	-3.2	-3.4	-3.6	-4.1	-4.2	-4.3	-4.3	-4.4	-4.5
Employment[a]	-2.9	-3.8	-4.3	-4.9	-6.1	-6.0	-6.1	-6.1	-6.2	-6.2
Mean Wage[a]	-1.2	-1.4	-1.6	-1.8	-2.2	-2.4	-2.4	-2.4	-2.4	-2.5
Net Migration[b]	-36.0	-40.6	-43.3	-46.2	-51.8	-53.1	-54.1	-55.2	-56.3	-57.5
Unemployment Rate[c]	1.3	2.0	2.4	2.8	3.7	3.6	3.7	3.7	3.7	3.7
GGB[d]	-1.3	-1.4	-1.5	-1.5	-1.8	-1.7	-1.7	-1.7	-1.7	-1.7
GGB (exc. windfall CT)[d]	-1.1	-1.3	-1.4	-1.5	-1.8	-1.8	-1.8	-1.8	-1.7	-1.7
Debt Stock[d]	3.0	5.3	6.6	8.0	11.1	11.6	12.0	12.4	12.8	13.2

Notes: GGB (CT) stands for the General Government Balance (Corporation Tax). ***a:*** Percentage deviation from the baseline in constant prices. ***b:*** Difference from the baseline in thousands. ***c:*** Percentage point difference from the baseline. ***d:*** As per cent of GNI*, percentage point difference from the baseline.

TABLE C.4: MULTINATIONALS

Variable	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
GDP[a]	-3.4	-3.7	-3.8	-4.4	-4.6	-4.6	-4.6	-4.6	-4.6	-4.6
GNI*[a]	-1.1	-1.2	-1.2	-1.4	-1.4	-1.4	-1.4	-1.4	-1.5	-1.5
Modified Domestic Demand[a]	-2.2	-2.3	-2.4	-2.6	-2.7	-2.7	-2.8	-2.8	-2.8	-2.8
Private Consumption[a]	-1.5	-1.5	-1.6	-1.8	-1.9	-1.9	-1.9	-2.0	-2.0	-2.0
Government Consumption[a]	-2.4	-2.7	-2.9	-3.3	-3.5	-3.5	-3.6	-3.7	-3.7	-3.8
Modified Investment[a]	-3.6	-3.7	-3.8	-3.9	-4.0	-3.9	-3.9	-3.8	-3.8	-3.7
Disposable Income[a]	-3.1	-3.2	-3.2	-3.3	-3.3	-3.3	-3.3	-3.3	-3.4	-3.4
Employment[a]	-1.8	-2.0	-2.0	-2.3	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4
Mean Wage[a]	-0.9	-0.9	-0.9	-1.1	-1.1	-1.2	-1.2	-1.2	-1.2	-1.2
Net Migration[b]	-17.8	-18.4	-18.8	-20.0	-20.6	-21.1	-21.4	-21.8	-22.2	-22.6
Unemployment Rate[c]	1.0	1.1	1.2	1.4	1.5	1.4	1.4	1.4	1.4	1.4
GGB[d]	-0.8	-0.8	-0.7	-0.7	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
GGB (exc. windfall CT)[d]	-0.6	-0.6	-0.5	-0.5	-0.5	-0.5	-0.5	-0.4	-0.4	-0.4
Debt Stock[d]	3.6	4.1	4.3	5.0	5.3	5.5	5.7	5.9	6.0	6.2

Notes: GGB (CT) stands for the General Government Balance (Corporation Tax). ***a:*** Percentage deviation from the baseline in constant prices. ***b:*** Difference from the baseline in thousands. ***c:*** Percentage point difference from the baseline. ***d:*** As per cent of GNI*, percentage point difference from the baseline.

TABLE C.5: DOMESTIC PRODUCTIVITY

Variable	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
GDP[a]	3.0	3.2	3.3	3.5	3.7	3.9	4.1	4.4	4.7	5.0
GNI*[a]	1.4	1.6	1.8	2.1	2.3	2.6	2.9	3.3	3.7	4.1
Modified Domestic Demand[a]	2.1	2.4	2.8	3.2	3.6	4.0	4.5	5.0	5.6	6.2
Private Consumption[a]	2.1	2.5	2.8	3.3	3.7	4.2	4.7	5.2	5.8	6.4
Government Consumption[a]	3.0	3.5	4.0	4.5	5.0	5.5	6.1	6.6	7.2	7.7
Modified Investment[a]	1.2	1.4	1.6	1.8	2.1	2.4	2.8	3.2	3.7	4.2
Disposable Income[a]	3.1	3.0	2.9	2.8	2.8	2.7	2.7	2.7	2.7	2.8
Employment[a]	1.8	1.9	2.0	2.2	2.3	2.4	2.6	2.8	2.9	3.2
Mean Wage[a]	1.0	0.9	1.0	1.1	1.2	1.4	1.5	1.6	1.8	2.0
Net Migration[b]	23.2	23.9	24.9	25.9	26.9	28.3	29.5	30.9	32.4	33.9
Unemployment Rate[c]	-0.8	-0.8	-0.9	-1.0	-1.1	-1.1	-1.2	-1.4	-1.5	-1.6
GGB[d]	0.7	0.6	0.5	0.4	0.4	0.3	0.2	0.1	0.1	0.0
GGB (exc. windfall CT)[d]	0.6	0.5	0.4	0.4	0.4	0.3	0.3	0.2	0.2	0.2
Debt Stock[d]	-2.1	-2.0	-1.9	-1.9	-1.9	-1.9	-2.0	-2.1	-2.2	-2.4

Notes: GGB (CT) stands for the General Government Balance (Corporation Tax). ***a:*** Percentage deviation from the baseline. ***b:*** Difference from the baseline in thousands. ***c:*** Percentage point difference from the baseline. ***d:*** As per cent of GNI*, percentage point difference from the baseline.

Economic & Social Research Institute

Whitaker Square
Sir John Rogerson's Quay
Dublin 2

Telephone: +353 1 863 2000
Email: admin@esri.ie
Web: www.esri.ie

An Institiúid um Thaighde Eacnamaíochta agus Sóisialta

Cearnóg Whitaker
Cé Sir John Rogerson
Baile Átha Cliath 2

Teileafón: +353 1 863 2000
Ríomhphost: admin@esri.ie
Suíomh Gréasáin: www.esri.ie