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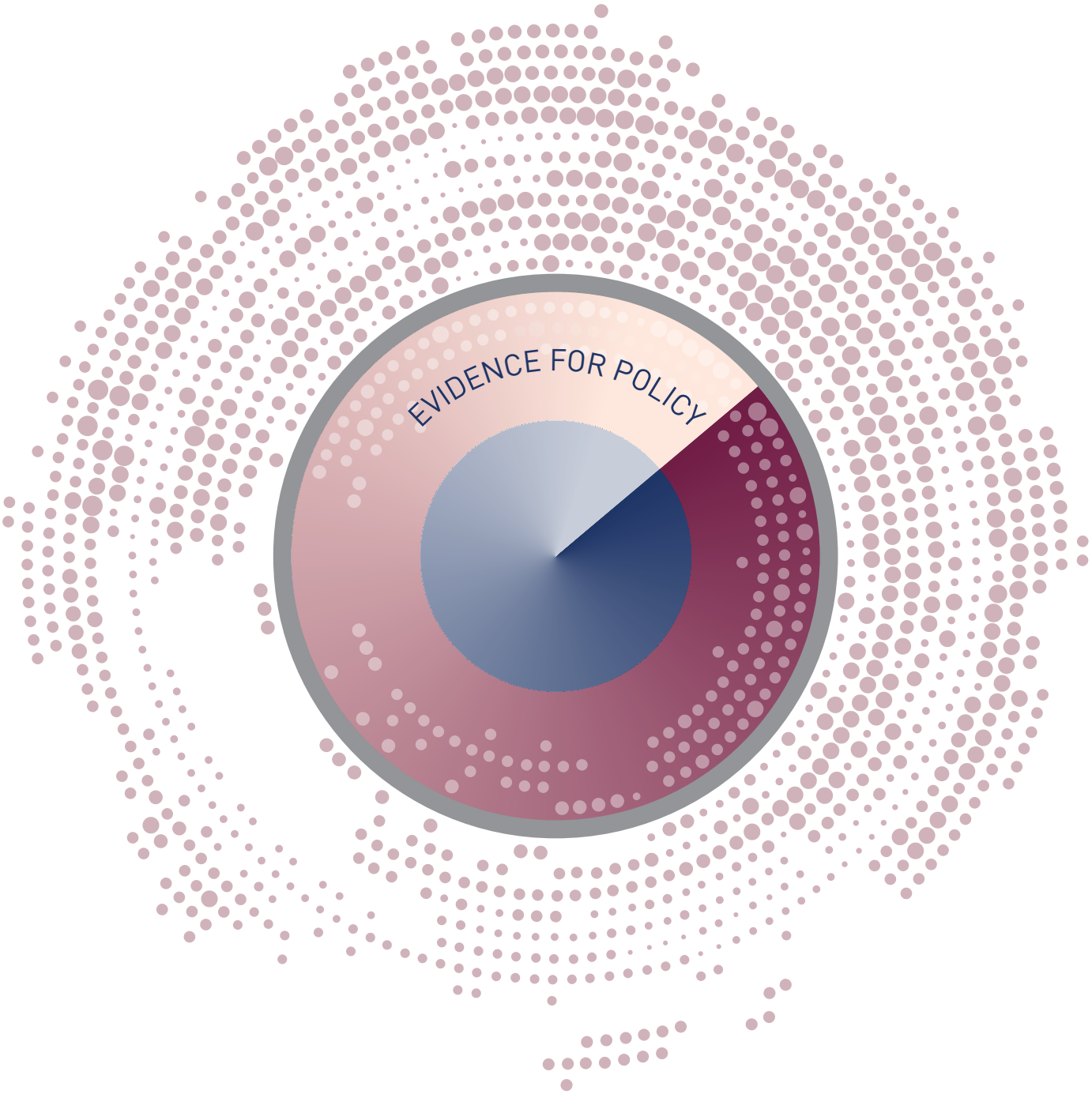
QUARTERLY ECONOMIC COMMENTARY

WINTER 2022

KIERAN MCQUINN, CONOR O'TOOLE, WENDY DISCH, EOIN KENNY AND EVA SHIEL



ESRI ECONOMIC & SOCIAL RESEARCH INSTITUTE

QUARTERLY ECONOMIC COMMENTARY

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Winter 2022

The forecasts in this *Commentary* are based on data available by 5 December 2022

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THE AUTHORS

The *Commentary* is edited by Kieran McQuinn and Conor O'Toole. Kieran McQuinn is a Research Professor and Conor O'Toole is an Associate Research Professor at the Economic and Social Research Institute (ESRI). Wendy Disch, Eva Shiel and Eoin Kenny are Research Assistants at the ESRI.

Special Articles are published in the *QEC* in order to foster high-quality debate on various aspects of the Irish economy and Irish economic policy. They are subject to refereeing prior to publication.

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SUMMARY TABLE

	2021	2022	2023
Output (Real Annual Growth %)			
Private Consumer Expenditure	4.6	5.8	2.1
Public Net Current Expenditure	6.5	2.6	-0.1
Investment	-39.0	18.8	7.3
Modified Investment	*8.2*	*20.7*	*4.6*
Exports	14.1	13.5	5.2
Imports	-8.3	15.0	6.4
Gross Domestic Product (GDP)	13.6	10.8	3.0
Gross National Product (GNP)	14.7	11.1	1.7
Modified Domestic Demand	*5.8*	*8.4*	*2.2*
Domestic Demand (excl. Stocks)	-18.2	10.4	3.9
Labour Market			
Employment Levels ('000)	2,178	2,515	2,533
Unemployment Levels ('000)	402	132	114
Unemployment Rate (as % of Labour Force)	16.1	4.9	4.3
Public Finances			
General Government Balance (€bn)	-7.1	3.5	6.5
General Government Balance (% of GDP)	-1.7	0.7	1.3
Price Developments			
Inflation (CPI)	2.4	7.9	7.1

Notes: The employment figures are based on the COVID-adjusted level of employment at the end of each quarter published by the Central Statistics Office (CSO) along with the quarterly LFS. As a result, employment levels represents a lower bound estimate for employment in 2021. The unemployment rate and level through February 2022 are based on the monthly unemployment and the COVID-adjusted monthly unemployment series published by the CSO.

Import forecasts for 2022 and 2023 refer to underlying activity. However, if National Accounts data reveal a significant impact of distortionary activity on import levels later in the year, modified and headline forecasts will be provided in future *Commentaries.*

Modified Domestic Demand refers to Modified Final Domestic Demand, which excludes large transactions of foreign corporations that do not have a large impact on the domestic economy. Definition available here: https://www.cso.ie/en/interactivezone/statisticsexplained/nationalaccountsexplained/totaldomesticdemandandmodifiedtotaldomesticdemand/#:~:text=Modified%20Total%20Domestic%20Demand%20goes%20further%20in%20trying,to%20exclude%20certain%20items%20that%20are%20in%20TDD. Modified investment excludes investment in aircraft for leasing and investment in R&D from abroad.

Inflation is measured by the annual percentage change in CPI.

The Irish Economy – Overview

- The pace of growth in the domestic economy has been slowing significantly throughout the year.
- An international recession coupled with the persistence of cost of living pressures means that the Irish economy in 2023 is set to grow at a significantly reduced pace.
- We now forecast modified domestic demand (MDD) to increase by 8.4 per cent in 2022 and by just 2.2 per cent in 2023. In 2023, the unemployment rate is still set to continue to fall to a near historical low of 4.3 per cent, while the public finances are expected to register a General Government Balance (GGB) surplus of 1.3 per cent.
- We expect cost of living pressures to remain elevated next year with headline inflation remaining above 7 per cent for the full year.
- The *Commentary* devotes further attention to the increasing concentration risk faced by the Irish economy due to the recent performance of the ICT and pharma sectors. An analytical Box highlights the substantial contribution both to value added and labour productivity in the domestic economy of the ICT sector over the past 20 years.
- The *Commentary* also focusses on financial sector and housing issues with a series of Boxes examining the potential implications of recent changes in the Central Bank of Ireland macroprudential rules and the relationship between domestic mortgage interest rates and euro area policy rates. A Special Article to the *Commentary* discusses capacity constraints in the domestic economy as housing output increases and outlines a series of policy proposals to enable greater activity levels in the sector.
- A further Box examines the implications of the proposed introduction of aviation taxes as a way of achieving climate change proposals. In particular the Box by de Bruin and Yakut suggests that revising the EU's Emission Trading System (ETS) is the most cost-effective way of reducing emissions.
- Finally, a Special Article by Doolan et al. examines the budgetary measures from a distributional perspective. They note the one-off nature of many of the measures introduced and argue that they might need to be extended in 2023 if energy prices remain high.

Risk Analysis

Despite the ongoing resilience of the Irish economy, a combination of persistently high inflation, a weakening global economic outlook and tighter financial conditions pose major challenges to the economy.

Persistent price pressures

As discussed in previous versions of the *Commentary,* global economic activity is operating under increasing levels of uncertainty. Most notably, the war in Ukraine and the security and supply of energy sources continues to be one of Europe's largest challenges. Rising costs present challenges to households, whose incomes are not rising at the same pace as inflation. Lower income households who typically spend a greater share of income on energy and food are particularly affected by the rising cost of living, as are energy-intensive firms, who are facing higher input costs as well as higher funding costs. Governments also face challenges while they attempt to balance the fiscal cost of supporting businesses and households without creating further inflationary pressures. They must also avoid risks to debt sustainability given the high levels of debt incurred during the pandemic and recent tightening of funding conditions.

However, it is also possible that inflation may return to more normalised levels faster than currently anticipated. Some key factors here are a) if de-escalation of the Russia-Ukraine war were to occur; b) an effective, permanent decoupling of European energy market from Russian fossil fuels; or c) no emergence of domestically generated second round price effects. Any combination of these factors materialising could lead to a change in the trajectory of price inflation.

The humanitarian cost of the crisis continues as nearly 7.9 million refugees have arrived in Europe, with over 64,000 arriving in Ireland.[1] The extent of the war and the size of the influx could put further strain on the public finances as Governments across Europe provide the essential services required to house and support refugees.

International economic conditions are deteriorating and policy uncertainty is high

Altogether, subdued confidence, supply chain constraints and higher prices are likely to restrict growth in the near-term. In Europe, subdued growth alongside elevated inflation in 2023 could pose a drag on domestic activity.[2] In the US,

1 See: Situation Ukraine Refugee Situation (unhcr.org).

2 European commission projections expect EU GDP growth of 0.3 per cent in 2023 and inflation of 7.0 per cent. See: https://economy-finance.ec.europa.eu/economic-forecast-and-surveys/economic-forecasts/autumn-2022-economic-forecast-eu-economy-turning-point_en.

restrictive monetary policy and a contraction in GDP in Q2 2022 will contribute to slowed GDP growth in 2022 and 2023.[3] Severe economic shocks, volatile policy responses, tighter fiscal policies and significant falls in real household income are contributing to the prospects of recession in the UK.[4] While Ireland has become less reliant on the UK as a major trading partner in recent years, any slowdown in their economy will have an impact domestically.

Meanwhile, the ongoing war in Ukraine along with continued trade disruptions and unrest in China continue to disrupt supply chains. On the upside, if supply chains stabilise in 2023, price pressures may abate more rapidly than expected and improve confidence.

Another notable risk is the economic impact of the snapback in monetary policy interest rates that Central Banks are undertaking to combat inflationary pressures. Rising policy rates impact investment and consumption decisions and increase the servicing cost of existing borrowers. All of these factors are likely to put downward pressure on growth.

3 GDP forecast to increase 1.9 per cent and 1.1 per cent in 2022 and 2023 (FocusEconomics, 2022, August 30; FocusEconomics Consensus Forecast: Major Economies September 2022).

4 See: 2022-NIESRs-Autumn-Statement-Response-FINAL.pdf for context.

The Domestic Economy

OUTPUT

KeyPoints

- *Domestic economy set to grow strongly again in 2022.*
- *However, pace of growth to slow substantially in 2023 with the growing likelihood of an international recession next year.*
- *Modified total domestic demand is forecast to increase by 8.4 and 2.2 per cent in 2022 and 2023 respectively.*
- *Domestic growth will ultimately depend on the performance of key multinational sectors.*

While the economy is set to grow robustly in 2022 with MDD increasing by 8.4 per cent and GDP growing by 10.8 per cent, it is clear that the growth rate is slowing through the year. Some of this reflects the unwinding of the post-pandemic boost which occurred in the earlier part of the year and some is reflective of developments in inflation and uncertainty concerning global developments. This reduced pace of growth is set to extend into 2023 when international conditions are set to further adversely impact the domestic performance.

In 2022, consumption is set to register strong growth of 5.8 per cent while the contributions from investment and exports are also likely to be robust. In 2023, persistent inflationary pressures are set to impact consumer spending, while the prospect of a growing international recession will have a negative impact on external trade. The degree of this impact will depend on the sectors of the global economy which are especially affected. Investment levels in 2023 are set to moderate with increased costs, in particular, impacting the supply of housing. Further increases in euro area policy rates will also dampen investment expenditure.

Previous *Commentaries* have highlighted the growing concentration risk in the Irish economy concerning the relative strength of the ICT and pharmaceutical sectors. These sectors have mainly been responsible for the increase in value added, employment growth, strong trade performance and surge in corporation taxation receipts in recent years. In Box A, Disch et al. further explore this issue by focussing especially on the contribution of the ICT sector to Irish labour productivity growth over the past 20 years.

BOX A THE CONTRIBUTION OF ICT TO GROWTH IN THE IRISH ECONOMY

Background

Recently, there have been a number of high-profile job losses amongst ICT companies both in an international and domestic context. Firms such as Twitter, Meta and Stripe have all announced significant reductions in employment numbers both in their international operations and their Irish offices. This has sparked some concern that the ICT sector is set to experience a significant contraction after a period of sustained employment growth throughout the COVID-19 pandemic. Such a contraction has particular resonance for the Irish economy, as a number of commentators (*Quarterly Economic Commentary* Autumn 2022) have identified the major contribution of this and other multinational sectors to the growth performance of the Irish economy in recent years.

The multinational sector makes a series of extremely valuable contributions to the Irish economy. The sector has extremely high labour productivity and contributes hugely to gross value added; it is also a significant contributor of highly paid employment. The economy's exports are also positively impacted as are the public finances which have witnessed a substantial contribution from corporation profits over the past ten years.

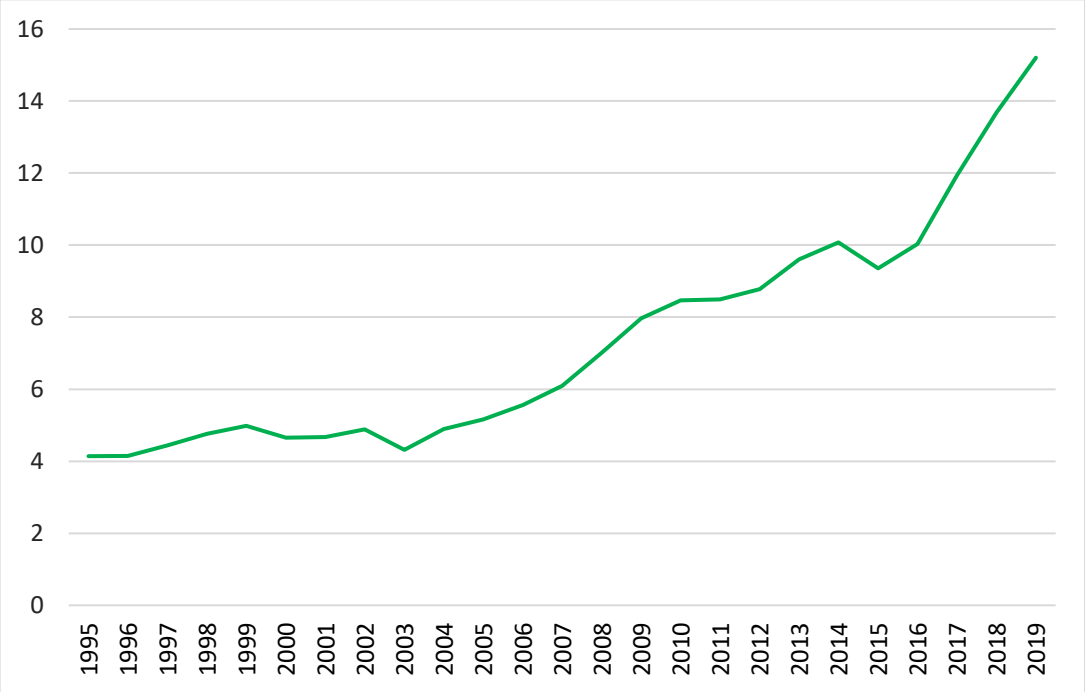
In this Box, we examine the contribution of the ICT performance from a growth and, in particular, from a labour productivity perspective to the Irish economy. Using a well-recognised cross-country data set on sectoral productivity developments (EUKLEMS and INTANPROD),[5] we compare the productivity of the Irish ICT sector with European comparators. The comparisons illustrate a remarkable divergence in productivity rates from approximately 2005 onwards with domestic rates dwarfing those of all other European countries since. While this has been a hugely beneficial channel of growth in an Irish context, it does highlight how vulnerable the domestic economy is to a substantial slowdown in the ICT sector generally and in the Irish case especially.

Rapid growth of the ICT sector

The importance of the ICT sector to the Irish economy has increased notably over the past number of years. In just a decade, ICT as a share of total value added has grown from 8 per cent in 2009 to just over 15 per cent in 2019 (Figure A.1).

5 Download - Luiss Lab of European Economics.

FIGURE A.1 ICT SECTOR'S CONTRIBUTION TO GROSS VALUE ADDED (% OF TOTAL)

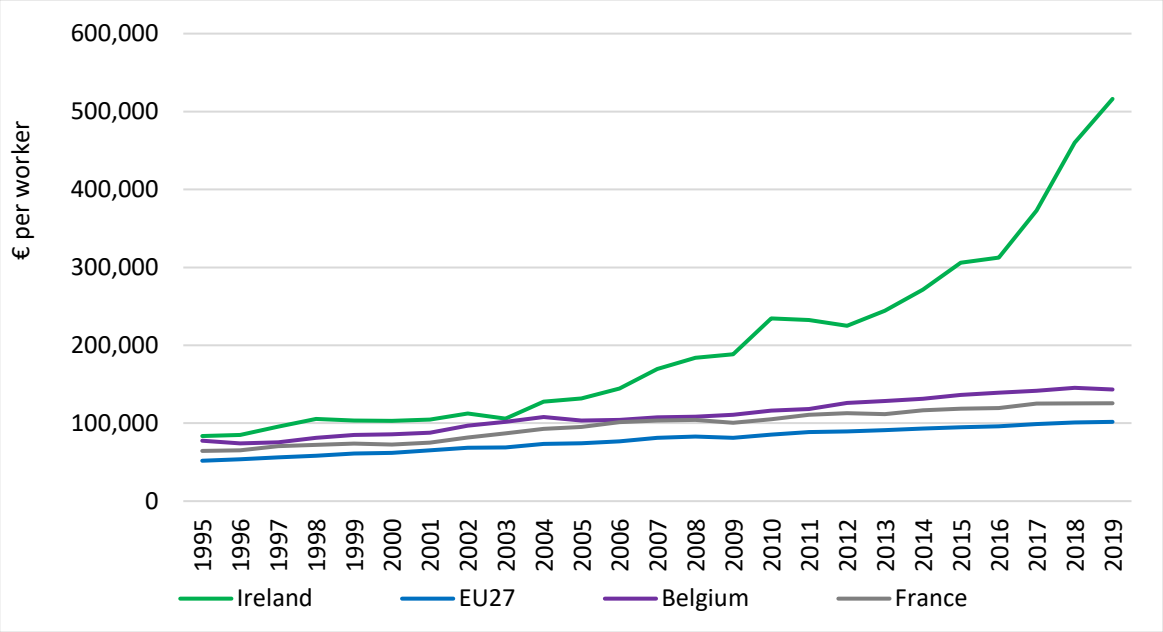


Source: EUKLEMS and INTANPROD.

ICT productivity across the EU

In order to gauge the extent to which the ICT sector in Ireland has contributed to growth, we compare labour productivity in the sector to that of Belgium, France and the EU. We measure labour productivity as the gross value added of the ICT sector divided by the total number of persons employed in the sector. As can be seen in Figure A.2, Irish labour productivity has diverged significantly from that of other countries since 2003. In 2019, labour productivity in the Irish ICT sector was more than 3.5 times that of Belgium and more than 5 times that of the EU. The most notable aspect of Figure A.2 is the decoupling of the relationship between Ireland and other European countries in the period post-2009; while before that period Ireland's productivity rate in ICT was higher than other countries, this gap has risen notably after this period to levels well in excess of any other country. The period since 2015 in Ireland has seen a notable increase in capital inflows of research and development related intangible assets; these assets are likely to explain some of the increases in labour productivity in the ICT sector and contribute to the rise in GVA experienced below.

FIGURE A.2 CROSS-COUNTRY COMPARISON OF LABOUR PRODUCTIVITY IN ICT SECTOR

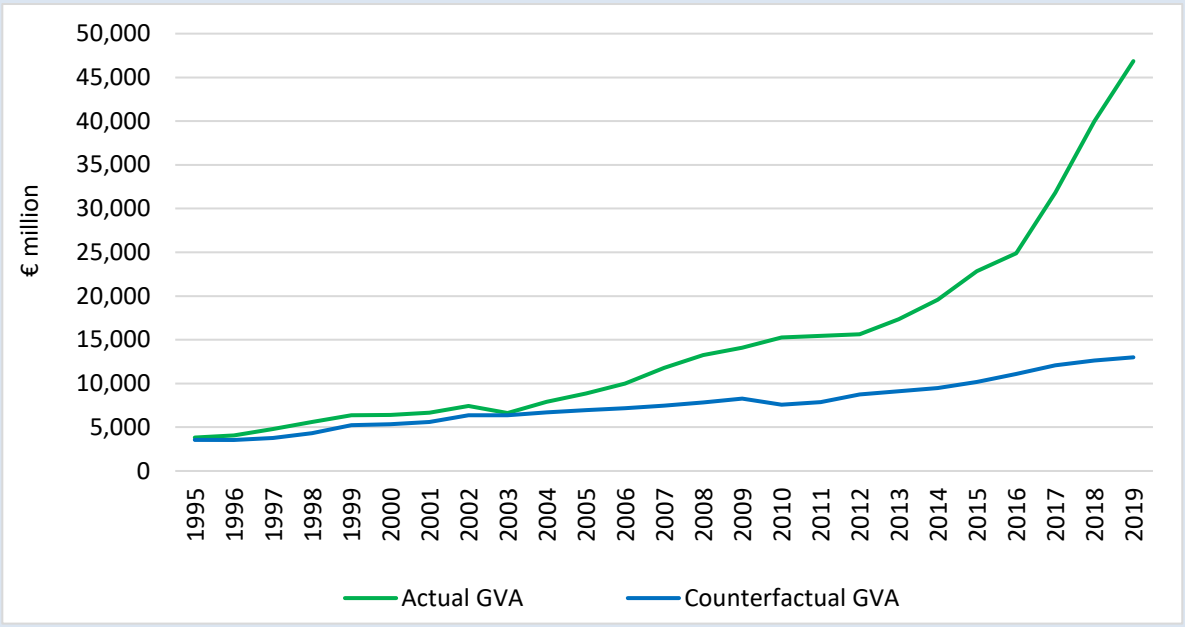


Source: EUKLEMS and INTANPROD.

A counterfactual measure of activity

As the country with the second highest labour productivity in Europe, we use Belgian labour productivity rates to generate a counterfactual measure of gross value added for the ICT sector in Ireland. Figure A.3 presents this counterfactual measure against actual value added since 1995. We see that for 2019, were the Irish ICT sector to perform at Belgian productivity rates, the value added of the sector would decline from approximately €46,860 million to just €12,990 million, a loss of just over 70 per cent.[6]

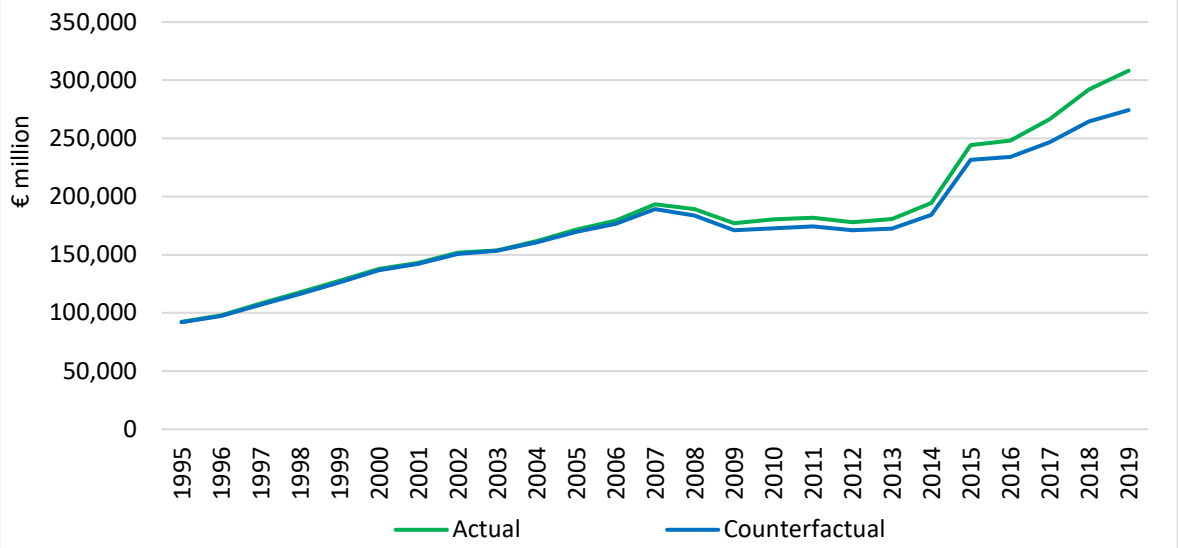
FIGURE A.3 ACTUAL AND COUNTERFACTUAL GROSS VALUE ADDED FROM THE ICT SECTOR



Source: EUKLEMS and INTANPROD.

Using our counterfactual measure for ICT-related value added, we generate a counterfactual value for total gross value as well. Figure A.4 compares this measure to actual value added. Until 2007, less than a 2 percentage point difference existed between these two measures. However, the difference has spread significantly since 2015. In 2019, total value added was 12.3 per cent above our counterfactual measure, indicating that the 'super growth' in the ICT sector has contributed significantly to the overall domestic economy. Were the Irish ICT sector to perform at the productivity rate of our counterfactual measure, overall value added would have declined from €308,211 million to €274,347 million in 2019. Interestingly, from 2017 to 2019 the difference in the total growth rate of value added is of the same order of magnitude (2 percentage points) as that reported by Honohan and Walsh (2002) who conducted a similar exercise for the Irish economy.[7]

FIGURE A.4 ACTUAL AND COUNTERFACTUAL TOTAL GROSS VALUE ADDED



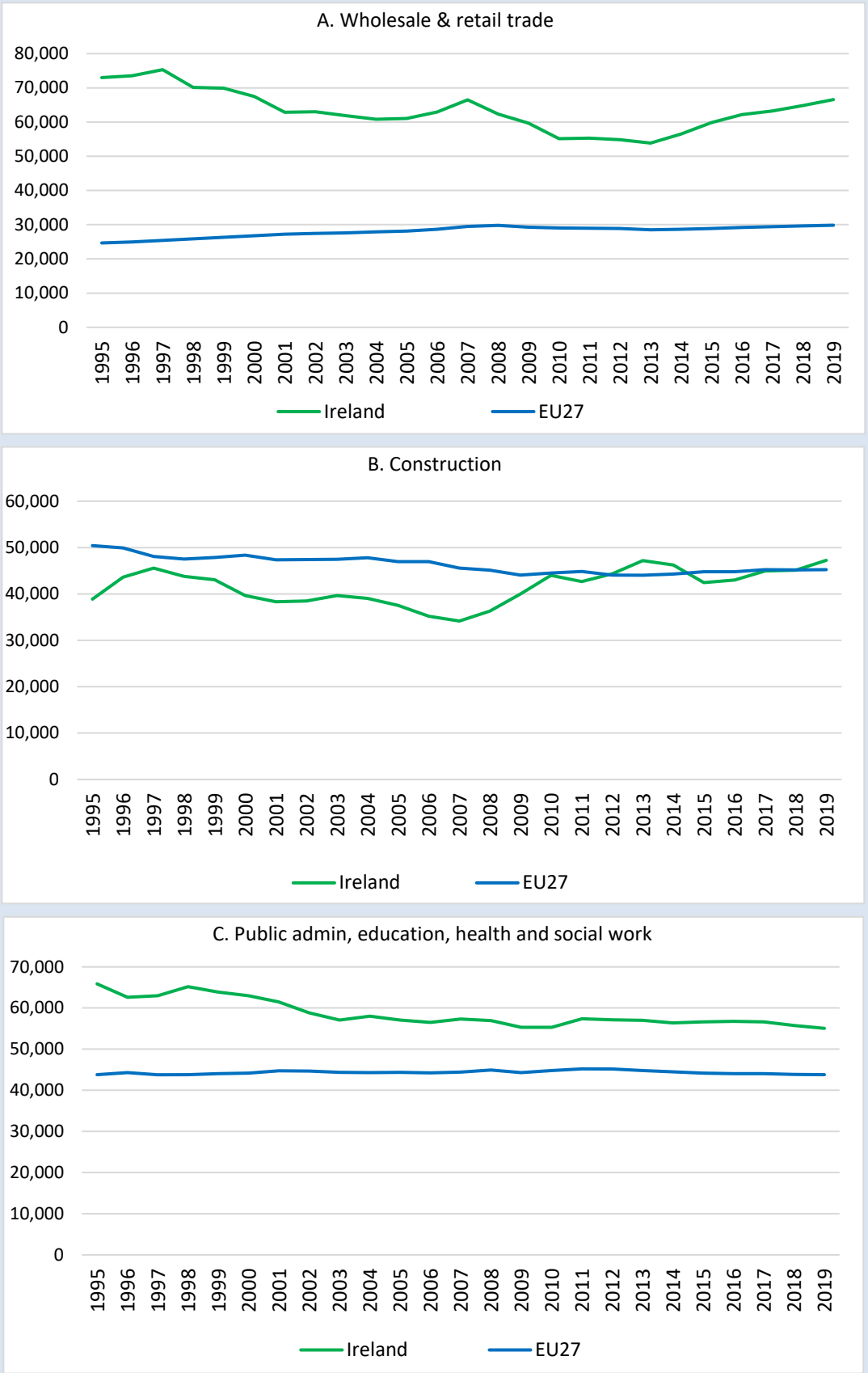
Source: EUKLEMS and INTANPROD.

In order to gauge the extent to which this super productivity is unique to the ICT sector, we compare Irish productivity in more traditional sectors to productivity across Europe (Figure A.5). We see that the difference in productivity varies greatly depending on the sector. We see that productivity in Ireland has historically been higher in both the public administration and wholesale and retail trade sectors; however, unlike in the ICT sector, productivity in these sectors has been relatively consistent over time. Meanwhile, average labour productivity in the construction sector has historically been lower in Ireland than the rest of Europe, although this appears to be improving recently. Overall, we can see from other sectors that labour productivity typically remains fairly consistent within economies. The abnormal growth rates in productivity in the ICT sector over recent years therefore are an additional sign that this sector may in fact be vulnerable to a correction in overall production.

6 Using Eurostat data for 2019, we see similar results with actual gross value added declining 63 per cent when we calculate the counterfactual value using Belgian productivity rates.

7 In particular their results for the 1995-2000 period as reported in Table 2 p.70, Honohan and Walsh (2002).

FIGURE A.5 LABOUR PRODUCTIVITY BY SECTOR (€ PER WORKER)



Source: EUKLEMS and INTANPROD and authors' calculations.

Conclusion

The analysis presented in this Box highlights the highly significant contribution of the ICT sector to the Irish economy over the past 20 years. From about 2005 onwards labour productivity rates in the Irish sector started to diverge quite dramatically from those in other EU countries. This surge in productivity has occurred even as the numbers employed in the sector have grown substantially over the same period.

This Box has considered the impact of changing labour productivity in the ICT sector and its impact on economic growth in Ireland. The ICT sector is extremely important to Ireland and should be central to any growth strategy. However, there are numerous risks that come through this reliance. While it is possible that a portion of Irish output could be 'at risk' if labour productivity in Irish ICT to were to revert to levels as seen in other EU countries, there are also risks from the contribution of the sector to income tax revenue, corporation tax and also any impact on growth that would come from lower employment in such a high productivity sector. Further research is needed to explore these avenues in more detail. However, it is also clear that these sources of activities are of huge importance to the Irish economy and that policymakers must continue to ensure that Ireland is a competitive location for this type of inward foreign direct investment.

References:

Honohan, P. and B. Walsh (2002). *Catching up with the leaders: the Irish hare*. Brookings papers on economic activity, 2002(1), 1-57.

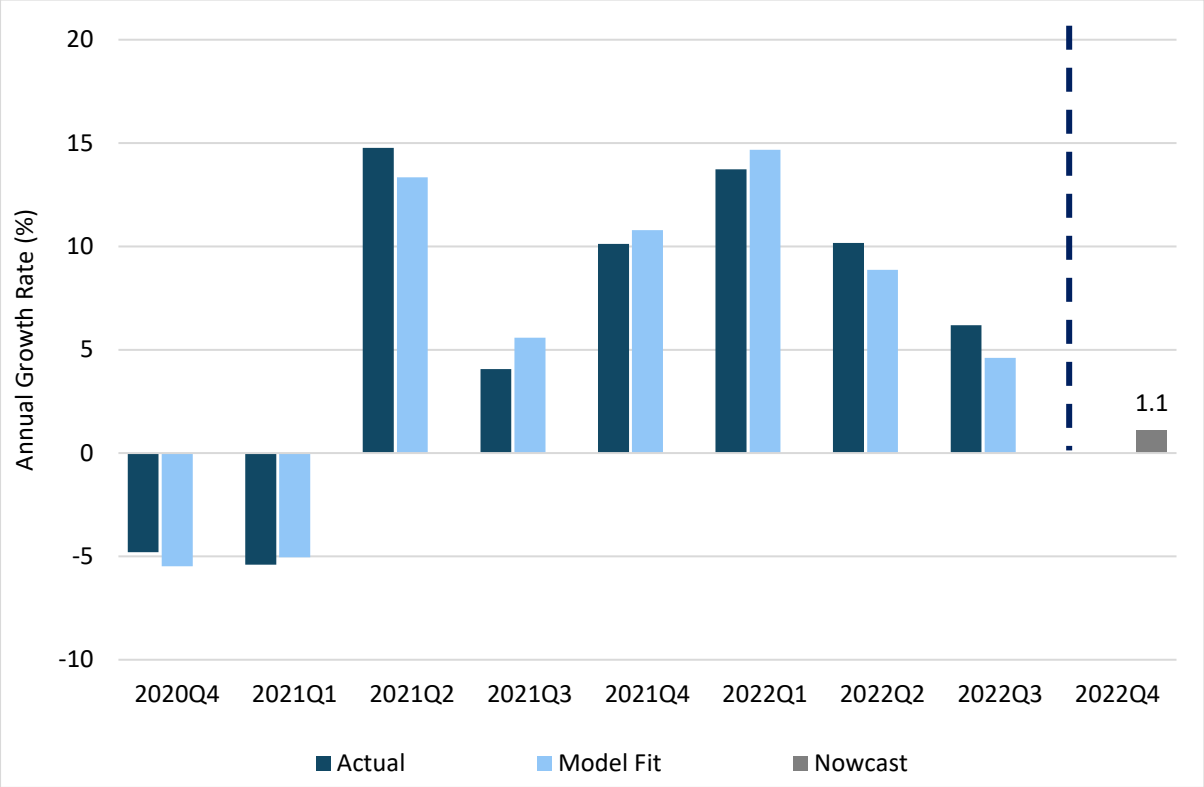
This Box was prepared by Kieran McQuinn, Conor O'Toole and Wendy Disch.

The slowing pace of the Irish economy throughout the present year is particularly evident from the monthly Nowcast estimates which are now published on the ESRI website.[8] The Nowcasting model (Egan, 2022),[9] currently employed to support the regular forecasting exercise in the *Commentary*, indicates that MDD is expected to slow to 1.1 per cent growth in Q4 2022 on an annual basis. Figure 1 shows the performance of the Nowcasting model compared to actual growth in MDD since Q4 2020. The significant rebound in MDD in Q1 2022 and stronger than anticipated modified investment in the first half of the year have contributed to a strong outlook in MDD for 2022. We now expect modified domestic demand to increase by 8.4 per cent in 2022 before slowing to 2.2 per cent in 2023.

8 The most recent estimate for September is available from https://www.esri.ie/publications/esri-nowcast-0.

9 Egan P. (2022). 'Nowcasting domestic demand using a dynamic factor model: the case of Ireland'. Applied Economics Letters. DOI: 10.1080/13504851.2022.2103500.

FIGURE 1 NOWCAST OF MODIFIED DOMESTIC DEMAND FROM Q4 2020 – Q4 2022



Source: Central Statistics Office and authors' calculations.
Note: Nowcast figures for Q4 2022 include data available through 5 December 2022. Unemployment data for the Nowcast reflect COVID-adjusted figures for the period March 2020-February 2022.

DEMAND

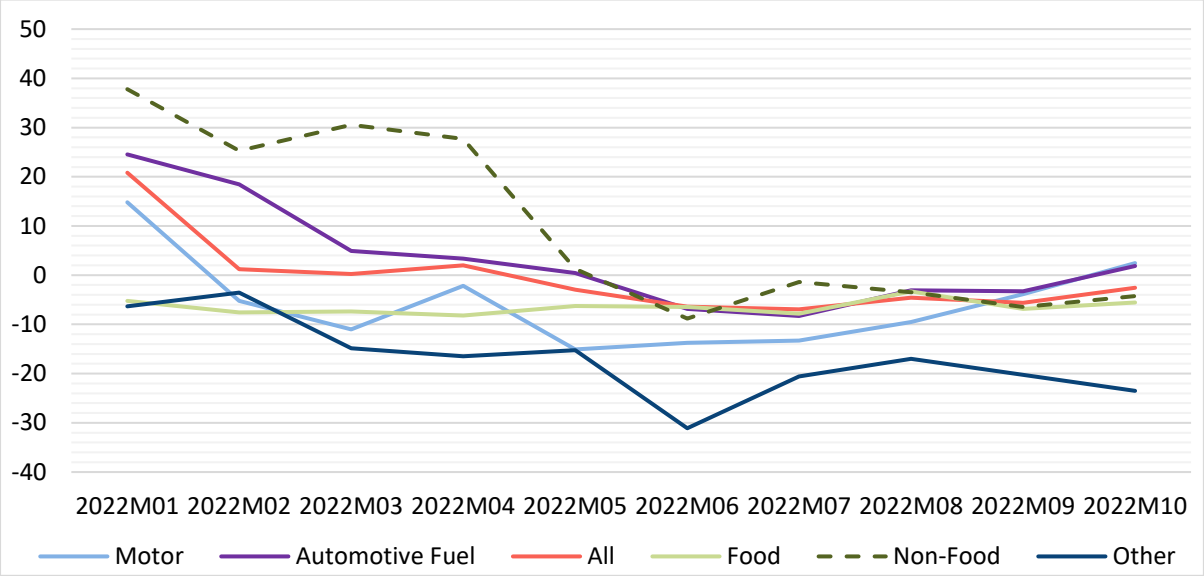
Key Points

- *The volume of retail sales fell annually by 2.6 per cent in October 2022.*
- *Consumption grew by just 0.3 per cent in Q3 2022 relative to Q2 2022.*
- *We expect the savings ratio to continue to fall through 2022 and 2023.*
- *Consumption is forecast to grow by 5.8 and 2.1 per cent in 2022 and 2023 respectively.*

Household expenditure is closely associated with developments in retail sales. Figure 2 shows the annual growth rate of the volume of retail sales from January 2022 to October 2022. While total retail sales (volume) experienced a monthly increase of 0.8 per cent in October 2022, the volume overall declined annually by 2.6 per cent. This was the sixth consecutive month in which the volume of retail sales had a negative annual growth rate, which suggests that the higher cost of living is resulting in lower consumption levels.

However, there is some variation across different items. For instance, the volume of motor retail sales increased annually by 2.5 per cent, while that of food decreased by 5.6 per cent. The volume of non-food retail sales also decreased by 4.3 per cent. In contrast, the volume in bar retail sales increased by 3.1 per cent year-on-year, as did the volume of fuel by 1.9 per cent. Other spending had the largest annual drop in the volume of retail sales, falling by 23.5 per cent. The volume in retail sales of books, newspapers and stationery followed close behind that of other retail sales, with a fall of 12.8 per cent year-on-year. The volume in retail sales in pharmaceutical, medical, and cosmetic items increased annually by 1.0 per cent.

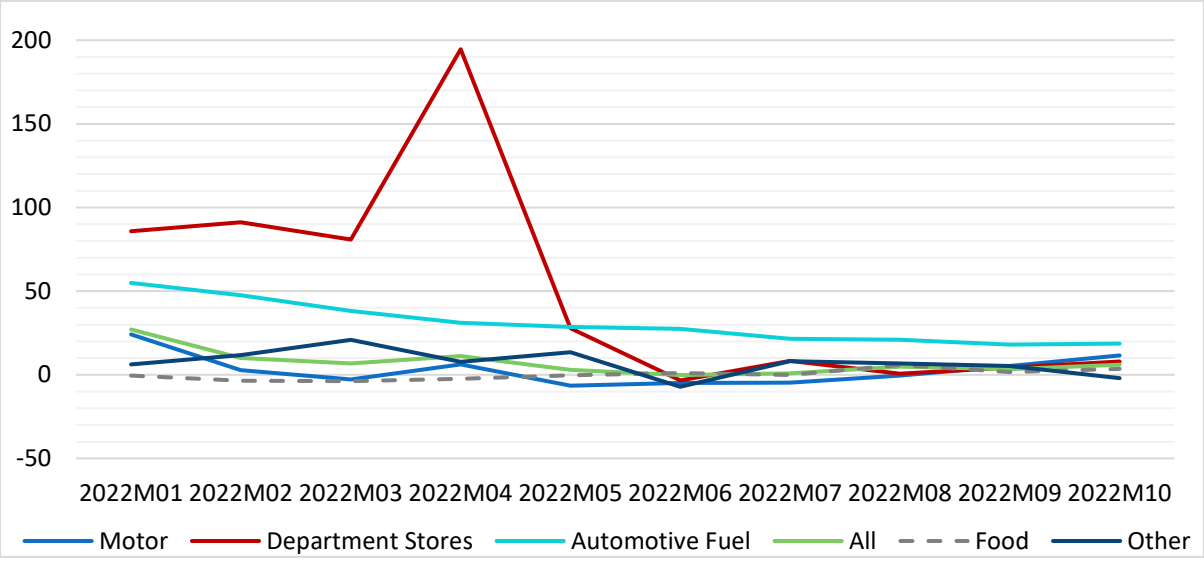
FIGURE 2 RETAIL SALES INDEX: VOLUMES



Source: Central Statistics Office.

One can identify the price effects associated with these changes when one examines the retail sales data in value terms, as illustrated in Figure 3 from January 2022 to October 2022. Although the volume of retail sales has stagnated or decreased across many of the main headings since the end of 2021, the value of retail sales has increased. The clearest example of this trend is illustrated by the value of automotive fuel retail sales, which increased by 18.7 per cent year-on-year in October 2022, reflecting higher prices compared to the previous year. The value of retail sales of motor and bars also saw large year-on-year increases of 11.5 per cent and 10.6 per cent respectively.

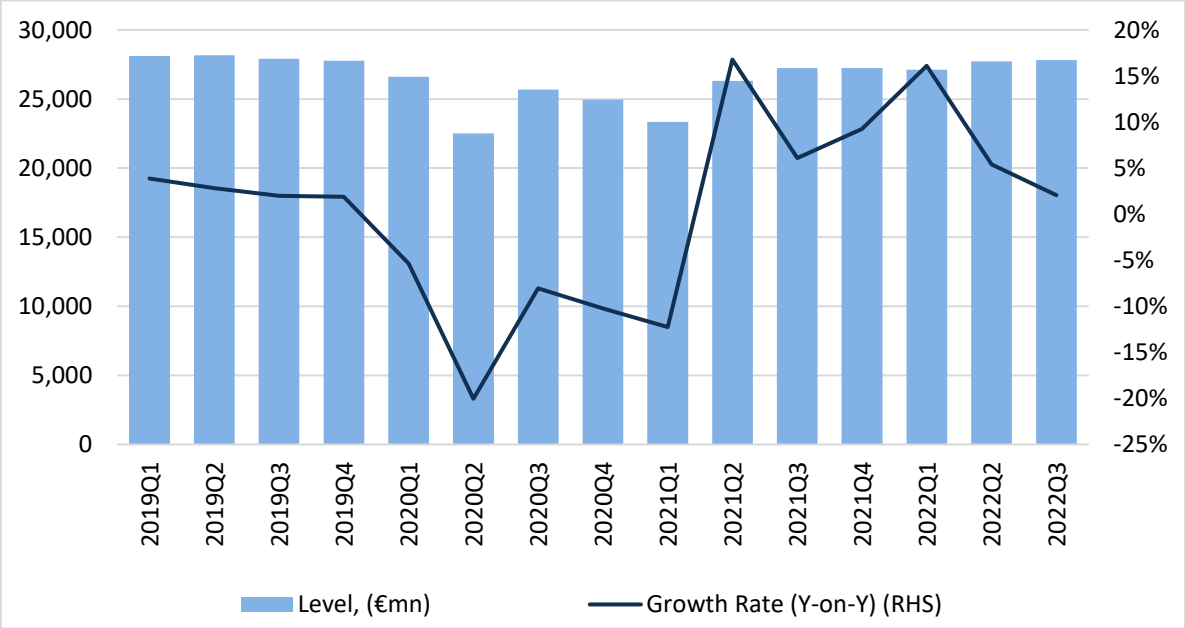
FIGURE 3 RETAIL SALES INDEX: VALUE



Source: Central Statistics Office.

Personal expenditure on consumer goods and services grew by 0.3 per cent on a quarterly basis and 2.1 per cent on an annual basis in Q3 2022 (Figure 4). Compared to Q2 2022, personal consumption of goods was negative (-1.0 per cent), while that of services was positive (1.1 per cent).

FIGURE 4 PERSONAL EXPENDITURE ON CONSUMER GOOD AND SERVICES (VOLUME, SEASONALLY-ADJUSTED)

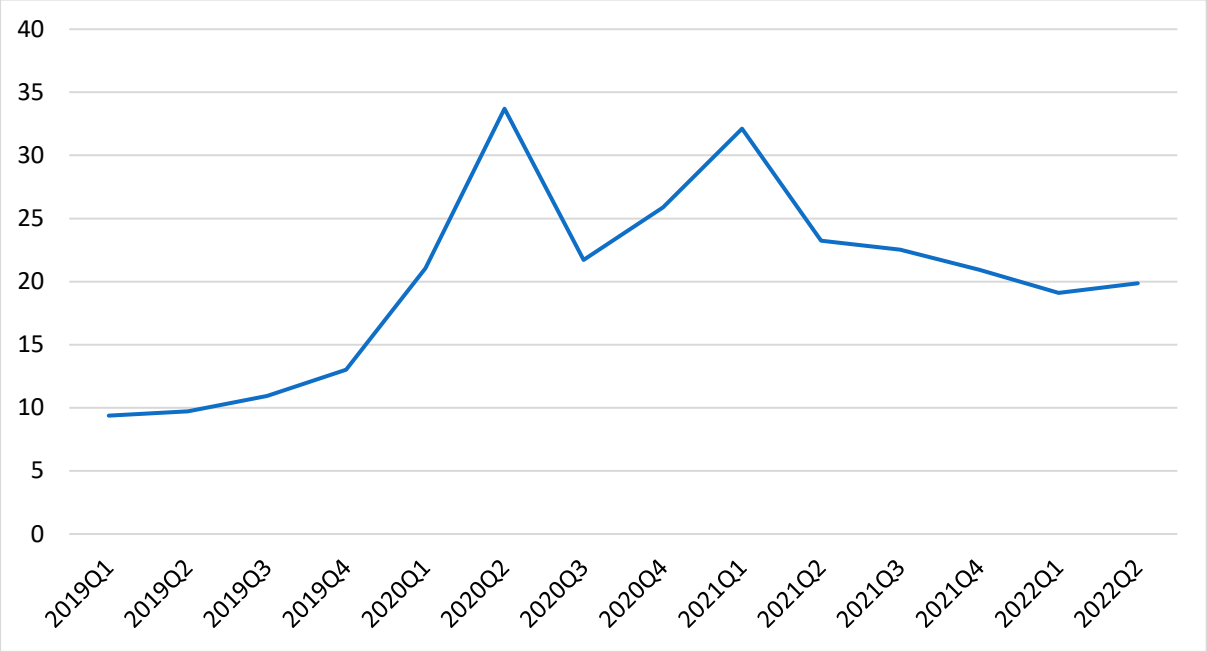


Source: Central Statistics Office.

Given the recent increases in the cost of living, the evolution of the savings ratio will be important in seeing how consumption behaviour has changed throughout the year and how it will change in the coming months. The savings ratio in Ireland increased significantly during the pandemic as consumption was greatly reduced due to public health restrictions, especially in Q2 2020 and Q1 2021 (Figure 5). The domestic savings ratio started to decline gradually throughout the latter half of 2021, and in Q2 2022 was down 14.9 per cent year-on-year.

Households' use of the increased savings accumulated since the pandemic will likely vary across the income distribution; many lower income households may have to use their savings to withstand the increased cost of living, while also having to reduce their consumption levels. On the other hand, many higher-income households may be able to withstand the increased cost of living by using a proportion of their savings without having to reduce their consumption levels.

FIGURE 5 SAVINGS RATIO (SEASONALLY-ADJUSTED)(%) – IRELAND

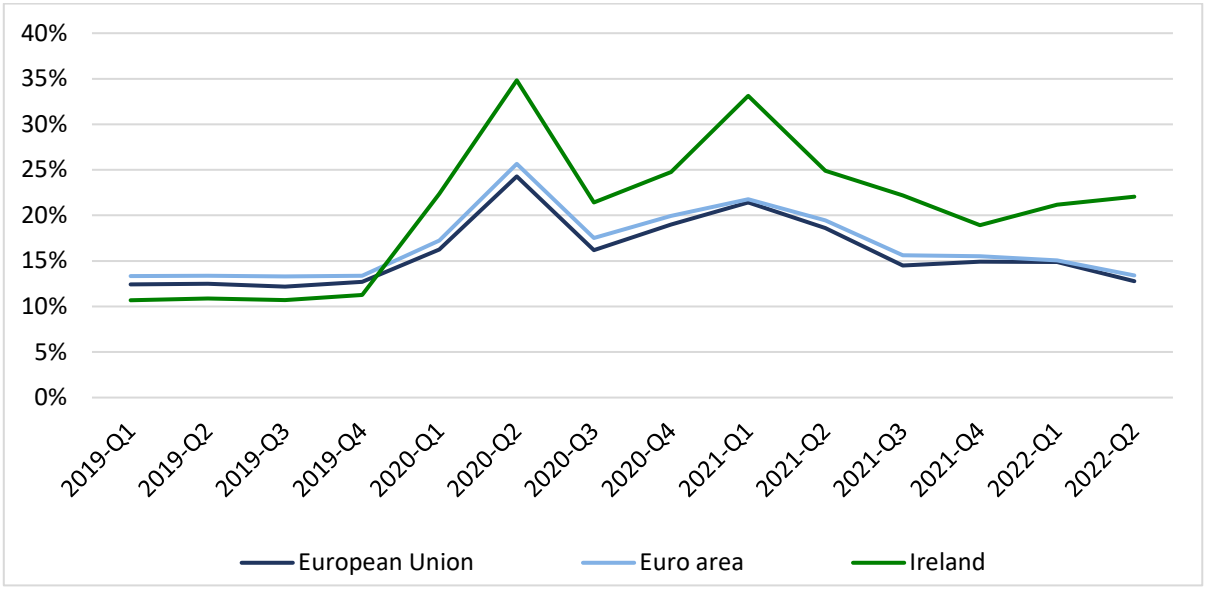


Source: Central Statistics Office.

According to Timoney (2022),[10] Ireland's official savings ratio is higher than other indicators of savings across euro area countries. This could be a consequence of consumption being underestimated due to inaccurate weighting in the consumption basket since the pandemic. When compared to our European peers (Figure 6) using Eurostat data, one can clearly see Ireland's savings ratio is at a much higher level than both that of the EU and of the euro area. If the level of savings in the domestic economy is overestimated, this means households will not have as much capacity to support their consumption levels as was previously thought.

10 https://www.fiscalcouncil.ie/wp-content/uploads/2022/11/Household-Consumption-and-Savings-in-Ireland-Since-the-Covid-19-Pandemic-Fiscal-Council-Analytical-Note-18-by-Kevin-Timoney.pdf.

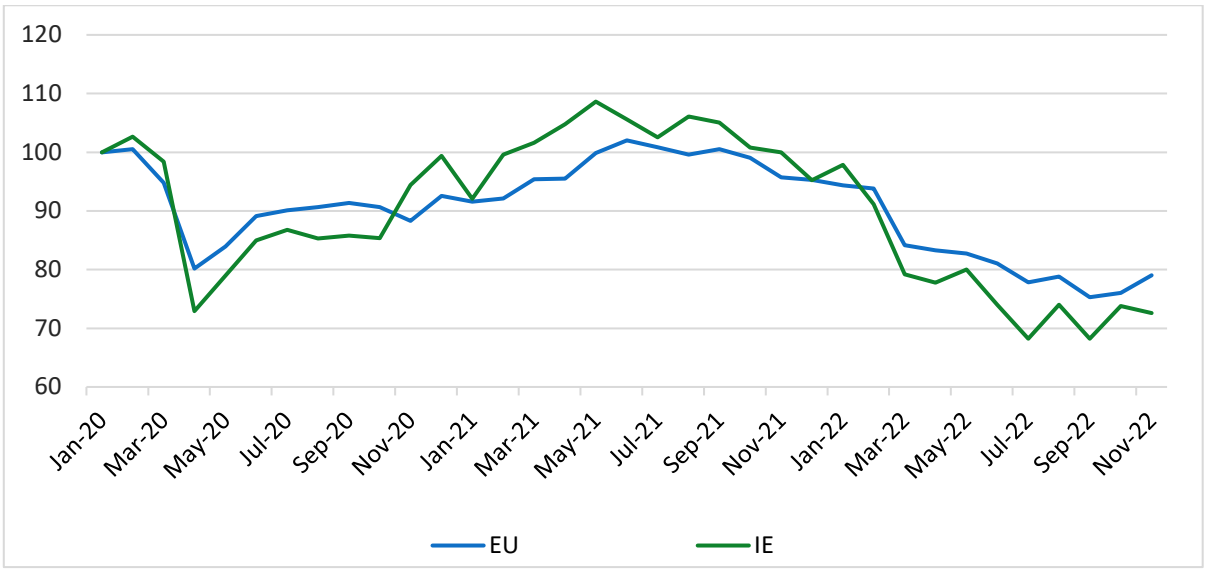
FIGURE 6 SAVINGS RATIO (SEASONALLY-ADJUSTED) – IRELAND, EU AND EURO AREA



Source: Eurostat and authors' calculations.

Consumer confidence has also declined throughout 2022. This is, of course, not Ireland-specific, with global uncertainty due to inflationary pressures and geopolitical uncertainties, both of which stem from the Russian invasion of Ukraine. As shown in Figure 7 consumer confidence dipped during the pandemic, and subsequently recovered to pre-pandemic levels before declining significantly at the start of 2022. Consumer confidence in Ireland in November 2022, which was down 27.4 per cent year-on-year, was lower than that of the EU's.

FIGURE 7 CONSUMER CONFIDENCE INDICATOR



Source: European Commission.

Consumption forecasts

While consumption grew in Q3 2022 by 2.1 per cent on an annual basis, this is a notable slowdown from its growth rate in the first two quarters of the year, as the risks associated with global uncertainty and cost of living increases are clearly impacting on household spending decisions. Despite these current economic uncertainties and forthcoming challenges, consumption is forecast to grow by 5.8 per cent in 2022 and 2.1 per cent in 2023. We expect the savings ratio to decline somewhat next year, as households cushion their expenditure levels by reducing savings. However, due to the aforementioned measurement issues we do not build in as sharp a reduction in savings as previously expected.

TRADED SECTOR

Key Points

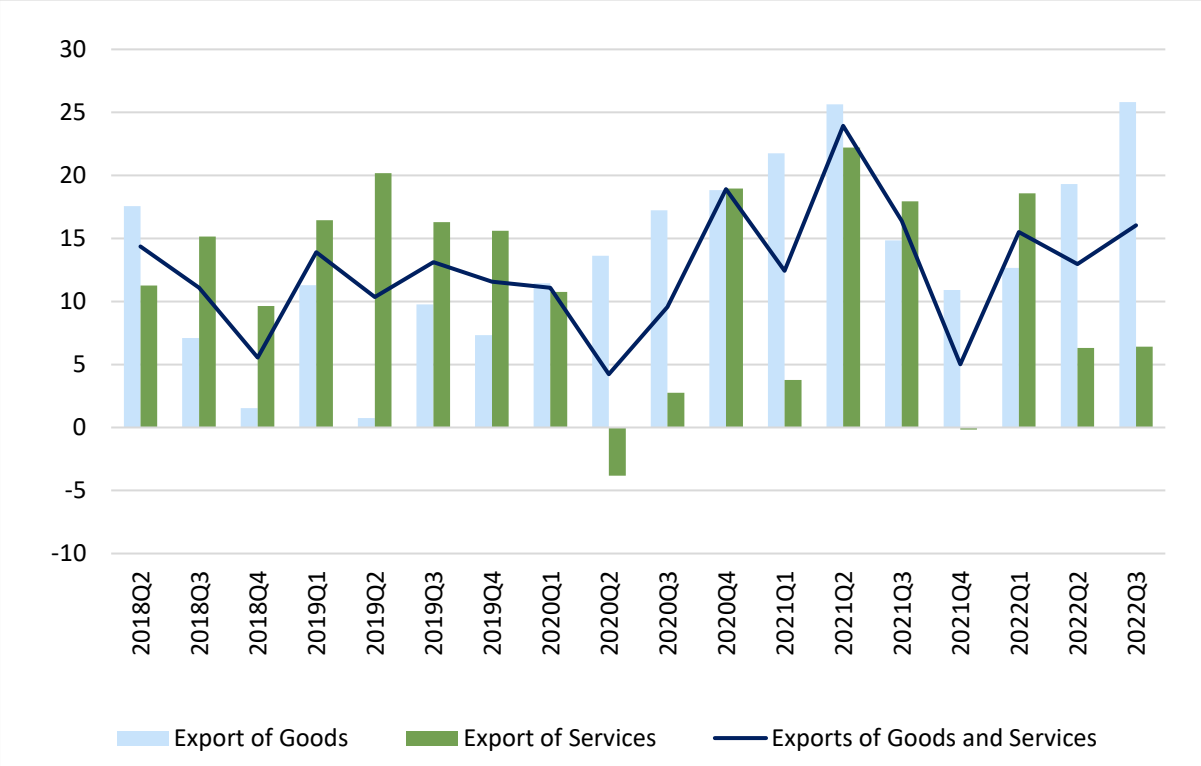
- *Irish net exports were €30.9 billion in Q3 2022.*
- *Pharmaceutical-related goods and computer services continue to drive export activity, as total exports increased 16.0 per cent in Q3 2022 per annum.*
- *Imports experienced significant growth in Q3 2022 (+42.6 per cent per annum) as a result of a surge in R&D related imports.*
- *Export activity will likely moderate in 2023 as global activity is expected to slow considerably in the new year.*

Import and export activity

Annual export growth has exceeded 10 per cent each year since 2019 and is likely to continue in 2022 as double-digit growth in exports continued in the first three quarters of 2022. In the third quarter, exports of goods and services increased 16.0 per cent on an annual basis and 4.8 per cent on a quarterly basis. Overall, Irish net exports increased to €30.9 billion in Q3 2022.

Figure 8 shows the annual growth rate in Irish exports by quarter. In Q3 2022, export growth was driven primarily by a surge in goods exports, which grew 25.8 per cent compared to Q3 2021. Service exports are also strong on an annual basis, growing 6.4 per cent. On a quarterly basis, both goods and services exports increased nearly 5.0 per cent.

FIGURE 8 SEASONALLY-ADJUSTED EXPORTS (VOLUME, YEAR-ON-YEAR %)

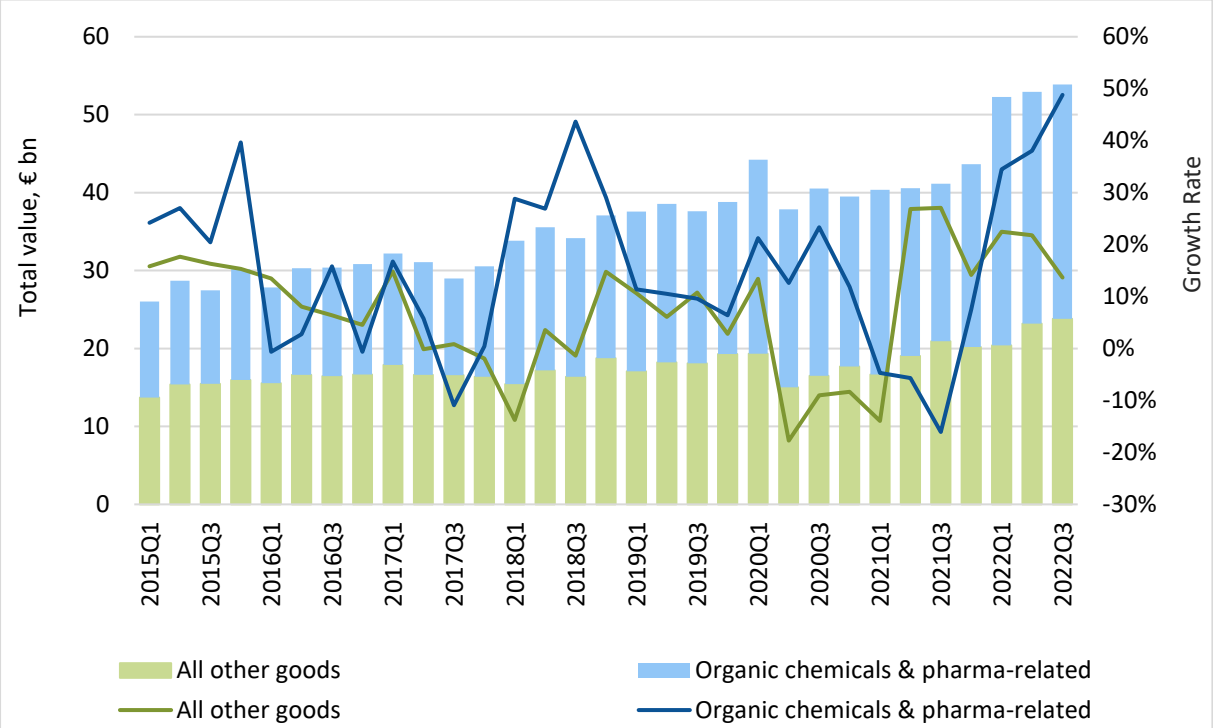


Source: Central Statistics Office, Quarterly National Accounts.

The value of services and goods exports in Ireland are heavily influenced by pharmaceutical-related and ICT industries. This is particularly evident when we look at exports by components. Figure 9 shows the annual growth rate and total value of pharmaceutical-related goods.[11] In Q3 2022, these goods accounted for over half (55.8 per cent) of all goods exports, with a total value of €30.1 billion; exports of these items increased 48.8 per cent on an annual basis and 1.0 per cent on a quarterly basis. The value of all other goods, which include food, machinery, manufactured articles and all other commodities, was €23.8 billion (44.2 per cent of total goods exports) in Q3 2022. The value of these exports increased 13.7 per cent from Q3 2021 and 2.7 per cent from Q2 2022.

11 These goods are identified as Organic chemicals, inorganic chemical and medicinal/pharmaceutical products.

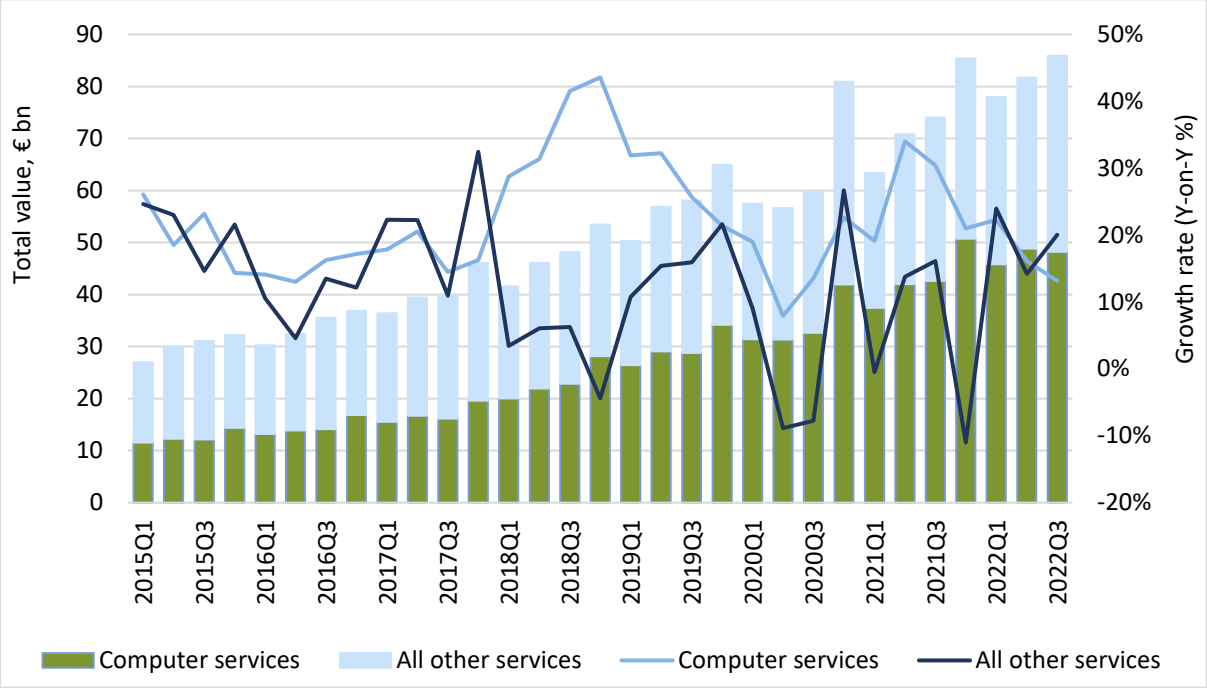
FIGURE 9 GOODS EXPORTS: VALUE (€ BILLION) AND GROWTH RATE (YEAR-ON-YEAR %)



Source: Central Statistics Office.

Turning now to services, these exports increased on both an annual (+16.1 per cent) and quarterly (+5.1 per cent) basis. Figure 10 shows the significant contribution of computer services to these exports. Since Q4 2018, computer services have accounted for just over half of all Irish services exports. Over the same period, average annual growth of computer services exports has been 23.4 per cent. In Q3 2022, these services were valued at €48.2 billion, accounting for 56.1 per cent of total services exports. On an annual basis, computer services exports increased 13.1 per cent but declined slightly (-1.3 per cent) on a quarterly basis. Unlike the consistent positive growth amongst computer services exports, all other services show greater volatility in growth over the years. The impact of the pandemic is clear to see, as these services declined considerably during periods with strict lockdown measures. In Q3 2022, all other services increased 20.0 per cent on an annual basis and 14.6 per cent on a quarterly basis. Of these services, royalties and licensing was the only component to experience a decline in exports (-20.0 per cent year-on-year).

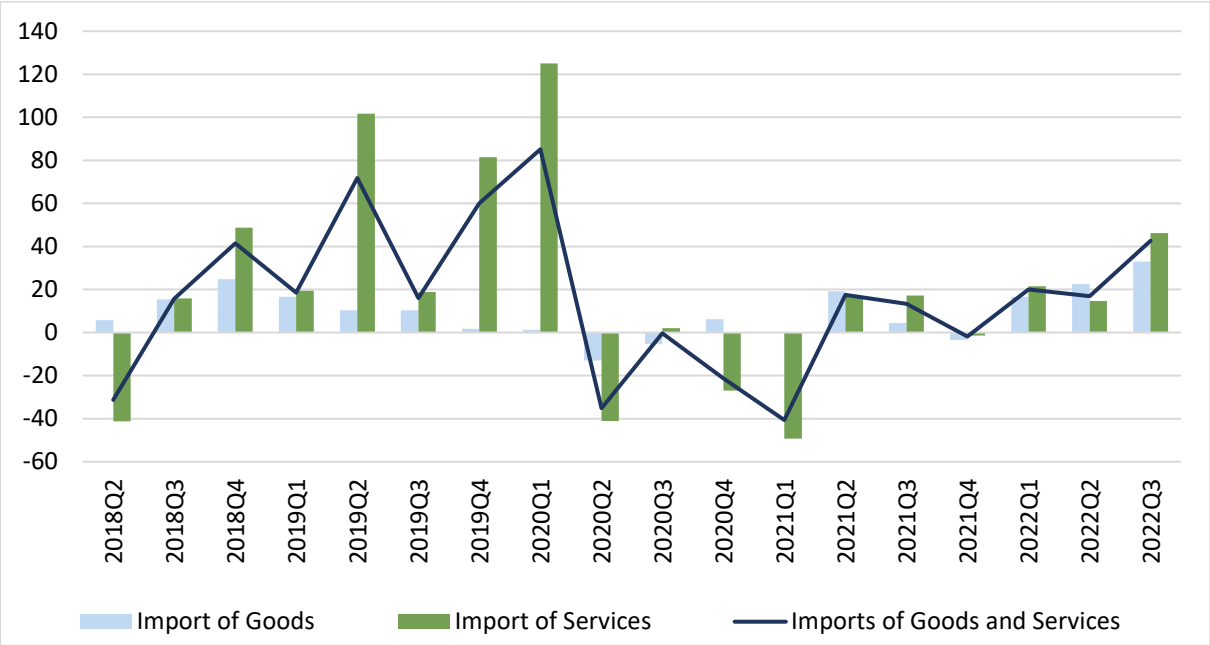
FIGURE 10 SERVICE EXPORTS BY COMPONENT VALUE (€ BILLION) AND GROWTH RATE (YEAR-ON-YEAR %)



Source: Central Statistics Office, Current Account: Merchandise and Services.

The volume of imports continued to increase in Q3 2022, in both goods and services imports. Overall, imports increased 42.6 per cent from Q3 2021 to Q3 2022, with imports of goods increasing 33.0 per cent and imports of services increasing 46.2 per cent over this period (Figure 11). From Q2 2022, imports of goods and services increased 27.0 per cent; goods imports increased 7.5 per cent over this period, while imports of services increased 35.4 per cent.

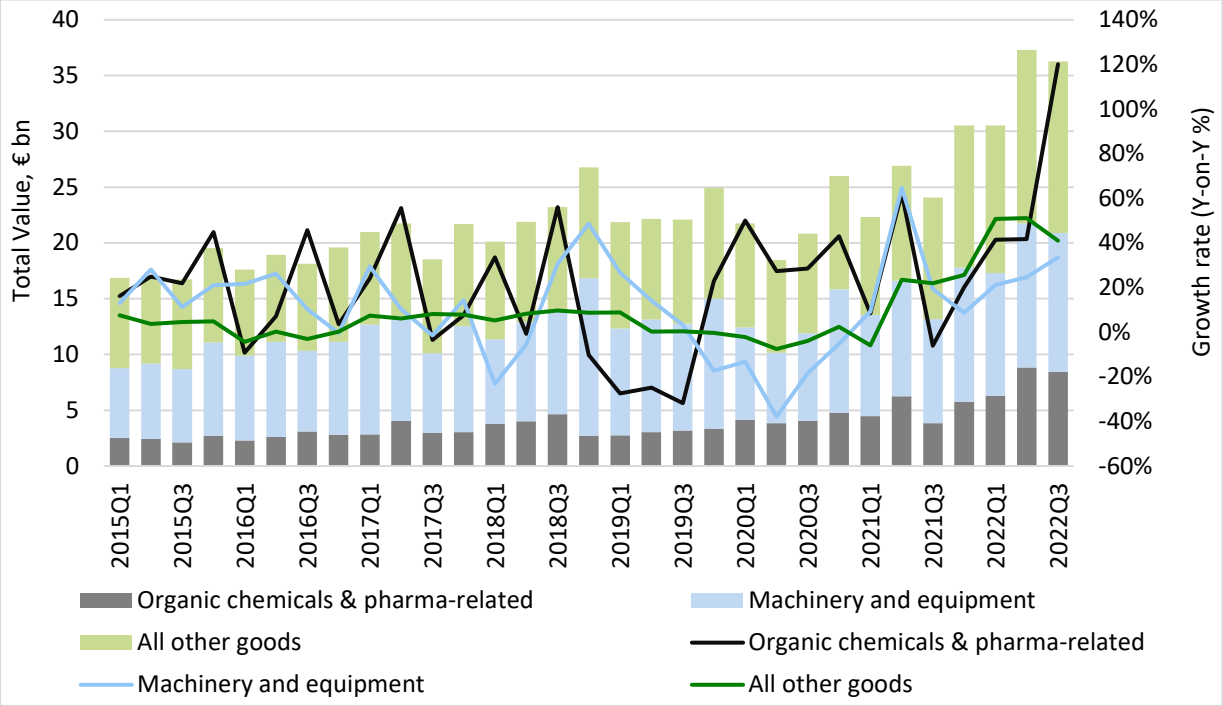
FIGURE 11 SEASONALLY-ADJUSTED IMPORTS (VOLUME, YEAR-ON-YEAR %)



Source: Central Statistics Office.

In value terms, goods imports increased significantly on an annual basis (+50.7 per cent) but declined slightly on a quarterly basis (-2.8 per cent) (Figure 12). In Q3 2022, total goods imports were valued at €36.3 billion, of which €8.4 billion was related to organic chemicals and pharmaceutical-related goods. In Q3 2021, the total value of these imports was just €3.8 billion. Machinery and equipment also represent a large share of the value of goods imports; in Q3 2022, the total value of these commodities was €12.5 billion or 34.4 per cent of all goods imports. From Q3 2021, imports of machinery and equipment increased 33.6 per cent but from Q2 2022, these imports declined 3.4 per cent.

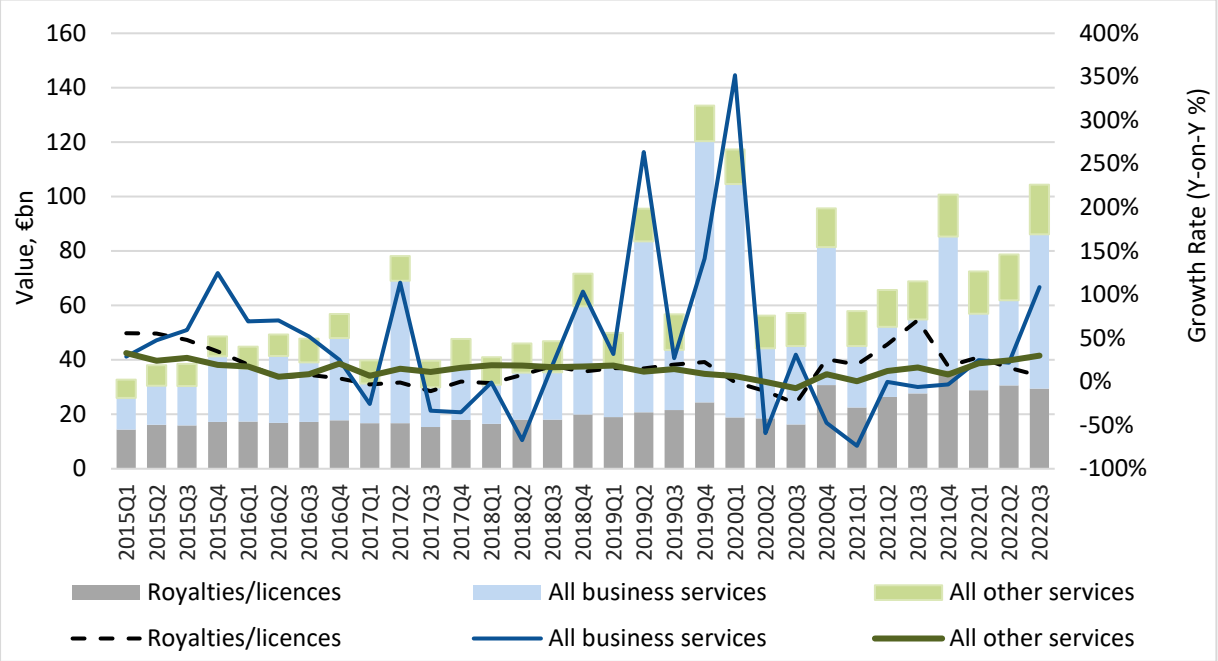
FIGURE 12 GOODS IMPORTS BY COMMODITY GROUP (VALUE, € BILLION)



Source: Central Statistics Office.

The value of service imports increased significantly on both an annual (+51.6 per cent) and quarterly (+32.6 per cent) basis. This growth was driven in large part by imports of research and development related business services which accounted for €34.0 billion of imports in Q3 2022 compared to €8.1 billion in Q3 2021. Figure 13 displays the total value and growth rates of services imports. From the figure it is clear to see the volatility in import values, particularly in those related to business services. Royalties and licensing, which accounted for nearly 30 per cent of service imports in Q3 2022, increased 6.6 per cent on an annual basis but declined 3.6 per cent from Q2 2022.

FIGURE 13 SERVICE IMPORTS BY COMMODITY GROUP (VALUE, € MILLION)



Source: Central Statistics Office.
Note: 'All other services' relate to transport, tourism and travel, communications, insurance, financial services, computer services, and other services.

Trade outlook

The exceptional performance of the traded sector has led to upward revisions in exports and imports for 2022. Given the surge in imports in Q3 2022 and continued robust activity in exports, we anticipate imports and exports to increase 15.0 per cent and 13.5 per cent, respectively. However in 2023, we do anticipate that trade activity is likely to moderate relative to 2022 given the expectation for sluggish global activity, ongoing supply chain disruptions, and uncertainty related to the trajectory of the war in Ukraine and the impact on energy markets. In particular, we have revised down our forecast for exports in 2023, given the expected slowdown in economic activity amongst Ireland's key trading partners. We now anticipate imports and exports to grow at 6.4 and 5.2 per cent, respectively, in 2023.

INVESTMENT

Key Points

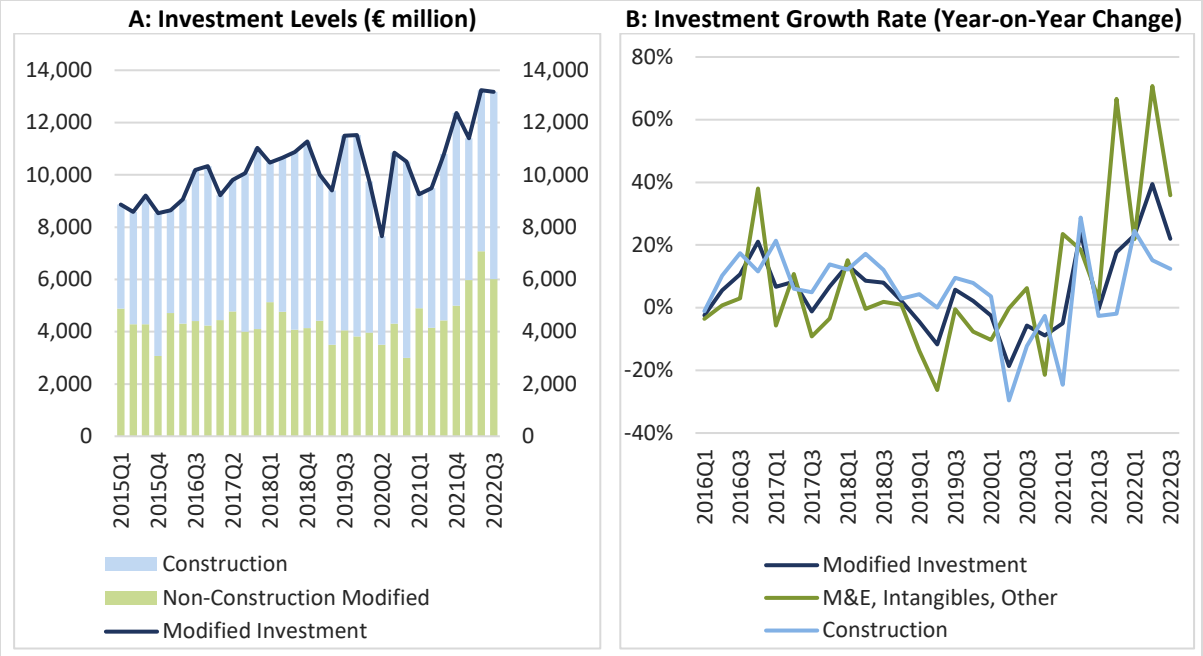
- *Overall investment in Ireland remains strong in 2022 given increases in intangibles and broad-based capital expenditure.*
- *International headwinds are likely to moderate the growth in investment into 2023.*
- *Housing completions have increased notably in 2022 relative to the previous years. With an expectation of 28,000 units, 2022 is likely to register the largest number of units since the financial crisis.*
- *However, labour scarcity and cost inflation are likely to impact completions into next year; we expect 26,000 units to be completed in 2023.*

Figure 14 presents the level of modified gross fixed capital formation in constant price terms for the period Q1 2015 to Q3 2022; modified investment excludes investment in aircraft leasing and investment in research and development-related intangible assets. The level of investment continued to remain strong in growth terms on a year-on-year basis in the third quarter, albeit with some moderation in the extreme high growth rates. Figure 14.B highlights the year-on-year growth rate in investment activity. The overall rate of investment increased by 22 per cent in the third quarter which represents a moderation in the growth rate from the second quarter.

The figure presents the breakdown in investment across two sub-groups: a) construction investment which includes dwellings, improvements and other non-residential building and construction activity; and b) the rest of investment which includes machinery, equipment, other intangible assets etc but excludes the items noted above in the definition of modified investment.

Considering the trajectory of investment in these two areas, it is clear that investment is continuing to grow strongly across all asset classes; however, the acceleration in Q3 is less than that seen in Q2. Given the international economic slowdown, it is notable that investment is continuing to grow in Ireland.

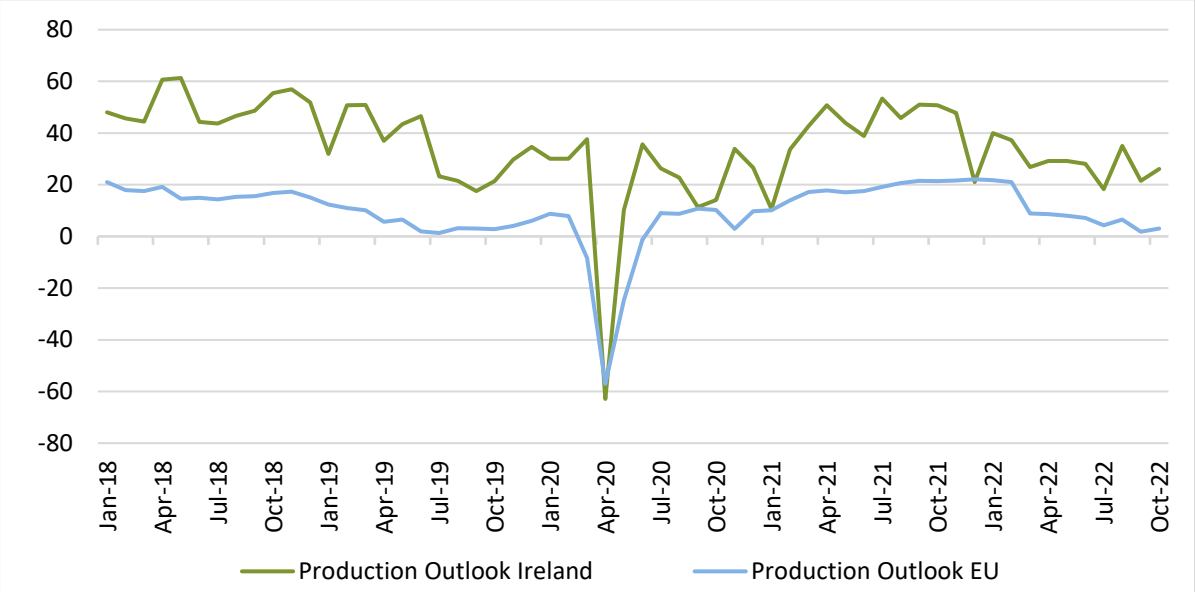
FIGURE 14 MODIFIED GROSS DOMESTIC FIXED CAPITAL FORMATION



Source: Central Statistics Office.

However, the outlook may be more subdued if further challenges in the IT sector arise and difficulties emerge in other FDI related sectors. Figure 15 presents the overall production outlook confidence indicator from the European Commission for Ireland and the EU. In the past number of months, a clear downward trend has emerged which highlights the ongoing uncertainties. It is likely that this subdued outlook will feed through into slower growth in capital spend in the coming year.

FIGURE 15 CONFIDENCE INDICATOR – IRELAND VS EU

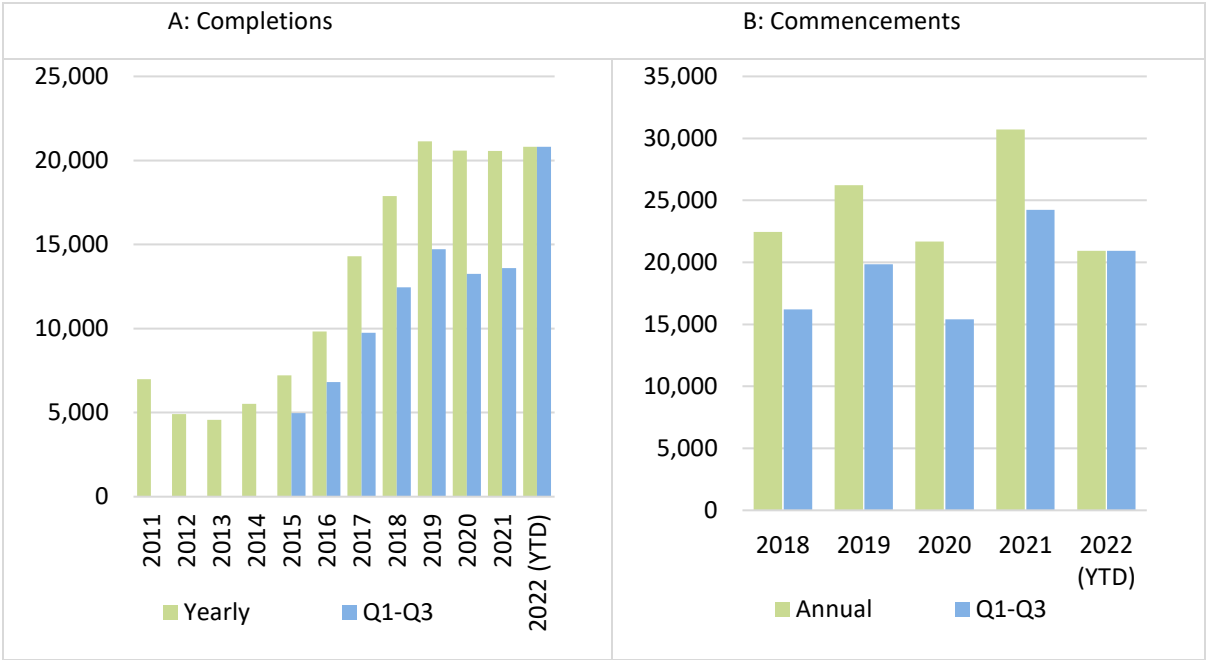


Source: European Commission, Sentiment Indices.

Construction outlook

In this section, we provide a more detailed assessment of the construction outlook given the importance of the sector to the Irish economy. Figure 16 presents the trend in completions (panel A) and commencements (panel B). It is clear that 2022 will be a strong year in terms of housing completions. For the first three quarters of the year, over 20,000 units were completed which is on a par with the full year 2020 and 2021. Over the past number of years, the share of the total completions that has been posted by the end of Q3 is approximately 68 per cent. If these relativities were to hold, it is likely that 28,000 units will be completed this year. However, due to the COVID-related work slowdowns in previous years, it is unclear if this seasonal pattern will hold. While housing completions are strong in 2022, the outlook for 2023 appears to be somewhat more subdued with commencements weaker in the first three quarters of 2022 than in the same period of 2021.

FIGURE 16 TREND IN HOUSING COMPLETIONS



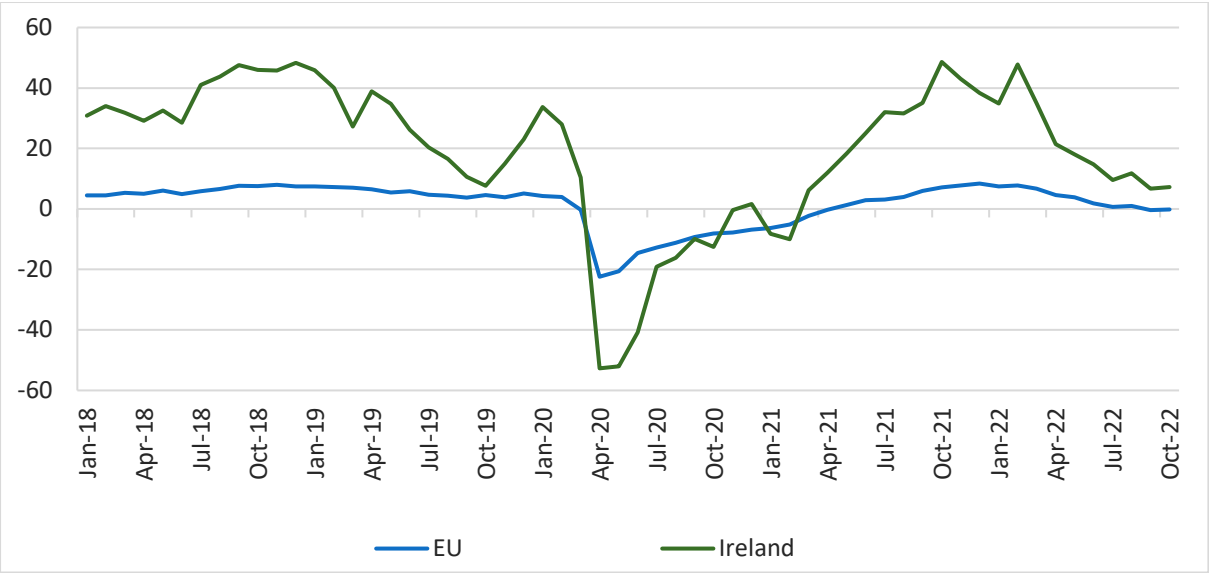
Source: CSO; Housing Agency.

It is likely that the extremely uncertain global environment, domestic cost of living crisis, and rising interest rates are spilling over into the construction sector on both the supply and demand sides. Cost inflation in construction inputs is likely to be raising the cost of production for individual units. At the same time, household affordability is being challenged by rising rates and increasing consumer prices which are squeezing household budgets. Figure 17 outlines the confidence index for construction firms for Ireland and the EU and the downward trend is clear for Ireland relative to the broader EU context.

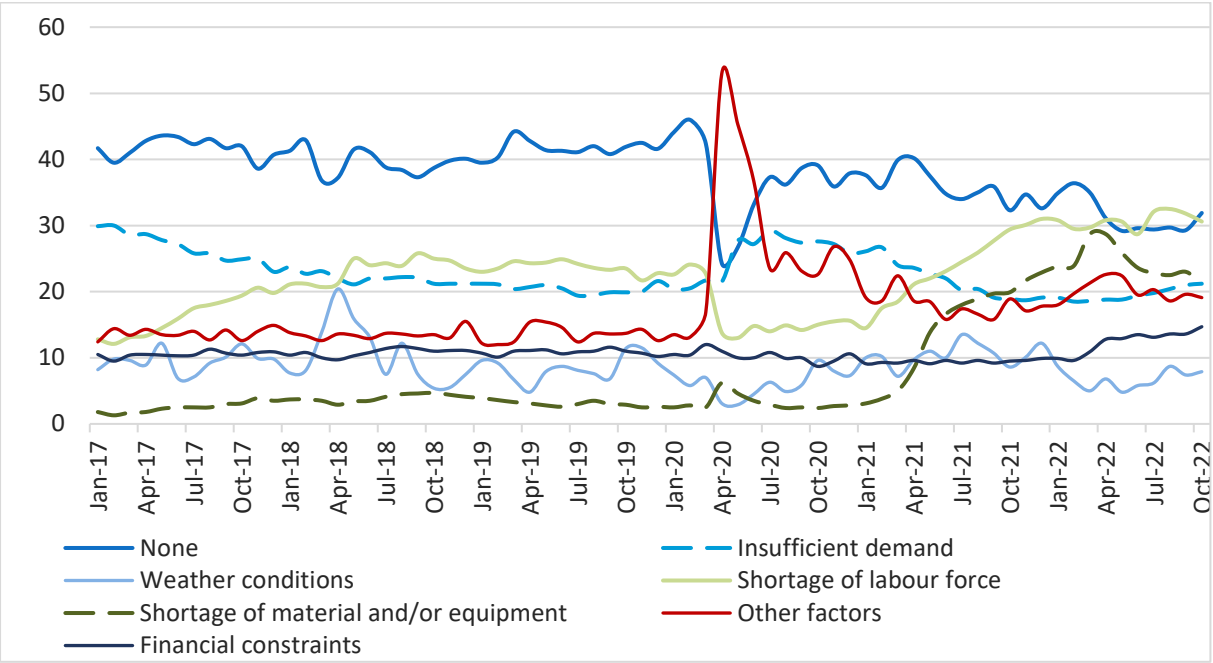
As well as inflation in international commodity prices, labour shortages are likely to be playing a role in the construction sector. This can clearly be seen in Figure 17.B which shows the constraints facing enterprises in the sector. The issue of costs and shortages of materials and labour are particular challenges facing the construction industry; one-in-three construction firms in Ireland indicate that labour is the greatest constraint on activity while the proportion indicating material shortages is falling. The proportion indicating insufficient demand is rising in the past number of months.

FIGURE 17 CONSTRUCTION OUTLOOK – CONFIDENCE INDEX – IRELAND VS EU

A. Overall Confidence Index



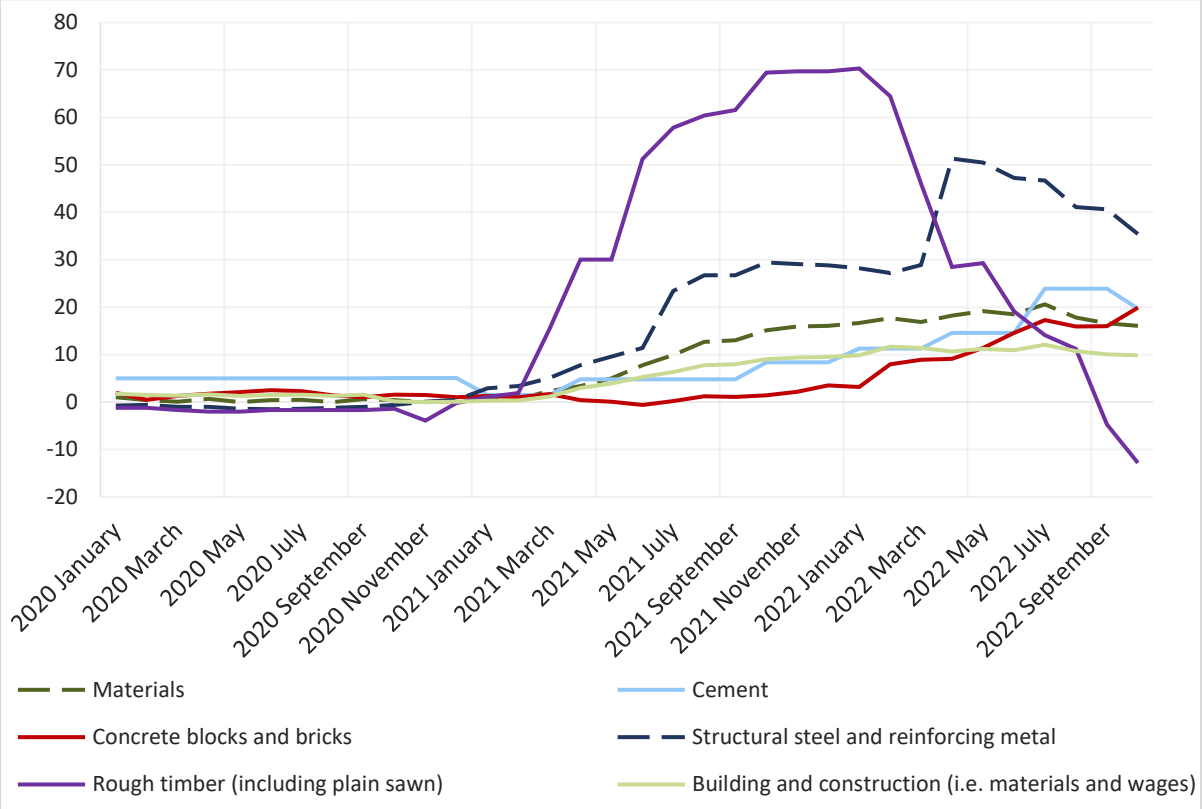
B. Issues facing the construction sector (% of responses)



Source: European Commission.

The inflation rates in the construction sector can clearly be seen in Figure 18 which presents inflation in key series relating to construction inputs. While inflation rates are high, some moderation in the pace of inflation can be seen in the most recent data.

FIGURE 18 INDUSTRIAL AND WHOLESALE PRICES IN CONSTRUCTION – IRELAND (% CHANGE YEAR-ON-YEAR)



Source: CSO Wholesale and Industrial price indices.

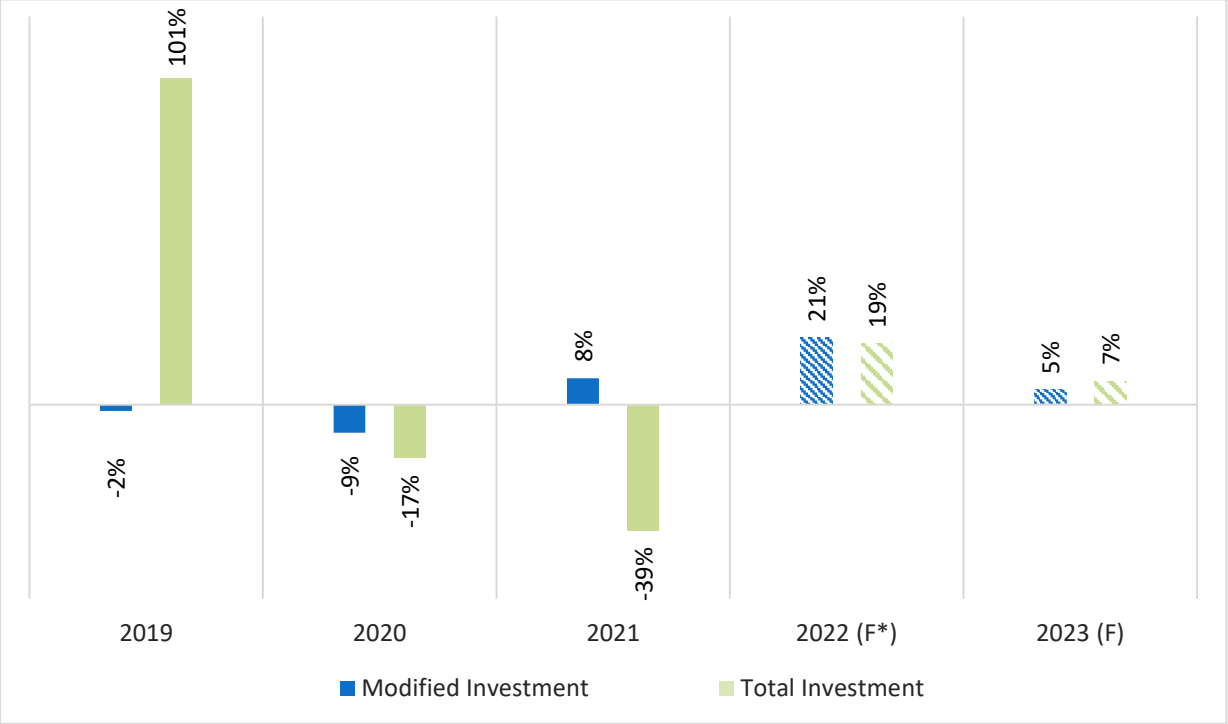
Given the strong outturn for housing completions for 2022 to date (with over 20,000 units completed up to the end of Q3), and on the balance of factors listed above, we hold our forecast for new housing completions at 28,000 for 2022. For 2023, due to the slowdown in housing commencements, we continue to envisage a lower outturn than in 2022; at present, our assessment is for 26,000 new housing units for 2023.

Investment forecasts

Our forecasts for 2022 and 2023 for investment are presented in Figure 19. Given the strong investment experienced in the first three quarters of 2022, we expect modified (MI) and non-modified investment (I) to grow strongly this year. We expect MI to grow by 20.7 per cent in 2022 and overall investment to growth by 18.8 per cent. For 2023, given the considerable economic risks on the horizon, the general slowdown in the European economy and the specific challenges seen in

some of Ireland's important FDI sectors, we expect a slowdown of investment for next year. Our forecast for MI is 4.6 per cent growth and for I is 7.3 per cent growth for 2023.

FIGURE 19 FORECASTS FOR INVESTMENT (% CHANGE YEAR-ON-YEAR)



Source: QEC Authors.
Note: ESRI F* denotes actual data for Q1, Q2, Q3 2022, projection for Q4. F denotes full year forecast.

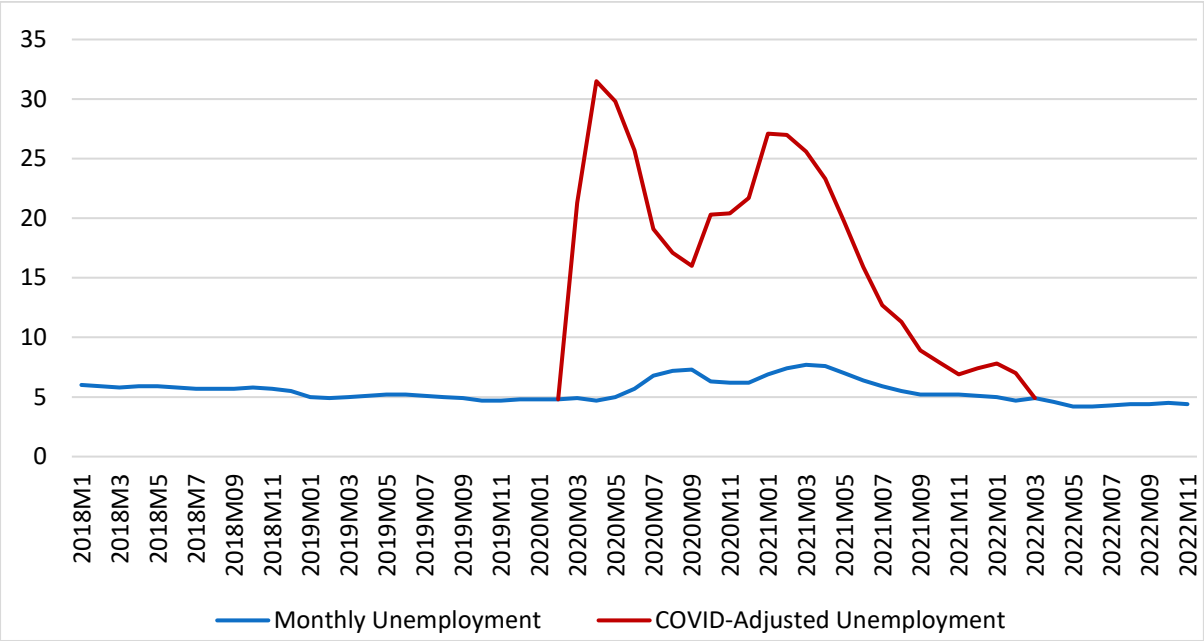
LABOUR MARKET

Key Points

- *High participation rates and low unemployment have contributed to full employment in the labour market.*
- *Recovery in employment levels since the pandemic have been strong across most sectors, with the exception of accommodation and food service.*
- *Discrepancies in recoveries across sectors are also leading to large differences in earnings growth, which has significant implications for households struggling with rising living costs.*

After the shock from the pandemic, the Irish labour force has rebounded markedly since the start of 2022 and reached full employment. As of November 2022, monthly unemployment was 4.4 per cent and unemployment for the year is set to be just below its pre-pandemic rate of 5.0 per cent.

FIGURE 20 UNEMPLOYMENT RATE BY MONTH (SEASONALLY-ADJUSTED, %)



Sources: Seasonally-Adjusted Monthly Unemployment Rate Series for ages 15-74. Central Statistics Office.
Note: The COVID-19 Adjusted Monthly Unemployment Rate Series is used for the period March 2020 – March 2022

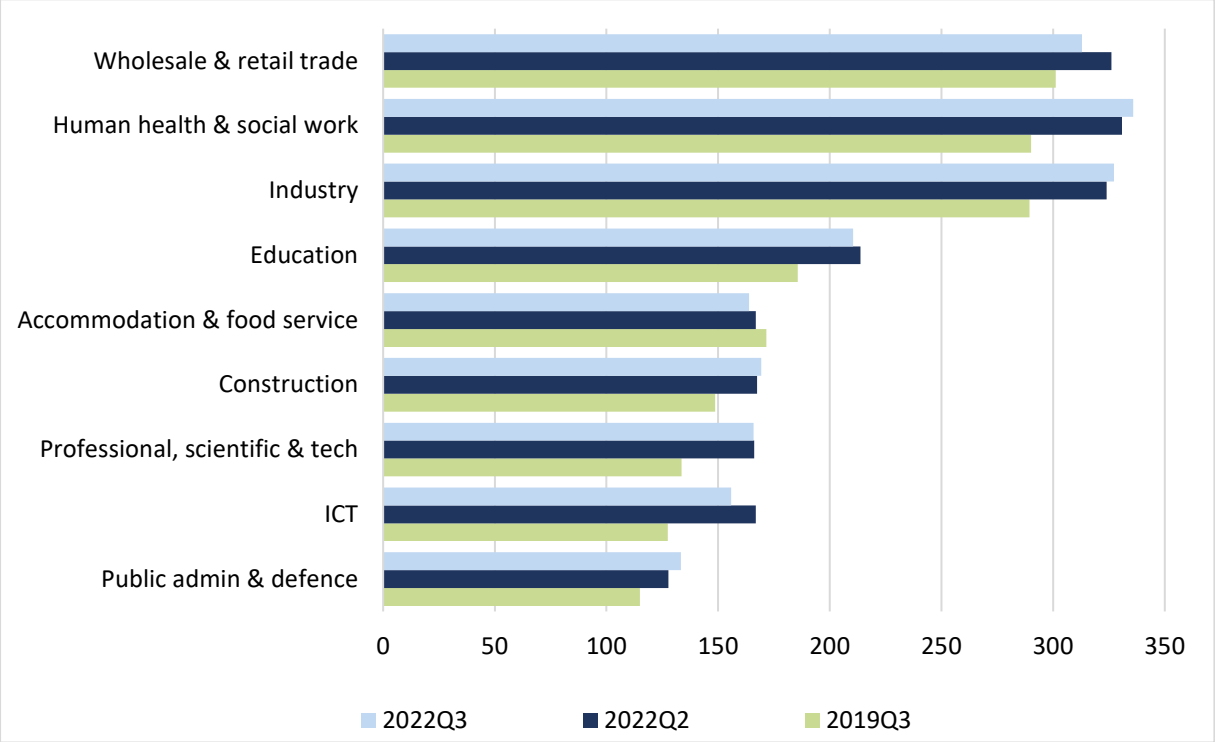
As mentioned in the Autumn *Commentary,* both total employment and participation rates have increased compared to 2019. In Q3 2022, total employment across all NACE sectors was 10.2 per cent higher than it was in Q3 2019 and participation rates for those aged 25-74 years old increased from 70.9 per cent to 73.5 per cent over the same period. While these improvements

signal a healthy labour market, it is important to see the extent to which all sectors have recovered.

Figure 21 shows the changes in employment in Q3 2022 compared to Q2 2022 and Q3 2019. Professional services and ICT experienced the largest gains in employment between Q3 2022 and Q3 2019; approximately 32,300 and 28,400 workers joined these sectors, respectively. However, from Q3 2022 to Q2 2022 roughly 11,000 of these workers were no longer employed in the ICT sector (-6.6 per cent of the total workforce). Employment has also declined in wholesale and retail trade from Q2 2022 to Q3 2022 (-13,200); however, the sector still employs nearly 12,000 more workers in Q3 2022 than it did in Q3 2019. Some sectors (Human health and social work, Industry, Construction, and Public administration) have experienced gains in employment on a quarterly basis as well as since 2019.

Accommodation and food service is one of the only sectors to have experienced a loss in employment since 2019. As mentioned in the Monetary and Financial section of this *Commentary*, SMEs in the Accommodation and food sector have not seen investment levels recover from the pandemic which could be a contributing factor to the loss of employment in the sector. Compared to Q3 2019, approximately 7,700 fewer workers were employed in this sector in Q3 2022.

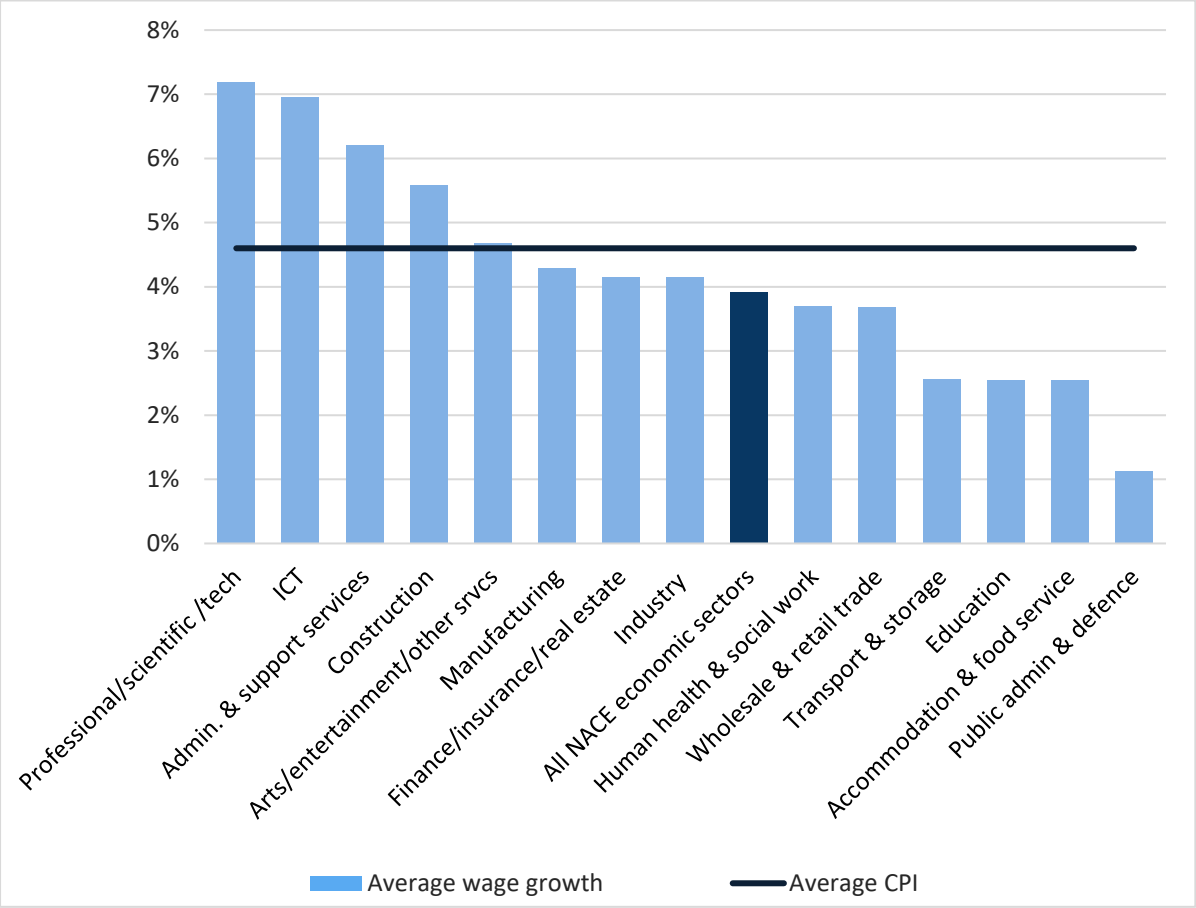
FIGURE 21 AVERAGE EMPLOYMENT BY SECTOR ('000, SEASONALLY-ADJUSTED)



Source: Central Statistics Office. Labour Force Survey. Persons aged 15-89 years in employment.

Given the rapid rise in inflation, it is important to see how wages are keeping pace with the cost of living. Additionally, given the differences in the employment levels and investment activity in certain sectors since the pandemic, it is also informative to see if some sectors are struggling more than others in keeping pace with inflation. Figure 22 displays the average earnings growth by sector since Q1 2021 as well as the average CPI increase over the same period. Across all sectors, we see average wage growth is 0.7 per cent below the pace of inflation, with large discrepancies between sectors. In professional services and ICT, wages have increased more than 2 per cent above average inflation. Public administration and defence as well as Accommodation and food service are the two sectors more than 2 per cent below the average inflation rate. Much like trends in investment activity and employment, we see that some sectors have struggled more than others in the post-pandemic period.

FIGURE 22 CPI AND AVERAGE EARNINGS GROWTH BY SECTOR (AVERAGE Q1 2021 – Q3 2022)



Source: Central Statistics Office. Earnings hours and employment costs survey.

Labour outlook

Given the rapid recovery of the labour market throughout 2022, we expect the unemployment rate to continue to remain low, averaging 4.9 per cent in 2022. We expect the improvements in the labour force to continue through 2023, with the unemployment rate expected to be 4.3 per cent next year. However, downside risks to this outlook include a slowdown in certain domestic sectors as global activity slows.

MONETARY, FINANCIAL AND INFLATION OUTLOOK

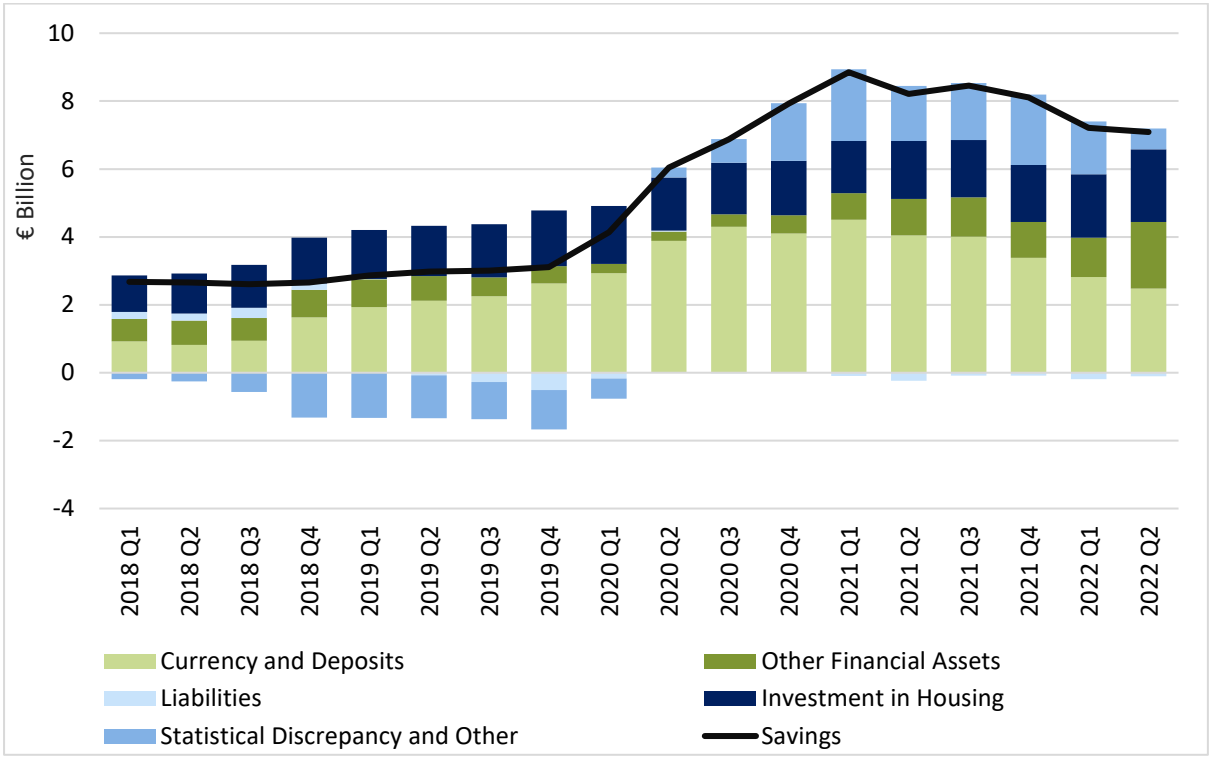
Key Points

- *Household savings remain elevated on a historical basis yet have declined annually for two consecutive quarters as of Q2 2022.*
- *Elevated savings from the pandemic are likely fuelling increases in mortgage lending.*
- *Lending to SMEs has yet to recover to pre-pandemic levels, with lending in some sectors particularly far below 2019 level.*
- *Energy continues to be the main driver of inflationary pressures, although price increases are beginning to be more broadly based. We have revised up our inflation forecast for 2023, although projections are highly dependent on the path of energy prices.*

Household savings and mortgage market

As mentioned throughout this *Commentary*, households in Ireland have experienced elevated savings levels as a consequence of the disruption to normal economic activity during the pandemic. We can see this in Figure 23, which shows components of household savings and displays the peak in household savings which occurred in Q1 2021. While Q1 and Q2 2022 were the first two quarters since 2018 in which the annual change in savings declined, household savings in Q2 2022 still remained nearly €3 billion higher than its level before the pandemic in Q1 2020. One possible route for the high savings is investment in housing; in Q1 and Q2 2022 investment in housing increased 21.4 per cent and 25.5 per cent on an annual basis.

FIGURE 23 HOUSEHOLD SAVINGS (FOUR-QUARTER MOVING AVERAGE)

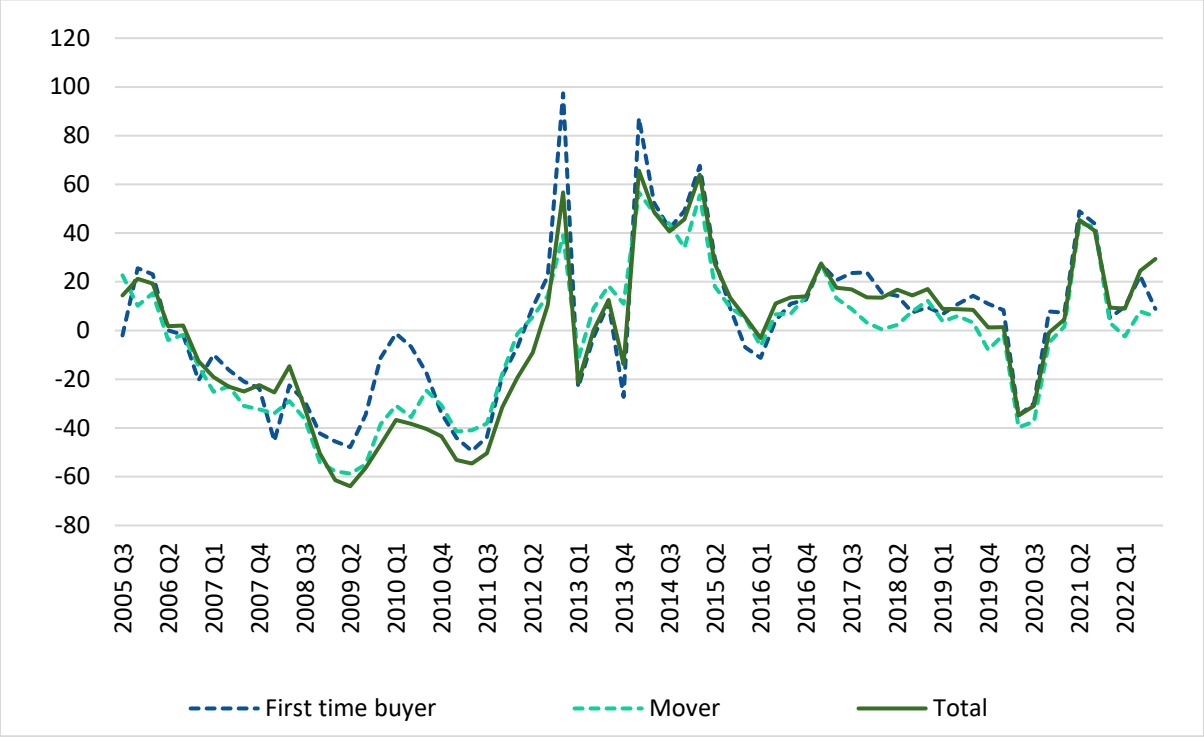


Source: Central Bank of Ireland.

The increases in housing investment can also be seen in the growth in mortgage lending. Figure 24 shows the overall growth in lending, as well as lending growth amongst both first-time buyers and movers. In Q3 2022, there were 14,851 total mortgage drawdowns, the highest number of drawdowns in a quarter since 2008.[12] Lending volumes amongst movers are strong, increasing over 5 per cent per annum in both Q2 and Q3 2022. However, the increase in lending amongst first-time buyers is particularly notable (+22.5 per cent and +8.9 per cent in Q2 and Q3 2022 on an annual basis, respectively).

12 There were 18,706 drawdowns in Q4 2008.

FIGURE 24 NEW MORTAGE LENDING VOLUME GROWTH (%)

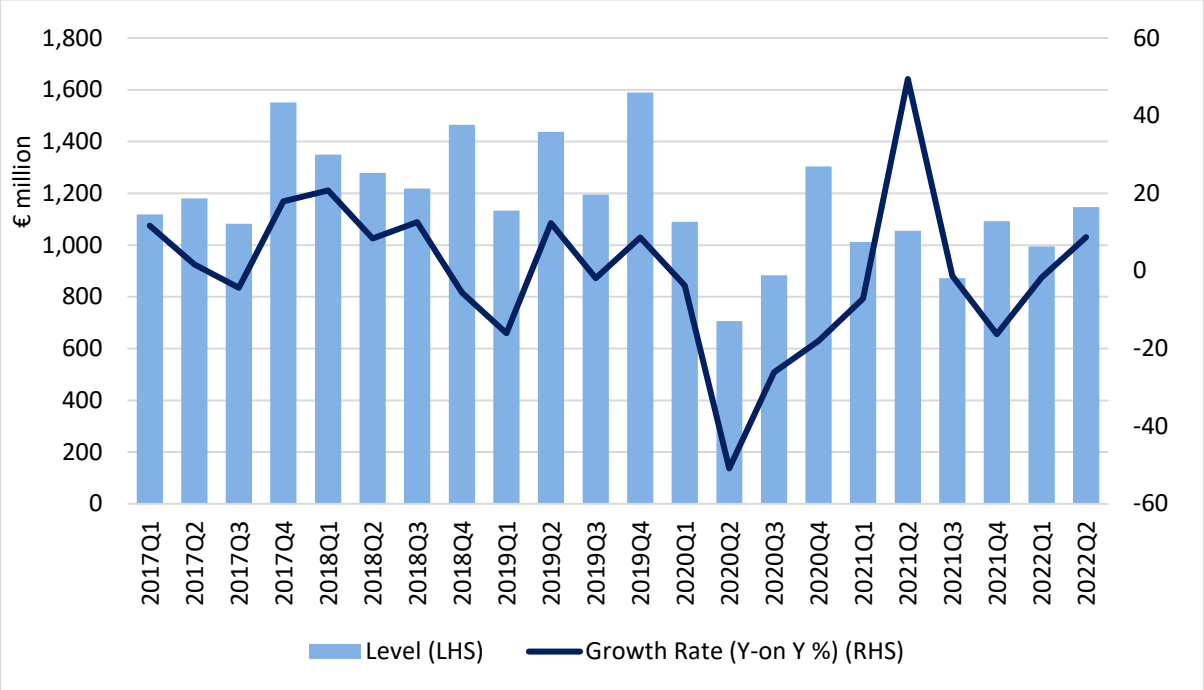


Source: Banking and Payments Federation Ireland.

SME lending activity

The allocation of credit to SMEs provides a gauge of both the willingness of credit providers to take on risk and the views of indigenous businesses to the suitability of market conditions for future investment. Figure 25 presents new lending to SMEs excluding financial intermediation from Q1 2017 to Q2 2022. The effects of the pandemic on lending to SMEs is clear; Q2 2020 was the first quarter since 2015 in which total lending fell below €1 billion. Lending has gradually increased since this low but has yet to recover to pre-pandemic levels. Lending in the first half of the year grew 3.6 per cent on an annual basis. In Q2 2022, total lending reached €1.15 billion, an increase of 8.7 per cent from Q2 2021.

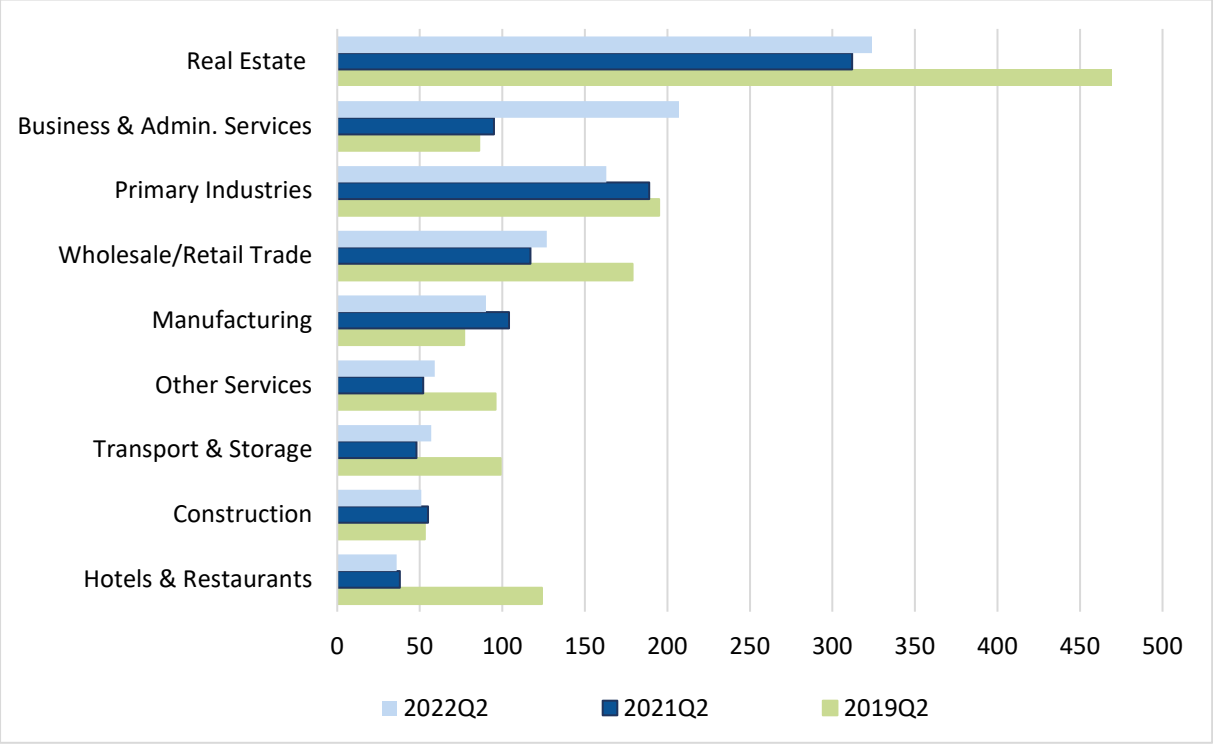
FIGURE 25 NEW LENDING TO SMEs



Source: Central Bank of Ireland, Table A.14.1.
Note: Refers to total lending excluding financial intermediation.

Figure 26 shows total lending to SMEs by sector. We compare total lending from Q2 2021 to Q2 2022 as well as to Q2 2019 in order to see whether lending has recovered across sectors since the pandemic. Again, we see much higher levels of lending in 2019. While it still had the highest level of total lending in Q2 2022 (€324 million), total lending in the real estate sector was still one-third less than its level in Q2 2019. We also see that lending has not recovered in sectors which were particularly impacted by public-health related closures in 2020 and 2021. Notably, the hotel and restaurants sector has struggled considerably; lending in Q2 2021 was 70 per cent below its level from Q2 2019 and lending in Q2 2022 declined a further 5.3 per cent on annual basis. Lending to SMEs in the 'other services' sector in Q2 2022 was also far below its pre pandemic level (-38.5 per cent since Q2 2019). In contrast, lending within the construction sector has returned to pre-pandemic levels, while the manufacturing and business and administrative services sectors are the only two to experience notable increases in total lending.

FIGURE 26 GROSS NEW LENDING TO SMEs BY SECTOR – LEVELS, € MILLION

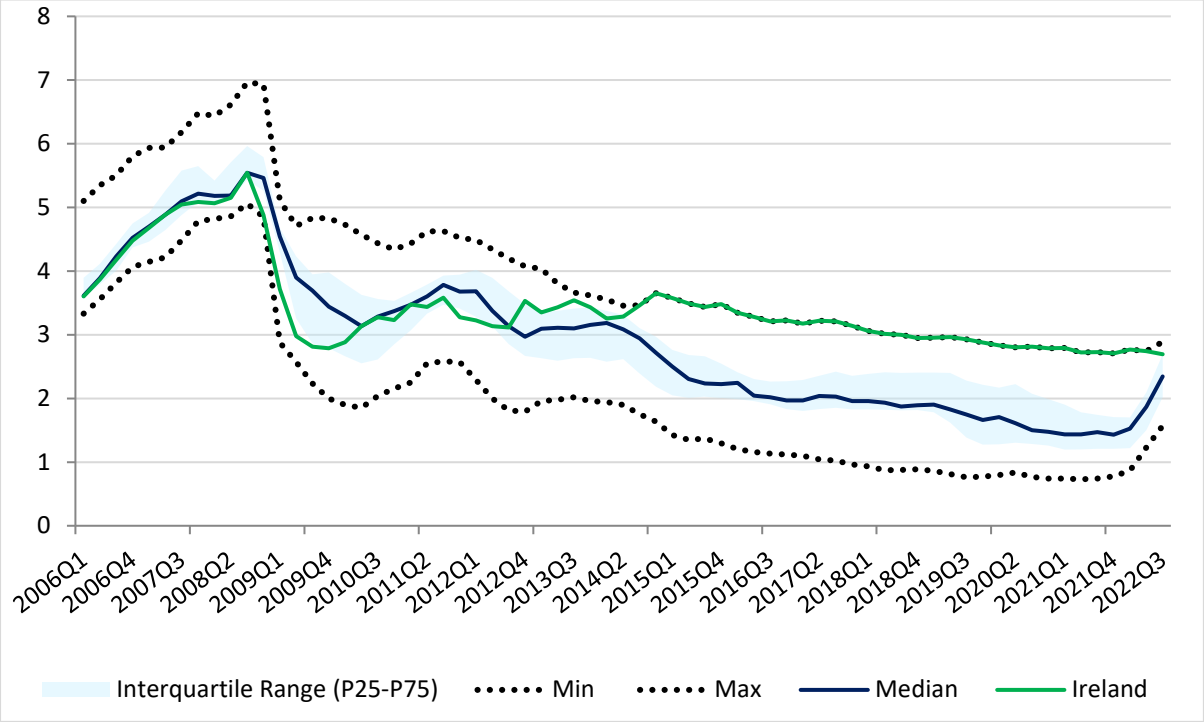


Source: Central Bank of Ireland, Table A.14.1.

Interest rates and the cost of finance

The cost of finance for both corporate and household credit is of importance given the increase in key interest rates this year. While interest rates are rising in other European countries, Ireland's have remained among the highest for several years; from Q3 2014 to Q2 2022, interest rates on mortgages in Ireland were the highest in the Eurozone. However, historically high rates means that lenders in Ireland may have a buffer that can absorb some of the recent interest rate increases. The cost of borrowing for households for house purchases in Ireland stood at 2.69 per cent in Q3 2022; this is down slightly year-on-year from 2.73 per cent in Q3 2021 (Figure 27). Across the Eurozone, rates have increased over the same period. The median rate on mortgages increased from 1.47 per cent in Q3 2021 to 2.89 per cent in Q3 2022. As of Q3 2022, interest rates in Spain, Estonia and Lithuania increased above Irish rates.

FIGURE 27 INTEREST RATES ON NEW HOUSE PURCHASE LOANS TO HOUSEHOLDS (%)

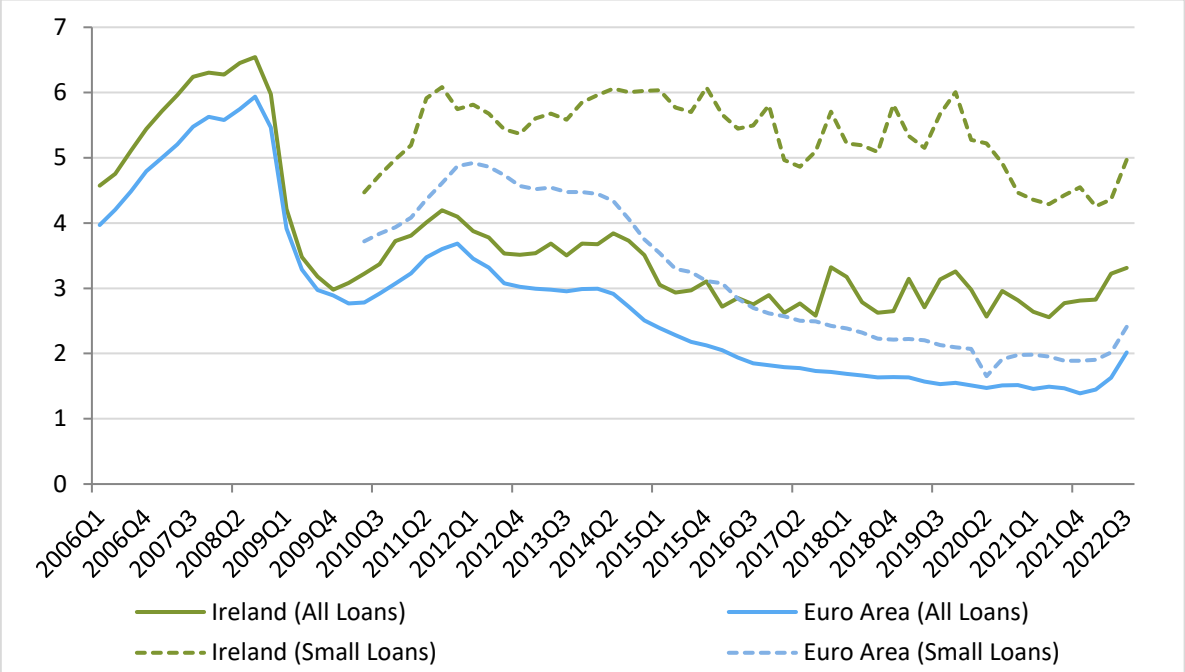


Source: European Central Bank, MFI Interest Rate Statistics. Countries included: AT, BE, EE, ES, FI, FR, DE, IE, IT, LT, NL, PT, SK, SI. These countries are selected due to data availability.

A similar picture emerges in relation to corporate interest rates. Figure 28 presents the interest rates on new business loans for non-financial corporates in Ireland relative to the average for the Eurozone. Two series are presented: 1) covering all loans and 2) capturing loans of less than €250,000 in value, which is used as a proxy for loans for SMEs. Interest rates in Ireland and across the Eurozone have increased just over 50 basis points from Q3 2021 to Q3 2022 for all loan types. However, Irish interest rates to corporations are amongst the highest in the Eurozone. In Q3 2022, Irish rates across all loans were 3.3 per cent compared to 2.0 per cent in the euro area. For small loans, the gap is even wider, with Irish rates approaching 5.0 per cent compared to 2.4 per cent in the euro area.

Given the renewed focus on monetary policy measures, this section contains two Boxes on related issues for the Irish market. The first revisits the issue of interest rate pass-through in the mortgage market, which is of particular interest in light of the recent increase in euro area policy rates. The second Box assesses the implications for Irish households of changes in mortgage lending rates and the recent changes in the macroprudential lending measures by the Central Bank of Ireland.

FIGURE 28 INTEREST RATES TO CORPORATIONS



Source: European Central Bank, MFI Interest Rate Statistics. Small loans refer to loans less than €250,000.

BOX B INTEREST RATE PASS-THROUGH IN THE EURO AREA: A PANEL DATA APPROACH

Background

In light of monetary authorities' response to the surge in inflation recently observed, the resulting increase in policy rates in the euro area has focussed attention on the potential impact of changes in policy rates on European mortgage holders. Central to this question is the pass-through of policy rates to the mortgage rate charged in mortgage markets across the euro area. In particular, how much and how quickly does the change in the euro area policy pass through to the mortgage rate in a particular euro area country's residential market?

To address this question, data from Hypostat, the statistical report of the European Mortgage Federation (EMF),[13] are used. This report contains information on mortgage data such as the representative mortgage interest rate across countries and the proportion of mortgages with a variable interest rate for European mortgage markets. It is important to use the representative mortgage rate as the dependent variable, as this is indicative of the average cost of finance in the particular mortgage market.

Data are also used from the European Central Bank's (ECB) statistical warehouse. Data are available for the 19 euro area countries over the period 2000-2020. We therefore adopt a panel data approach looking at the pass-through issue across the 19 member states of the euro area over a 21-year period.

13 https://hypo.org/ecbc/publications/hypostat/.

To formally examine the relationship between the euro area policy rate and mortgage rates we modify the specification outlined in Muellbauer (2022) and Chauvin and Muellbauer (2018) which is as follows:

$$mr_{it} = \alpha_{i0} + \beta_1 sr_{it} + \beta_2 lr_{it} + \beta_3 NPL\ ratio_{it} + \beta_4 eurospread_{it} + \varepsilon_{it} \quad (1)$$

Where mr_{it} is the mortgage interest rate in country *i* at time *t*, sr_{it} is the short rate and lr_{it} is the 10-year Treasury yield. The $NPL\ ratio_{it}$ is the non-performing loan ratio while $eurospread_{it}$ is defined as the difference between the average of the Italian and Spanish year yields and that of Germany. This variable serves as a risk indicator associated with sovereign debt crisis while the non-performing loan ratio captures the degree of distressed loans on the balance sheets of resident financial institutions in a particular market.

The specification adopted in the present specification is as follows:

$$\ln mr_{it} = \alpha_{i0} + \beta_1 \ln euribor_t + \beta_2 \ln lr_{it} + \beta_3 Variable_{it} + \beta_4 \ln FStress_{it} + \beta_5 \ln HHI_{it} + \sum_{j=1}^{19} \beta_{4+j}\, CD_j + \varepsilon_{it} \quad (2)$$

Where ln denotes logs. This also follows previous examination of the pass-through issue in McQuinn and Morley (2015) and Goggin et al. (2012). The Goggin et al. (2012) approach follows the marginal cost pricing model outlined by Rousseas (1985) which specifies retail lending rates as a function of the cost of funds and a mark-up, which is typically referred to as the interest rate spread. To capture the policy rate, the Euribor is used. This rate is based on the average interest rate at which a large panel of European banks borrow funds from one another. The rate is considered to be the most important reference rate in the European money market. $Variable_{it}$ is the amount of gross lending within a mortgage market which is conducted with a variable interest rate. This is important as the type of interest rate in a particular market has a significant impact on the degree of pass-through from the policy rate. Markets, which have a relatively high degree of fixed mortgages, ceterus paribus, are likely to be less sensitive to policy rate changes.

The final variable $FStress_{it}$ is an indicator of financial stress in a particular country. The variable, which is outlined in Duprey et al. (2015), defines financial stress as simultaneous financial market turmoil across a wide range of assets (equity markets, government bonds and foreign exchange), reflected by (i) the uncertainty in market prices, (ii) sharp corrections in market prices, and (iii) the degree of commonality across asset classes. This seeks to capture both the non-performing loans and euro spread issue hypothesised in (1) above. We also include an indicator of concentration; a Herfindahl index for credit institutions (HHI_{it}) in each respective country. The greater the size of the index, the more concentrated the financial sector in a particular country is. Ceteris paribus, one would expect that the representative interest rate in a particular mortgage market would be lower the greater the degree of concentration in that market. CD_j are the 19 country-specific dummies that are estimated as part of the fixed effects specification.

The basic specification (2) is run as a panel data fixed effects model. The model results are summarised in Table B.1:

TABLE B.1 FIXED EFFECTS RESULTS

Variable	Coefficient	T-Stat
$\ln euribor_t$	0.193	12.48
$\ln lr_{it}$	0.040	1.68
$Variable_{it}$	-0.001	-1.14
$\ln FStress_{it}$	0.015	0.72
$\ln HHI_{it}$	0.155	2.39
Country-level dummies		
Austria	1.63	7.11
Belgium	1.57	10.56
Estonia	1.49	10.75
Finland	0.82	5.27
Germany	1.80	6.94
Greece	1.66	9.70
Ireland	1.76	8.43
Italy	1.57	6.62
Latvia	1.84	9.84
Lithuania	1.54	9.61
Luxembourg	1.54	6.14
Netherlands	1.61	11.94
Portugal	1.46	7.71
Slovakia	1.69	9.96
Slovenia	1.75	9.86
Spain	1.62	7.72
Fixed effects test (Prob.)	0.00	

Source: Authors' calculations using data from Hypostat and the European Central Bank.
Note: 19 countries x 21 years = 399 observations.

As the model is estimated on a log-log basis, the coefficient on ln $euribor_t$ is an elasticity i.e. a 1 per cent increase in the Euribor rate results in a 0.2 per cent increase in the representative interest rate for euro area mortgage markets. Similarly, a 1 per cent increase in the long-term interest rate results in the representative mortgage rate increasing by 0.05 per cent. This suggests a relatively low impact of the policy rate on representative mortgage rates across the countries overall.

However, it is likely that the impact could vary across countries. Therefore, in order to capture the country-specific effects of the pass-through issue, we now interact the country dummies with the Euribor rate.

TABLE B.2 FIXED EFFECTS RESULTS

Variable	Coefficient	T-Stat
$\ln euribor_t$	0.18	6.89
$\ln lr_{it}$	-0.01	-0.51
$Variable_{it}$	-0.00	-3.93
$\ln FStress_{it}$	0.05	3.19
$\ln HHI_{it}$	-0.21	-2.84
Interactive country-level dummies		
Austria	0.11	2.80
Belgium	0.13	3.20
Estonia	0.24	2.25
Finland	0.29	3.88
Germany	0.12	3.30
Greece	-0.13	-4.35
Ireland	-0.07	-2.03
Italy	0.02	0.47
Latvia	-0.01	-0.15
Lithuania	-0.04	-1.34
Luxembourg	0.13	2.99
Netherlands	0.03	0.67
Portugal	0.12	3.93
Slovakia	0.28	7.48
Slovenia	0.05	1.76
Spain	0.00	0.00
Fixed effects test (Prob.)	0.00	

Source: Authors' calculations using data from Hypostat and the European Central Bank.
Note: 19 countries x 21 years = 399 observations.

From the results, it is clear that along with the Euribor variable, the financial distress variable is now significant; an increase in the index of 1 per cent results in the representative mortgage rate increasing by 0.05 per cent. The coefficient on $Variable_{it}$ is negative and significant indicating that the more mortgages in a given market that have a variable rate, the lower the representative interest rate in a market. The results for the Herfindahl index are particularly interesting; the negative coefficient, which is also significant, demonstrates that the less concentrated the market is for credit institutions, the lower the interest rate in a mortgage market.

To get the individual country-specific strength of the pass-through relationship, the coefficient on ln $euribor_t$ must be combined with the coefficient on the country-specific interaction terms with the Euribor rate. The results are summarised in Table B.3.

TABLE B.3 COUNTRY-SPECIFIC PASS-THROUGH RESULTS (ORDERED BY SCALE OF EFFECT)

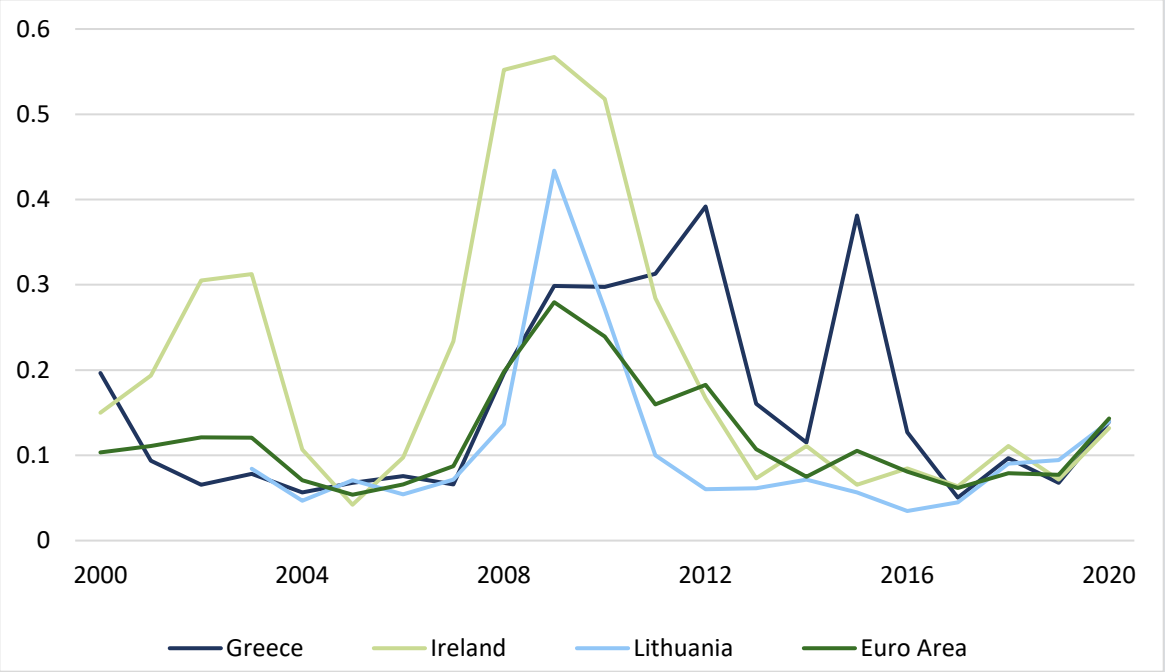
Country	Pass-through effect	T-Stat
Greece	0.05	-4.35
Ireland	0.11	-2.03
Lithuania	0.13	-1.34
Latvia	0.17	-0.15
Spain	0.18	0.00
Italy	0.20	0.47
Netherlands	0.20	0.67
Slovenia	0.23	1.76
Austria	0.29	2.80
Portugal	0.29	3.93
Germany	0.30	3.30
Belgium	0.30	3.20
Luxembourg	0.31	2.99
Estonia	0.42	2.25
Slovakia	0.45	7.48

Source: Authors' calculations using data from Hypostat and the European Central Bank.
Note: 19 countries x 21 years = 399 observations. The T-stat is for the interactive dummy.

From the table, it is evident that there is a significant difference in the strength of the pass-through relationship across the euro area. At the lower end of the scale you have Ireland and Greece where the relationship is at or less than 10 per cent, whereas at the other end, you have Estonia and Slovakia experiencing a pass-through of over 40 per cent from the policy rate to the representative mortgage rate.

The reason for the differing strengths of the pass-through relationship may go back to the varying impacts of the global financial crisis (GFC) on different mortgage markets across the euro area. This can be observed from Figure B.1, which plots the financial distress index for Ireland, Greece, Lithuania and the euro area average. It is clear that the three countries with the lowest strength of pass-through across the euro area were also those whose financial sectors experienced the most distress between 2008 and 2012.

FIGURE B.1 FINANCIAL DISTRESS VARIABLE: SELECT EURO AREA COUNTRIES



Source: Authors' calculations using data from Hypostat and the European Central Bank.

The high level of distress experienced resulted in financial institutions in those countries subsequently having to carry higher levels of capital vis-à-vis institutions in other euro area countries. This would result in relatively higher funding costs for these institutions and limit their ability to pass on downward movements in the euro area policy rate. For example, as noted by Baudino et al. (2020), non-performing loans and particularly mortgage arrears are still an issue for Irish financial institutions.

Alternatively, the weakness of the pass-through relationship may also be related to a lack of competition in that sector, which, in turn, resulted in a reduced rate of pass-through; the lack of competition may have resulted in domestic institutions not passing on the full fall in lending rates as official rates were lowered over the past ten years. Draghi (2018), for example, referred to the 'quasi-monopoly' in the Irish banking sector in light of the growing difference observed between euro area policy rates and lending rates in the Irish economy.

References

Baudino P., D. Murphy and J-P. Svoronos (2020). *The banking crisis in Ireland*. FSI Crisis Management Series, No. 2, Bank of International Settlements.

Chauvin V. and J. Muellbauer (2018). 'Consumption, household portfolios and the housing market in France', *Economie et Statistique / Economic and Statistics*, 500-501-502, pp. 157-178. https://doi.org/10.241187/ecostat.2018.500t.1950.

Draghi M. (2018). 'Speech by the President of the European Central Bank (ECB) to the Irish Parliament Oireachtas Finance Committee', November.

Duprey T., B. Klaus and T. Peltonen (2015). 'Dating systemic financial stress episodes in the EU countries'. European Central Bank (ECB) working paper No 1873 / December.
Goggin J., S. Holton, J. Kelly, K. McQuinn and R. Lydon (2012). 'The financial crisis and the pricing of interest rates in the Irish mortgage market: 2003-2011', Central Bank of Ireland Research Technical Paper 1/RT/12, 2012.
McQuinn K. and C. Morley (2015). 'Standard variable rate (SVR) pass-through in the Irish mortgage market: An updated assessment', Research Note, *Quarterly Economic Commentary*, Summer, Dublin: The Economic and Social Research Institute, June 2015.
Muellbauer J. (2022). 'Real estate booms and busts: Implications for monetary and macroprudential policy in Europe'. Conference paper at European Central Bank Forum on Central Banking, 27-29 June. Available online at: https://www.ecb.europa.eu/pub/conferences/ecbforum/shared/pdf/2022/Muellbauer_paper.pdf.
Rousseas, S. (1985). 'A mark-up theory of bank loan rates', *Journal of Post Keynesian Economics*, Vol. 8, No.1, pp. 135-144.

This Box was prepared by Paul Egan and Kieran McQuinn.

BOX C FUTURE TRENDS IN THE IRISH MORTGAGE DEBT SERVICE RATIO

Introduction

Accurately assessing the stability or otherwise of leverage in an asset market is a key challenge for policymakers. This is particularly so in the case of the Irish mortgage market where households have in the recent past been subject to intense pressures in terms of the levels of debt accumulated. In the aftermath of the global financial crisis (GFC), mortgage arrears and negative equity became especially prevalent in the Irish market due to the build-up of a credit bubble in the domestic residential market just prior to 2007 (McCarthy, 2014). Indeed, the difficulties experienced by Irish mortgage holders after 2007 were one of the main reasons for the programme of support, which was negotiated between the Irish State and the European Central Bank (ECB), European Commission (EC) and International Monetary Fund (IMF), collectively referred to as the 'Troika' in October 2010.

The debt-service ratio (DSR) is an increasingly popular concept for assessing the sustainability or otherwise of debt levels in the general economy. In assessing the sustainability of asset prices and the associated debt, the DSR measures the amount of income used for interest payments and amortisations and, as a result, includes the impact of interest rate changes, unlike, for example, the more standard loan-to-income ratio. Drehmann et al. (2015) have outlined a database of such measures compiled by the Bank of International Settlements (BIS) who publish aggregate DSRs for the total private non-financial sector for 32 countries from 1999 to the present. Drehmann et al. (2015) argue that the evolution of DSRs in recent years allows for a more comprehensive assessment of credit burdens than the credit-to-income ratio or simple measures of interest payments relative to income.

In this Box, we examine some likely future scenarios for the DSR in the Irish mortgage market. This is particularly appropriate given the recent changes in the Central Bank of Ireland's macroprudential limits and the expected increase in mortgage interest rates given the increase in euro area policy rates.

As part of their reform of the macroprudential measures introduced in early 2016, the Central Bank of Ireland announced in October 2022[14] that the upper limit on the loan-to-income ratio, which had been set at 3.5 in 2016 is now set to be increased to 4. This constitutes a significant increase in this macroprudential measure, as a number of studies, such as McCarthy and McQuinn (2017) have identified the loan-to-income ratio as being particularly influential in impacting house price inflation.

Simultaneously, however, it is evident that the Irish mortgage market, like most euro area ones, is set to face higher mortgage rates in the short- to medium term as the European Central Bank (ECB) tightens monetary policy in response to the significant rates of inflation now being experienced across the euro area. Therefore, it is likely that many mortgaged households, particularly those on variable rate mortgages, are set to witness increases in their mortgage repayments over the coming year to 18 months.

The debt-service ratio (DSR)

As the DSR includes both the relative size of the outstanding debt level as well as the amortisation schedule, it is particularly useful in assessing the capability of mortgage households to service their debt obligations. The DSR can be calculated by taking the standard formula for the per-period cost of an instalment loan and dividing it by income,[15] resulting in the following:

$$DSR_t = \frac{i_t}{(1 - (1 + i_t)^{-S_i})} \times \frac{L_t}{Y_t}$$

where i_t is the interest rate on the mortgage loan L_t. Y_t is the income available to service the loan and S_t denotes the maturity for the stock of debt. The DSR formula, therefore, indirectly captures amortisations through the non-linear interest rate term in the denominator. A variation of the DSR has already been used in an Irish context (O'Reilly and McQuinn, 2007; McQuinn, 2022) to examine the impact of movements in interest rates on house prices.

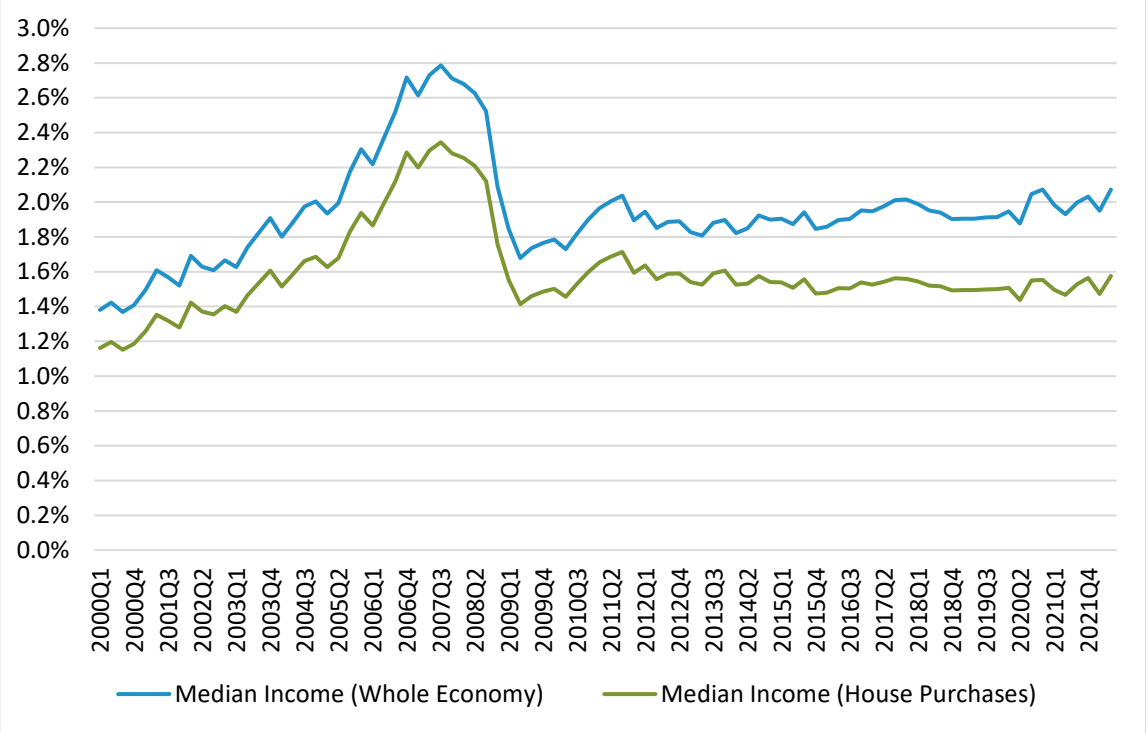
In Figure C.1 we plot the DSR over the period 2000-2022 for the Irish market. Two DSRs are plotted; one which uses median household income and one which uses the median income of a household purchasing a house. Both income levels are from the Central

14 See: https://www.centralbank.ie/financial-system/financial-stability/macro-prudential-policy/mortgage-measures/mortgage-measures-framework-review-public-engagement for details.

15 See Box 2 of Drehmann et al. (2015) for details.

Statistics Office (CSO) and the SILC[16] survey.[17] Mortgage loan data are sourced from the Banking and Payments Federation of Ireland (BPFI) and indicate the average loan amount issued.[18] The interest rate is taken from the Central Bank of Ireland and is a representative rate for the Irish market.[19] The term, S_t, is assumed to be 25 years.

FIGURE C.1 ACTUAL DEBT-SERVICE RATIO (%) FOR IRISH MORTGAGE MARKET: 2000-2022



Source: QEC calculations.

The ratio using the median income of those who purchased a house is lower than that of the general population as their income level is higher than that of the typical household. What is notable is that the difference between the two ratios is increasing through time reflecting the fact that the income levels of those purchasing a house are increasing relative to the general population. From the graph the significant increase in the ratios in the period up to 2007 can be identified. The ratios reach a peak at the end of 2007 and decline rapidly thereafter; this reflects the sharp fall in house prices which occurred, with prices declining by 54 per cent between 2007 and 2012. From 2013, the ratios are relatively stable. This is because while house prices (and hence mortgage levels) have been increasing over this period, income levels have also been increasing while interest rates have been gradually declining.

16 Survey on Income and Living Conditions (SILC). More details are available at https://www.cso.ie/en/statistics/socialconditions/surveyonincomeandlivingconditionssilc/.

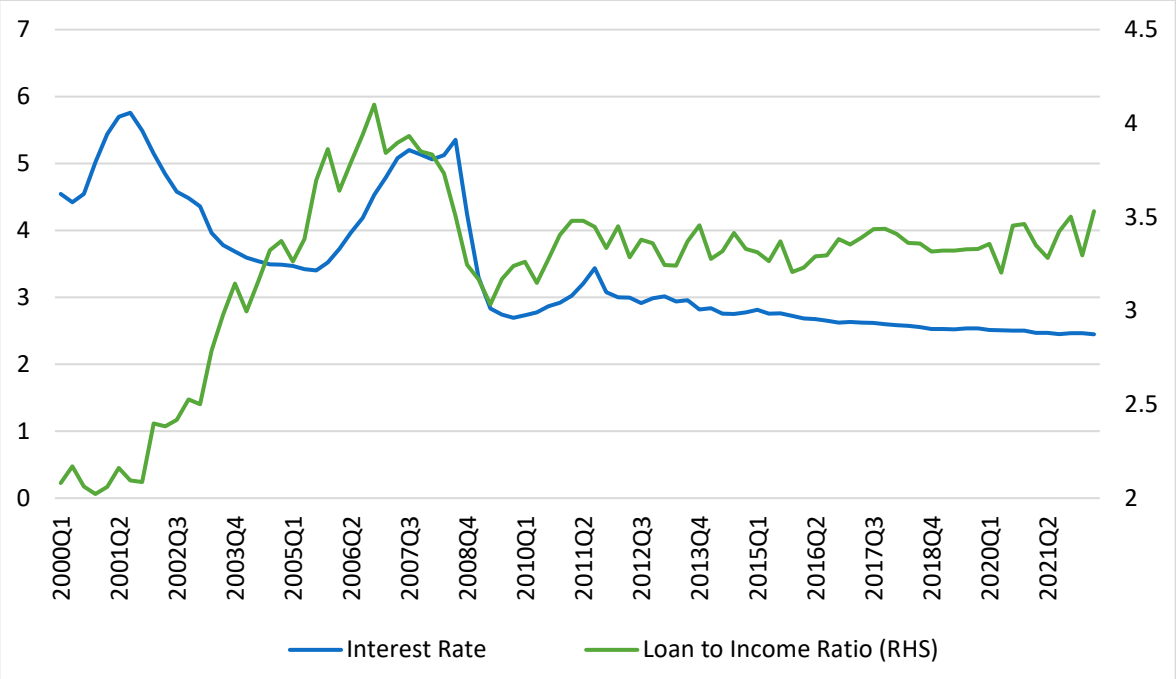
17 Both series are annual and are, therefore, interpolated for the purposes of this exercise. Also, the income for those purchasing a house is not available prior to 2012. The data between 2000 and 2012 are *backcast* using the income for all households.

18 Available at https://bpfi.ie/news-resources/.

19 Available at https://www.centralbank.ie/statistics/data-and-analysis/credit-and-banking-statistics/retail-interest-rates.

The contrasting contribution of interest rates and the loan-to-income ratio to the DSR can be observed from Figure C.2, which plots both series over the period 2000-2022.

FIGURE C.2 MORTGAGE INTEREST RATE AND LOAN-TO-INCOME RATIO (FOR HOUSE PURCHASERS): 2000-2022



Source: QEC calculations.

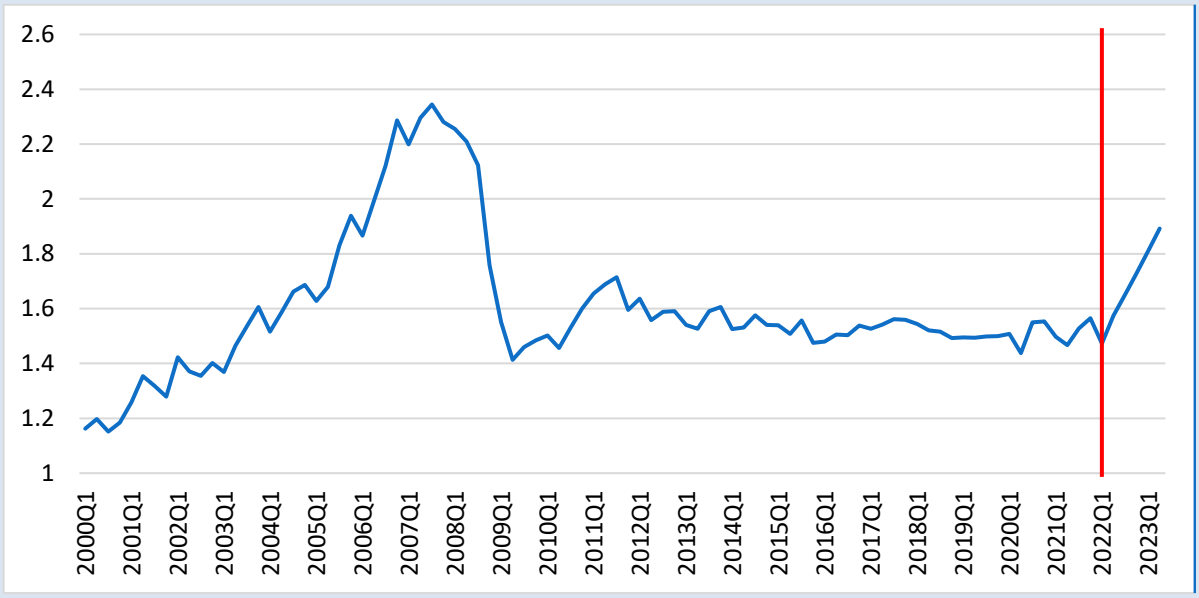
From the graph it is clear to see that apart from 2006 and 2007, interest rates have been following a long downward trajectory. The loan-to-income ratio increased sharply between 2000 and 2007 before falling until 2013. It has remained relatively stable ever since.

Future scenarios

We now conduct a simple scenario exercise where we focus on the different components of the DSR to see what is likely to happen to the ratio overall. In particular, we allow for a gradual increase in mortgage interest rates and an increase in the loan-to-income ratio over the period Q3 2022 to Q2 2023. At present the representative mortgage interest rate for the Irish market is 2.44 per cent. Over the next year, factoring in expected increases in the euro area policy rate and the transmission of that rate into the domestic market, we assume that the rate will increase by 100 basis points, or to 3.44 per cent.

Regarding the loan-to-income ratio, it is interesting to observe that of those households purchasing a property, the current ratio of the actual mortgage level to median income is 3.5; the exact limit for lending set out in the previous macroprudential regime. We, therefore, forecast that over the next year the ratio increases to 3.8 due to the relaxation of this measure by the Central Bank. The combination of the higher interest rate and higher loan-to-income ratio can be observed in Figure C.3, where the DSR is forecast out to Q2 2023.

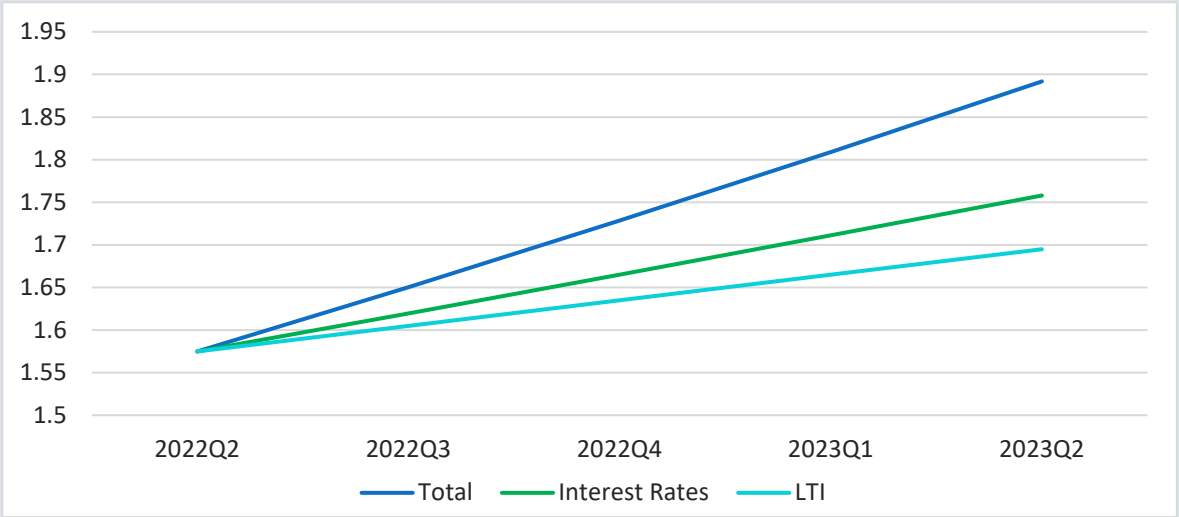
FIGURE C.3 ACTUAL AND FORECAST DEBT-SERVICE RATIO (%) FOR IRISH MORTGAGE MARKET: 2000-2023



Source: QEC calculations.

From the graph it is evident that the scenario results in a distinct uptick in the DSR. While it is not as elevated as it was at the peak of the GFC, it is still a considerable increase in the burden faced by mortgaged households. In Figure C.4 we separate out the effects of the increase in interest rates and the loan-to-income ratio. This allows us to gauge the respective magnitude of either component of the DSR. So we keep the LTI constant over the forecast period and allow the interest rate to vary, and similarly we hold the interest rate constant over the forecast period and change the LTI.

FIGURE C.4 FORECAST DEBT-SERVICE RATIO (%) FOR IRISH MORTGAGE MARKET: Q2 2022-Q2 2023



Source: QEC calculations.

From the graph it can be seen that an increase in the representative mortgage rate from 2.44 to 3.44 as envisaged under the scenario would result in a greater impact on the DSR. While the increase due to the LTI is not as great as the change in the interest rates, it still produces an uptick in the ratio.

This analysis is essentially static in nature. For example, it could transpire that the increase in mortgage rates results in a fall in house prices and hence mortgage loans; this would result in a decline in the loan-to-income ratio if incomes were unaffected.

Concluding comments

The recent decision by the Central Bank of Ireland to increase the threshold for the LTI ratio from 3.5 times income to 4 is somewhat surprising, particularly when domestic house prices have been increasing at a rate of 14 per cent. It is all the more surprising when an increase in interest rates is a reality for many Irish mortgaged households. A scenario exercise demonstrates that the debt-service ratio (DSR), an informative indicator of mortgage affordability, is set to increase somewhat in the Irish market due to the simultaneous upward pressures of greater loan-to-income ratios and higher mortgage interest rates.

References

Drehmann M., A. Illes, M. Juselius and M. Santos (2015). 'How much income is used for debt payments? A new database for debt service ratios', Bank of International Settlements (BIS), *Quarterly Review*, September.

McCarthy Y. and K. McQuinn (2017). 'Credit conditions in a boom and bust property market: Insights for macro-prudential policy'. *The Quarterly Review of Economics and Finance*, Vol. 64, pp. 171-182, May.

McCarthy Y. (2014). 'Dis-entangling the mortgage arrears crisis: The role of the labour market, income volatility and housing equity', Research Technical Paper 02/RT/14, Central Bank of Ireland.

McQuinn K. and G. O'Reilly (2008). 'Assessing the role of income and interest rates in determining house prices', *Economic Modelling*, Vol. 25 pp.377-390, 2008.

McQuinn K. (2022). 'Dis-equilibrium in the Irish housing market?' Analytical Box in *Quarterly Economic Commentary*, Economic and Social Research Institute, Autumn.

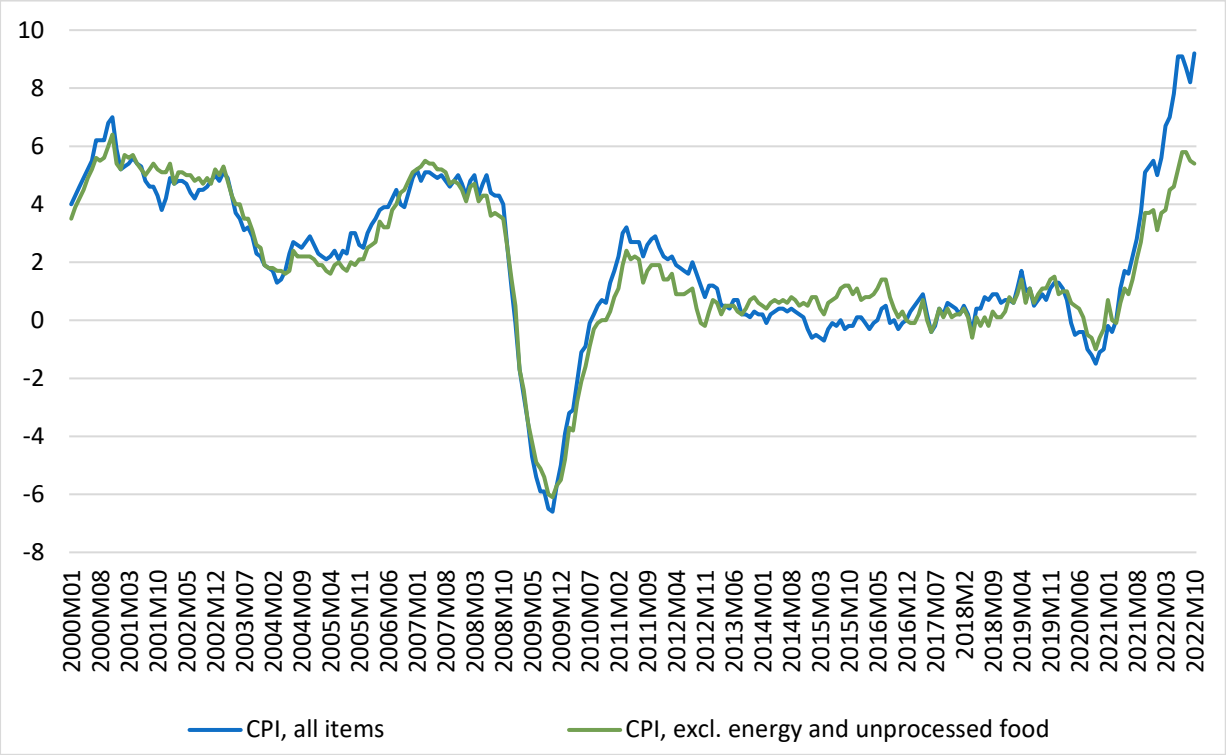
This Box was prepared by Kieran McQuinn.

Inflation overview

The price pressures built up from the pandemic were amplified earlier this year as food and energy markets were disrupted due to the outbreak of the war in Ukraine. As shown in Figure 29, inflation has reached historical highs in 2022 and core and headline inflation rates have begun to diverge because of the effects on food and energy. Analysis by the Irish Fiscal Advisory Council (IFAC) has found that even goods and services with a low import content are experiencing sharp increases in inflation, suggesting that second-round effects are currently setting in from the

rapid rise in energy costs experienced this year.[20] As of October 2022, the CPI in Ireland reached 9.2 per cent, while core inflation stood at 5.4 per cent.

FIGURE 29 HEADLINE AND CORE INFLATION (YEAR-ON-YEAR %)



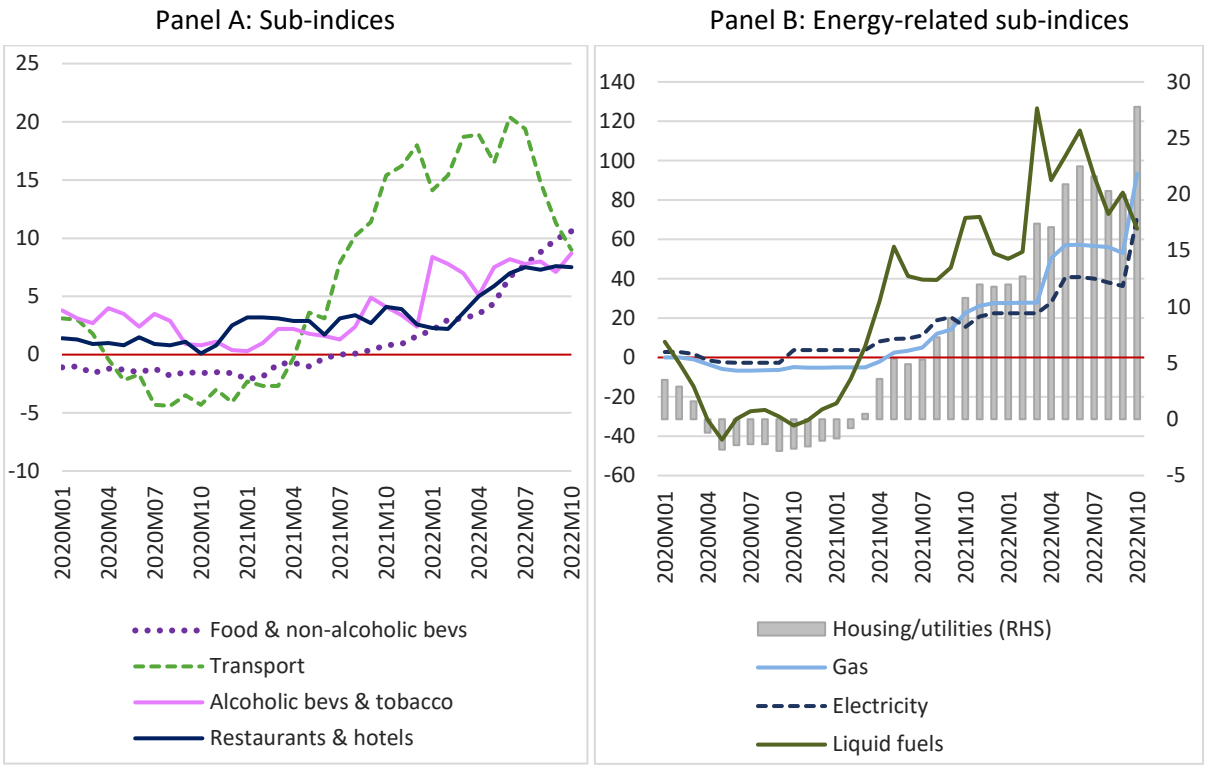
Source: Central Statistics Office.

Panels A and B of Figure 30 show price increases based on sub-indices of CPI. Panel A presents the general sub-indices experiencing the highest growth in inflation, excluding costs related to housing and utilities. The acceleration in food prices is particularly notable; until November 2021, growth in this component was under 1 per cent. As of October 2022, food prices were 10.6 per cent higher than their level in October 2021. The price of food and energy of course has an effect on other sub-indices, such as transport and restaurants and hotels. Price pressures in transport peaked in June 2022 (20.4 per cent growth year-on-year), as transport related fuels were driving the price increases in this category. The growth in transport costs has slowed considerably since the summer, yet still remains elevated at 9.0 per cent relative to October 2021. Prices in restaurants and hotels have accelerated considerably in recent months; the inflation rate has been above 7 per cent since June 2022.

[20] Irish Fiscal Advisory Council (IFAC) Fiscal Assessment Report November 2022.

Panel B shows the rapid price growth in housing and utilities and its energy-related subcomponents. Growth in both gas and electricity prices nearly doubled from September 2022 to October 2022 as price increases for residential gas and electricity products went into effect.[21]

FIGURE 30 DECOMPOSITION OF ANNUAL CPI GROWTH INTO SUB-INDICES (%)

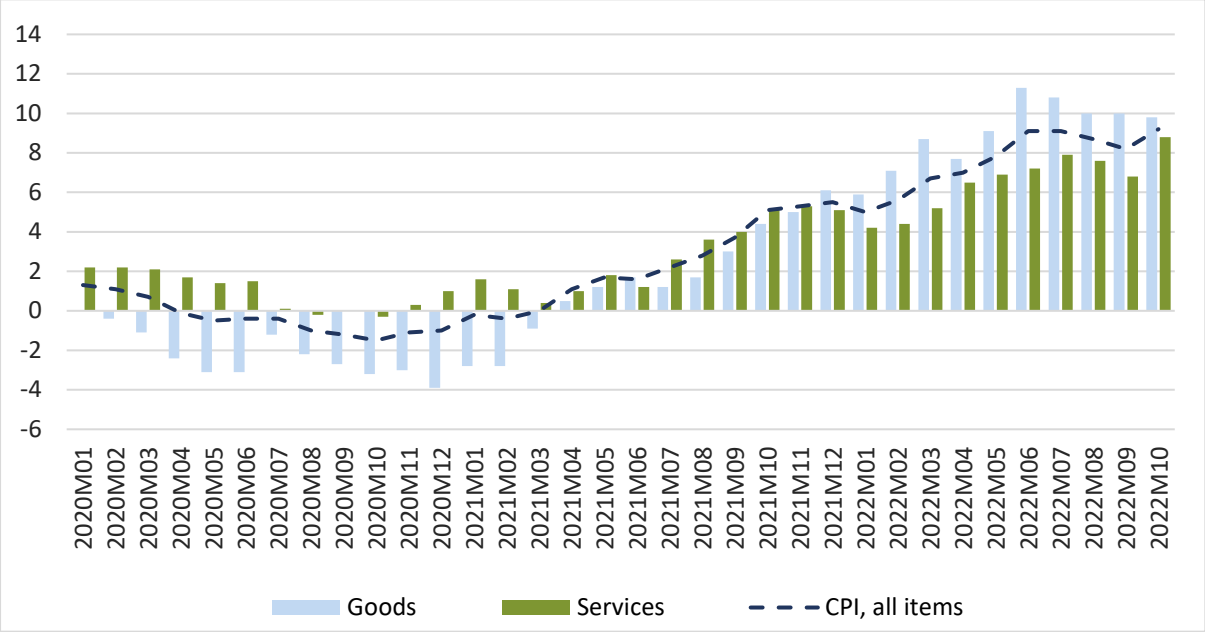


Source: Central Statistics Office.

Both goods and services are driving overall inflation. In October 2022, prices of goods and services were 9.8 and 8.8 per cent higher than the year prior respectively (Figure 31). As shown above, the increase in food and energy prices continues to be the largest driver of elevated goods prices. Even before the shock to food and energy items, prices related to services were already experiencing significant increases, as the end of pandemic-related restrictions contributed to surging demand. But now the knock-on effect of food and energy-related inflation has led to further price increases in the services sector. In particular, inflation for accommodation services reached 19.1 per cent in October 2022.

21 Electric Ireland set to increase residential electricity bills by 26.7 per cent and residential gas bills by 37.5 per cent beginning 1 October 2022 (see: Electric Ireland Announces Energy Price Increases Effective from 1st October 2022 (esb.ie)). Energia set to increase residential electric bills by 29 per cent and residential gas bills by 39 per cent beginning 7 October 2022 (see: Energia Price Change Announcement - Energia).

FIGURE 31 DECOMPOSITION OF ANNUAL CPI GROWTH INTO GOODS AND SERVICES GROWTH (%)



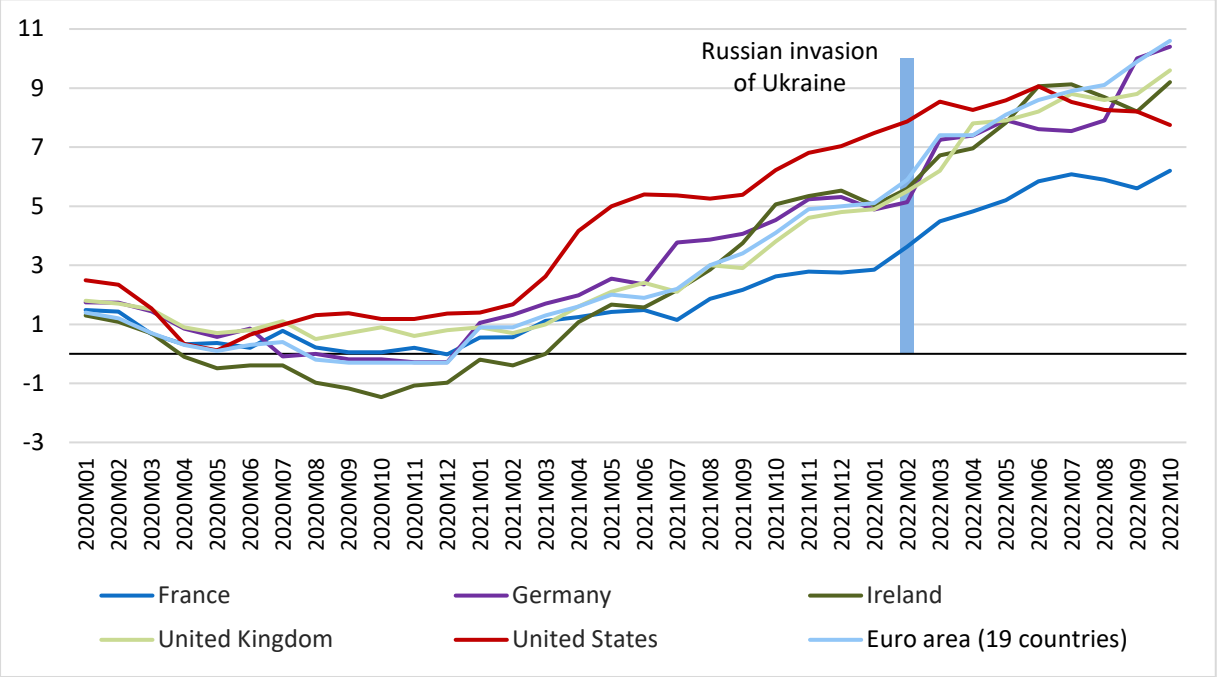
Source: Central Statistics Office.

The impact of the war in Ukraine and disruption to European energy markets has contributed significantly to differences in inflation rates across countries, with those most dependent on Russian gas experiencing the most extreme inflationary pressures. Across the euro area, inflation was 10.6 per cent on an annual basis in October 2022; countries such as Latvia, Estonia and Lithuania are contributing significantly to the large increase, as inflation in these countries has exceeded 20 per cent since July 2022. Germany is also particularly affected by higher energy prices, recording an inflation rate of 10.4 per cent in October 2022 (Figure 32).

The US does not face the same energy-related pressures as Europe and therefore experienced its peak inflation rate in June of this year (9.1 per cent) when fuel costs were particularly elevated. Since then, the growth in inflation in the US has been slowing steadily, although overall CPI remained elevated at 7.7 per cent in October of 2022. In the UK, inflation continues to rise, reaching 9.6 per cent in October. Price pressures in the US and the UK have triggered strong responses from the Federal Reserve and the Bank of England; it is now expected that interest rates will reach close to 5 per cent in the US by May 2023.[22] Meanwhile, in the UK, rates were increased to 3 per cent in November.[23]

22 See: Fed announces sixth consecutive hike in US interest rates to fight inflation | Federal Reserve | The Guardian.
23 See: Bank Rate increased to 3% - November 2022 | Bank of England.

FIGURE 32 CPI ALL ITEMS, CROSS-COUNTRY COMPARISON (YEAR-ON-YEAR %)



Source: OECD.

Outlook

Much of the volatility likely to impact the overall CPI in the near-term is the trajectory of food and energy prices. We now anticipate an inflation rate of 7.9 per cent in 2022. Given the persistent increases in energy costs experienced this year along with more broadly based inflationary pressures, we now anticipate a higher increase in wages than previously expected and continued growth in consumption, albeit at a slower pace. We now expect inflation to reach 7.1 per cent in 2023 before falling in 2024. However, there are a number of factors that could result in revisions to this forecast. In the event of de-escalation in the war in Ukraine and improvements within Europe's energy market, we would likely see inflation begin to decline sooner than anticipated, resulting in a downward revision to next year's forecast. Alternatively, attention has been called to the potentially misleading nature of using constant weights for inflation forecasts. For example, a revision in the weight of consumption on energy-related items to reflect higher spending on this component of CPI in 2023 would result in a higher forecast inflation rate.[24] Therefore, in the event that the weights assigned to calculate CPI are recalibrated, we would expect further revisions to our inflation outlook.

[24] See November 2022 Fiscal Assessment Report from the Irish Fiscal Advisory Council (IFAC) (Fiscal-Assessment-Report-November-2022.pdf (fiscalcouncil.ie)).

PUBLIC FINANCES

Key Points

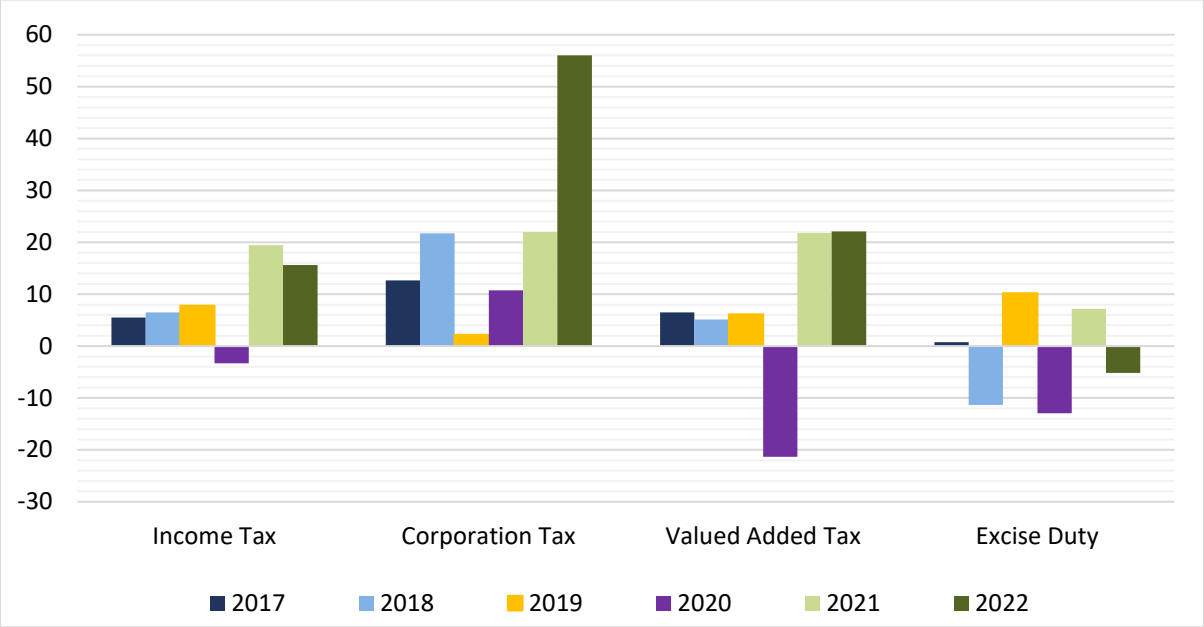
- *The State will record a large surplus this year due to strong growth in tax revenues and a decline in current expenditure compared with 2021 levels.*
- *Total tax receipts for the year to date are showing an annual increase of 16 per cent, which has been driven by income tax, VAT, and in particular, corporation tax.*
- *Debt ratios projected to continue to fall throughout 2022 and 2023.*
- *A proposal from the EU Commission for reforms to the EU fiscal rules advocates for more leniency but stricter penalties if broken.*

Tax revenues have continued to grow through the last quarter of the year and are now registering an increase of €9.9 billion, or 11.1 per cent, for the year to date. This has been driven by increases in income tax, VAT, and corporation tax.

Income tax has increased by 16 per cent compared to Jan-Nov 2021 and stands at €28.3 billion. This represents a €3.8 billion increase. VAT receipts for the year have also seen substantial increases, with the VAT intake 22 per cent higher than the same period last year. However, this increase is likely influenced by base effects, as the economy was subject to 'lockdown' in the early months of 2021.

Finally, the most substantial increases in tax receipts have come from corporation tax receipts. Receipts from corporation tax have increased by €7.6 billion in comparison to the period January to November 2021. This is a 56 per cent increase, and corporation tax receipts now stand at €21.1 billion. This is a significant figure, as it means corporation tax is now the second largest source of tax revenue after income tax, surpassing VAT receipts which currently amount to €18.5 billion. It should be noted that receipts for the month of December remain to be reported and hence this may not be the case for the year end. The growth rates across the main tax headings are shown in Figure 33.

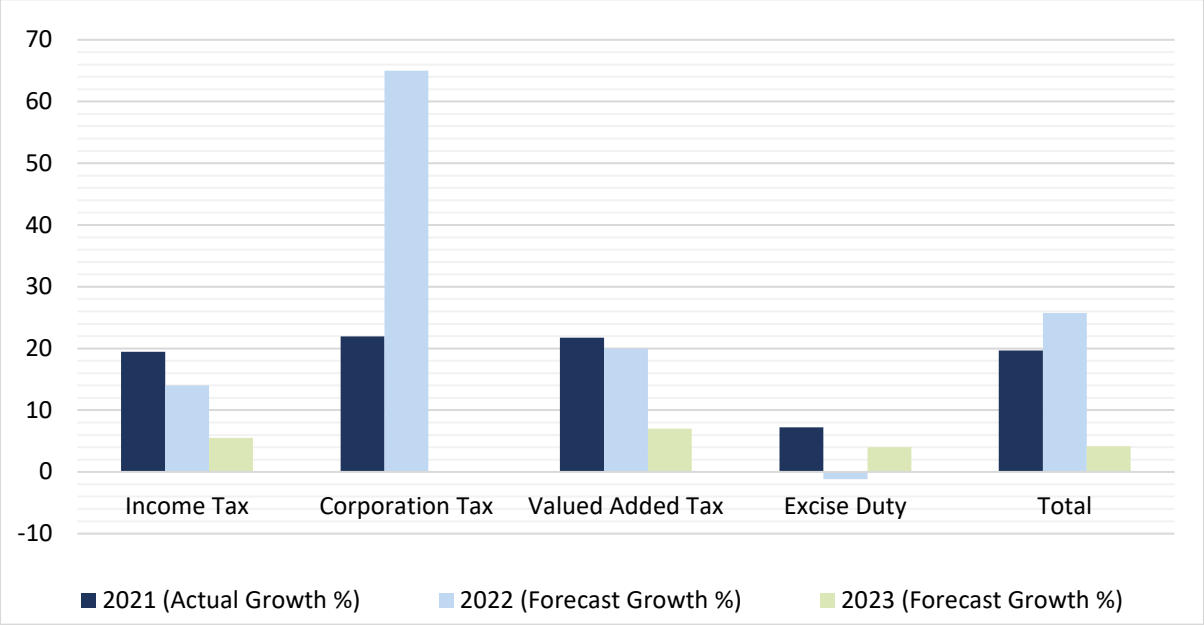
FIGURE 33 GROWTH RATES OF MAIN TAXATION ITEMS



Source: *QEC* calculations.

Figure 34 presents the forecasts of the main taxation items for 2022 and 2023.

FIGURE 34 FORECAST OF KEY TAXATION AGGREGATES



Source: Department of Finance and *QEC* calculations.

At present, forecasts across many tax headings have been maintained as outlined in the Autumn *Commentary*. In these forecasts, it is assumed that the dramatic increases in corporation tax receipts will not continue in 2023, but, in line with continued multinational activity, the high level of tax revenue is maintained into

next year. Hence, it is assumed there will be no change in corporation tax receipts in 2023. Tax revenue overall is expected to increase in 2022 and, indeed, in 2023 also. However, it is believed that the growth in 2023 will be at a lower level than in 2022.

Expenditure, on the other hand, is lower compared to the same period in 2021. This has been driven by decreases in current expenditure, which was €0.4 billion lower in Jan-Nov 2022. Capital expenditure has a seen a slight increase of €0.6 billion. This is, however, 19.3 per cent below targeted capital expenditure for 2022 to date.

The drop in current expenditure is due to a significant decrease of current expenditure on social protection, which was €5.3 billion lower in January to November 2022 compared to the same period last year. As mentioned, this is largely due to the ending of COVID-19 supports.

To date in 2022, there is a notable shortfall of capital spending from its target, amounting to an underspend of €1.6 billion; this is made up of lower-than-targeted capital investment into housing (€702 million), climate and the environment (€308 million), and transport (€316 million), respectively. There are likely to be multiple factors determining the capital spending, but it is likely capacity constraints are playing a role in the construction sector (Egan et al., 2022).

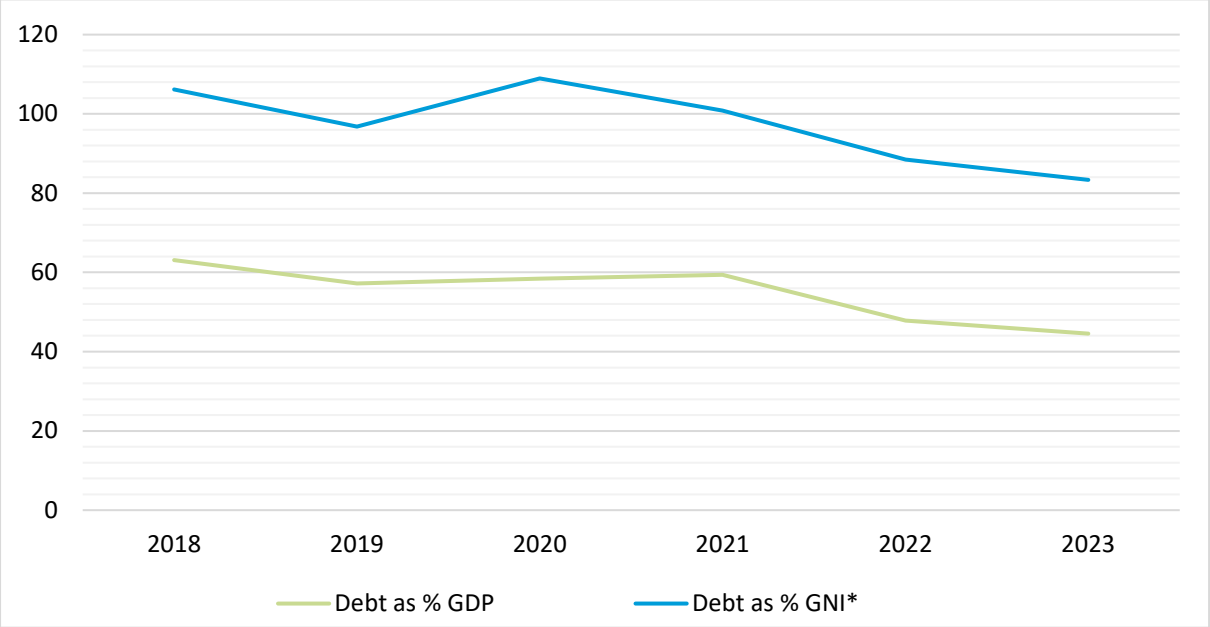
Given the expected increases in taxation revenue, it is projected that the government will run a surplus in both 2022 and 2023. A General Government Balance (GGB) of €3.5 billion is forecast for 2022, with GGB rising to €6.5 billion in 2023. This represents 0.7 per cent and 1.3 per cent of GDP, respectively. Included in the expenditure figures are commitments to the build-up of contingency finances. These funds have been treated as expenditure and hence reduce the estimation of the government surplus. There has been €2 billion allocated to the contingency fund in 2022 with €4 billion to be committed to it in 2023. These 'rainy day' funds have been set aside as a response to the significant increases in corporation tax, as many commentators have noted the risk that these increases are windfall in nature.

Therefore, the amounts set aside to the contingency fund are related to the degree of the windfall nature of the corporation tax increases. It is, however, unclear how the degree of windfall was determined as well as how the funds committed to the fund were calculated. Clarity and transparency are important on this issue, as the State has collected a substantial amount of taxation revenue over the last two years, some of which was not anticipated. With large surpluses accumulating, it is

important that there be a transparent decision-making process as to the proportion of this money diverted into the contingency fund, the proportion kept as a surplus, and the proportion that could be spent on capital projects such as housing supply, as suggested in Egan et al. (2022).

These surpluses will see further declines in both the debt-to-GDP and debt-to-GNI* ratios. The debt-to-GDP ratio is projected to be 47.9 per cent at the end of 2022 with a further decline to 44.5 per cent expected in 2023. The debt-to-GNI* is also expected to fall in both 2022 and 2023; it is estimated that it will fall to 88.5 per cent in 2022 and 83.3 per cent in 2023.

FIGURE 35 PROJECTED PATH OF DEBT RATIOS



Source: *QEC* calculations.

These debt ratios as well as the GGB will continue to be monitored under the proposed reforms of the EU fiscal rules. It is suggested that the rules move towards a transparent risk-based EU surveillance framework. The rules seek to take account of national medium-term fiscal-structural plans including fiscal, reform, and investment objectives. The framework put forward by the European Commission proposes that the Commission presents a reference fiscal adjustment path over four years, based on its debt sustainability analysis using net primary expenditure – referred to as 'the expenditure which is in government's control'. This reference path aims to ensure that debt of Member States with substantial debt challenges would be put on a downward path.

Member States would then submit their own fiscal adjustment plans based on the reference path provided, with the opportunity to extend the fiscal adjustment path by up to three years if policy is targeting common EU priorities and targets. If it is satisfactory to the EU Commission, the EU Council will endorse the plan and monitor it for the projected time period.

This proposal for reformed fiscal rules could see different approaches to debt consolidation depending on the circumstances of certain Member States. The Commission claims that these rules would be more flexible and transparent as a result. However, this flexibility would be limited and if Member States do not honour their agreed debt reduction paths, there are harsher penalties through financial sanctions and possible suspension of EU financing.

Despite some signs of increased flexibility and accountability, these proposed reforms leave considerable tracts of the existing rules in place. The Excessive Deficit Procedure (EDP) would remain in cases where Member States have deficits greater than 3 per cent of GDP or have debt above 60 per cent of GDP. These elements of the fiscal rules, in particular, have been subject to criticism in the past for hampering public policy and being pro-cyclical. Therefore, many of the perceived limitations of the current fiscal rules seem set to remain. There is, however, yet to be agreement on these proposals, hence some aspects of these reforms may yet be changed.

BOX D AVIATION TAXATION IN IRELAND

Introduction

After its slowdown during the COVID crisis, air transportation and the concomitant issue of greenhouse gas (GHG) emissions are back on the rise. In the European Union, aviation emissions constitute 13.9 per cent of total transport emissions and 3.8 per cent of total CO_2 emissions. However, after decades of tax exemptions, aviation is facing increased pressure to decarbonise, where, e.g. the EU Green Deal aims to achieve a 90 per cent reduction in transportation emissions by 2050.

The dependency of an island state on aviation leads to strong connections between the aviation sector and other sectors in the economy. Production sectors and consumers in islands are particularly vulnerable to the impacts of an aviation tax due to limited substitution possibilities. As a small island economy with strong linkages with the rest of the world, Ireland is not an exception in this respect.

Aviation taxation is an increasing probability from a policy perspective and could have important impacts on not only the Irish aviation industry but also the whole economy. This Box analyses the economic and distributional impacts of four aviation taxation options on the Irish economy using the Ireland, Environment, Energy, Economy (I3E) model.

What aviation taxation options do we have?

When it comes to aviation taxation, a Member State of the EU is subject to the EU Emission Trading System (EU ETS) and hence is exempt from carbon taxation at a national level. The EU ETS is a carbon allowance market working on the cap-and-trade principle, mandating those firms subject to the system to buy emissions allowances for any emission levels exceeding their free allowances. The aviation sector has been subject to the system since 2012, where its free allowances accounted for 44 per cent of total emissions in 2019. In July 2021, the European Commission (2021) proposed the abolition of free EU ETS allowances for aviation by 2026 within the 'Fit for 55' package.

Aviation Fuel Taxation is a taxation option applied in several countries, such as the US, Canada, Australia, Thailand, Vietnam, and Japan, at rates ranging between €0.02 per litre (Australia) to €0.70 per litre (Hong Kong). It is currently not applied in the EU, where EU nations are prohibited by the Energy Taxation Directive (European Union, 2003) to tax aviation fuel. However, recently the European Commission (2021) has proposed to amend this and allow a kerosene tax of €0.40 per litre.

The ***Value-added Tax*** (VAT) exemption of international air transportation services has been approved by the International Civil Aviation Organisation (ICAO) and International Air Transport Association (IATA). However, aviation fuel, airport charges, air navigation charges or service fees and domestic air transportation are subject to VAT. Within the EU, it is applied at varying rates; 3 per cent in Luxembourg, 6 per cent in Sweden, Belgium, and Portugal, 24 per cent in Greece and 27 per cent in Hungary, which are the general VAT rates in these two countries.

Given the restriction on aviation taxation options, many European nations have implemented a ***Passenger Tax***. A passenger tax is levied on the ticket price as a unit tax, and its value differs based on the flight duration (short- vs long-haul) and the ticket class (business vs economy). A passenger tax is applied in Austria, Germany, France, Italy, Sweden, Norway, and the UK. The European Commission (2021) considers a passenger tax at a flat rate or multi-rates based on the destination (intra- vs extra-European Economic Area, EEA) and the distance (for extra-EEA flights, at two different rates for flights up to and over 6,000 km).

Other policies exist that currently have little economic impacts on aviation but may play an important role in the future of aviation decarbonisation. ***ReFuelEU*** is an EU initiative that aims to use sustainable aviation fuels (SAFs) and targets a minimum SAFs share of 28 per cent in 2050. ***The Carbon Offsetting and Reduction Scheme (CORSIA)*** is a global initiative proposed by the ICAO, in which aviation companies buy Certified Emission Reductions (CERs) from emissions mitigation projects outside aviation, e.g. renewable energy installation and electrification of land transportation. The system has been working since 2020 on a voluntary basis but will be mandatory from 2027, and all EU countries have joined the scheme.

The History of Aviation Taxation in Ireland

The Irish government introduced the Air Travel Tax (ATT) in March 2009 at rates of €2 and €10 per passenger on all flights from Dublin airport to airports that are situated less than

and more than 300 kilometres from Dublin, respectively. Not to put non-Dublin airports in a disadvantageous position, the tax was levied only on flights from Dublin. In March 2011, the tax was equalised at €3 for all distances, since applying a differential rate was treated as interfering with the internal market by the EU. In April 2014, the government abolished the tax due to strong opposition from airlines (Hancock, 2008). To support their objections against the ATT, Aer Lingus, Ryanair and CityJet commissioned a report regarding the impacts of the tax on Irish aviation and related sectors.

By applying an ex-ante price elasticity-based analysis, Veldhuis and Zuidberg (2009) find that the ATT will cost the Irish economy (€310-455 million) which is more than the revenue generated (€117-124 million). The sub-sectoral analysis shows that the bulk of the total cost will be borne by the tourism sector (€224-330 million), and airlines and Dublin airport will face declines in their revenues (€60-87 million and €26-38 million, respectively The PWC (2017) report – which uses an ex-post synthetic control method – regarding the ATT's economic and passenger number, finds that impacts are in line with those of Veldhuis and Zuidberg (2009).The utilised methodology leads to an overestimated impact of the tax as it suffers from using a generic price elasticity of demand estimate. Furthermore, the impact on tourism is exaggerated as the authors assume that all incoming passengers are tourists. The results of Faber and Huigen (2018), which also uses a generic price elasticity value but calculates the economic impacts using input-output analysis, seem more robust than those of the studies mentioned above. Accordingly, a 5 per cent increase in the average ticket price decreases the demand by 5 per cent, and a 19 per cent VAT on the aviation commodity lowers the demand by 20 per cent.

Policy Analysis

This work applies the I3E model, which is a single country small open economy computable general equilibrium (CGE) model. The I3E model provides a comprehensive analysis of the impacts of a policy change as it portrays the economic relations among several agents, including sectors, households, government, and the rest of the world. We consider four taxation options in five policy scenarios.

The first two scenarios consider the direct taxation of the aviation commodity (the flight): the Irish government either imposes a flat passenger tax (PT) at €16 or removes the VAT exemption of the sector (VAT). In the other two options, the aviation sector (the airlines) is taxed; following the proposal of European Commission (2021), kerosene is taxed at the suggested rate of €0.40 a litre (KRS), or free EU ETS allowances of the aviation sector are abolished by 2026 (ETS). In another scenario, the combination of the latter two taxation alternatives is also evaluated, as these two measures will come into place simultaneously once approved by the European Parliament (KRS_ETS). The scenario names are given in parentheses. All scenarios consider the developments in international energy prices, EU ETS prices, and the impacts of the COVID-19 crisis. The results are presented as percentage change with respect to the carbon tax (CT) scenario, in which the EU ETS price is constant at €57 and the carbon tax increases gradually and reaches €100 in 2030, as projected in the Climate Action Plan (Government of Ireland, 2021). In addition, all taxation options are evaluated with an increasing EU ETS price assumption such that it gradually increases and reaches €120 in 2030.

TABLE D.1 THE RESULTS OF AVIATION TAXATION, % CHANGE WITH RESPECT TO CARBON TAX IN 2030

	EU ETS Price							
	Constant				Increasing			
	VAT	PT	KRS	ETS	KRS_ETS	CT	ETS	KRS_ETS
Aviation								
Real Value-added	-4.05	-1.55	-0.04	-3.92	-3.95	-21.95	-26.91	-26.89
Demand	-12.00	-4.37	-0.16	-3.40	-3.54	-15.44	-20.29	-20.33
Price	12.07	3.96	0.16	2.93	3.10	14.40	20.99	21.09
Macroeconomy								
Real GDP	-0.19	-0.07	-0.03	-0.09	-0.12	-0.67	-0.83	-0.86
Real Investment	-0.34	-0.12	-0.05	-0.15	-0.21	-1.52	-1.82	-1.87
Total Employment	-0.14	-0.04	-0.04	-0.05	-0.09	-0.45	-0.55	-0.59
Debt-to-GDP Ratio	0.43	0.13	0.09	0.01	0.09	1.25	1.38	1.46
Emissions								
Total Emissions	-1.50	-0.52	-0.59	-1.50	-2.06	-8.60	-11.52	-11.98
Total ETS Emissions	-5.16	-1.91	-0.51	-8.11	-8.55	-32.99	-42.88	-43.01
Total Non-ETS Emissions	-1.54	-0.53	-0.57	-0.32	-0.89	-3.19	-3.71	-4.26

Source: de Bruin and Yakut (2022).

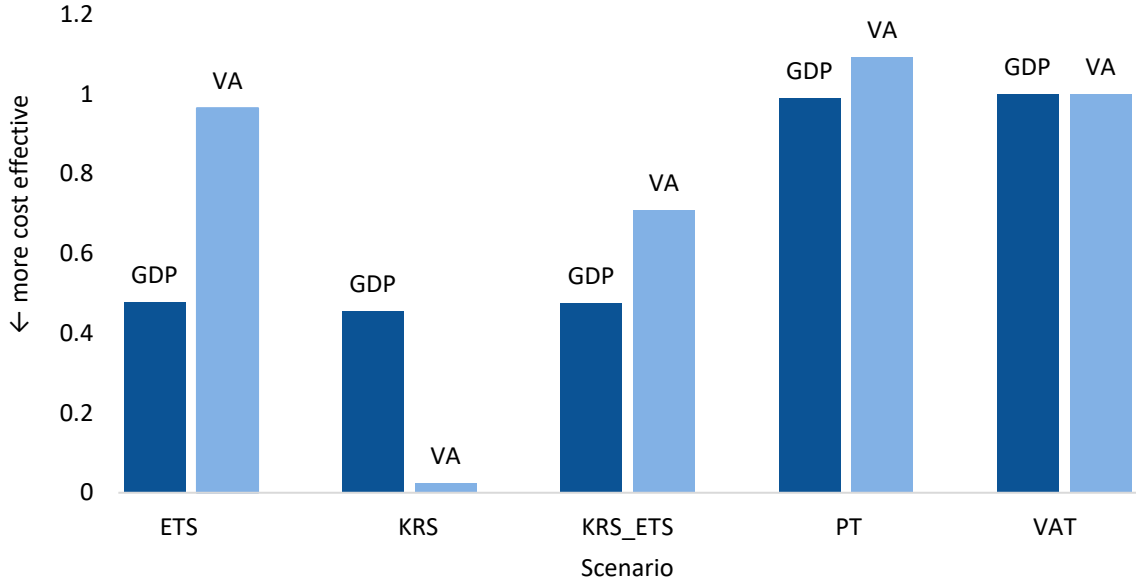
The results reveal that all taxation options increase the price of the aviation commodity which, in turn, lowers the demand and the sectoral real value-added. The VAT and ETS scenarios (both ETS and ETS_KRS) have the highest impacts on real value-added. Taxing the aviation commodity, the VAT and PT scenarios, has higher impacts on price and demand than taxing the aviation production sector, the KRS, ETS, and KRS_ETS scenarios. The impact in the VAT scenario is higher than that of the PT as the level of passenger tax is low. Taxing kerosene has the smallest impact as the level of tax is relatively low.

The impact on the macroeconomic aggregates is in line with that of the aviation sectoral value-added, i.e. the VAT and ETS scenarios have the highest impact. KRS has the highest secondary impact (relative impacts outside of the aviation sector), measured by dividing the percentage change in GDP by the percentage change in aviation value-added, as the kerosene taxation also largely affects the petroleum sector. Although the overall impact of aviation taxation on the labour market is negligible, high-skilled labour is the most affected labour type. The reason is that the most affected sectors are the petroleum, aviation, and other transportation sectors, which employ more high-skilled labour relative to other labour types. The decline in economic activity lowers tax revenues, and a higher unemployment rate and Consumer Price Index increases the government welfare transfers and pensions. The total budget of welfare transfers is a positive function of the unemployment rate and Consumer Price Index, and pensions are a positive function of the Consumer Price Index. As a result, the government debt stock as a fraction of GDP increases. In the ETS scenario, the increase in the debt stock-to-GDP ratio is the lowest, as the Irish government receives half of the total cost of EU ETS permits.

Aviation taxation decreases the economy-wide CO_2 emissions by up to 2 per cent, whereas the decline in the ETS emissions reaches 8.6 per cent, compared to the CT scenario. The decline in non-ETS emissions is negligible in all scenarios apart from VAT, where the decline in the overall economic activity is the highest.

The sensitivity scenarios shown on the right panel of Table D.1 indicate that gradually increasing the EU ETS price affects the Irish economy more substantially than a constant EU ETS price. The reduction in sectoral real value-added, real GDP and ETS emissions can reach 27 per cent, 0.9 per cent, and 43 per cent, respectively. In the sensitivity scenarios, a higher EU ETS price also affects all sectors subject to the system, including power generation and manufacturing.

FIGURE D.1 COST-EFFECTIVENESS: GDP AND AVIATION VALUE-ADDED IMPACTS PER TONNE OF EMISSIONS REDUCTION



Source: de Bruin and Yakut (2022).

To compare the cost-effectiveness of aviation taxation options, we calculate the reductions in aviation value-added and GDP (in percentage changes) per tonne of emission reduction across scenarios. The calculated indicators are scaled to their values in the VAT scenario to make this comparison more straightforward. In other words, the levels are 1 in the VAT scenario, and if a scenario is above that level, this represents a higher cost per tonne of emissions reduced. As shown in Figure D.1, direct taxation of carbon usage (KRS and ETS) is more cost-effective compared to taxing aviation commodity. In the case of VAT and PT, not only are the source of emissions taxed but also other inputs and economic activities generated by other sectors are also taxed.

Conclusion

Aviation taxation will have a negative effect on the aviation sector and the entire Irish economy. Using the I3E model, we show that revising EU ETS and taxing kerosene generates more favourable outcomes than levying VAT or introducing a passenger tax. This confirms the theory that direct taxation of carbon is the most cost-effective way of reducing emissions. The sensitivity scenario shows that an increase in the cost of production driven by market conditions where a rise in the EU-ETS price is expected would help more in reducing emissions than the other aviation taxation options considered.

References:

de Bruin, K. and A.M. Yakut (2022*). The impacts of aviation taxation in Ireland, Case Studies on Transport Policy*, 10(4), 2218-2228, DOI: https://doi.org/10.1016/j.cstp.2022.09.017.

European Commission (2021). 'European Green Deal: Commission proposes transformation of EU economy and society to meet climate ambitions', available at https://ec.europa.eu/commission/presscorner/detail/en/IP_21_3541.

European Union (2003). *Council Directive 2003/96/EC of 27 October 2003 restructuring the Community framework for the taxation of energy products and electricity*, available at https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32003L0096&from=EN.

European Union (2021). *Proposal for a Council Directive restructuring the Union framework for the taxation of energy products and electricity (recast)*, available at https://ec.europa.eu/info/sites/default/files/revision_of_the_energy_tax_directive_0.pdf.

Faber, J. and T. Huigen (2018). *A study on aviation ticket taxes*, available at https://cedelft.eu/publications/a-study-on-aviation-ticket-taxes/.

Government of Ireland (2021). *Climate Action Plan 2021 Securing Our Future*, available at https://www.gov.ie/en/publication/6223e-climate-action-plan-2021/.

Hancock, C. (2008). 'Airlines Criticise Decision to Introduce €10 Departure Levy', *Irish Times,* 15.10.2008, available at https://www.proquest.com/docview/309087756/fulltext/268DA58ED8B4899PQ/23?accountid=14404, accessed via Trinity College Dublin on 07.07.2022.

IATA (International Air Transport Association) (2019). *Ireland: Value of Aviation*, available at: https://www.iata.org/en/iata-repository/publications/economic-reports/ireland--value-of-aviation/.

PWC (2017). *Air Passenger Tax Case Studies: Ireland, Italy, and Netherlands*, available at https://a4e.eu/wp-content/uploads/a4e-study-pwc-air-passenger-tax-case-studies-ireland-italy-and-netherlands-2017-10.pdf.

Veldhuis, J. and J. Zuidberg (2009). *The implications of the Irish air travel tax*, available at https://www.ryanair.com/doc/news/2009/irish_air_travel_tax.pdf.

This Box was prepared by Kelly de Bruin and Aykut Mert Yakut.

General Assessment

Prospect of international recession

The continued high rate of inflation experienced across most Western economies looks set to persist into the new year. Related ongoing concerns about energy markets and the war in the Ukraine means that most of Ireland's main trading partners are facing the prospect of a recession in 2023. Business sentiment across most European countries has been deteriorating through 2022 with a number of countries expecting a recession in 2023. This inevitably has an impact on the domestic outlook and our growth expectations for next year are down considerably on where they were some months back. We now expect the domestic economy to grow by 8.4 per cent in 2022 in terms of modified domestic demand; however in 2023 we expect the same indicator to register growth of just 2.2 per cent. The unemployment rate in 2022 is set to average 4.9 per cent, which is a remarkable recovery from the labour market shock endured due to the pandemic. In 2023, the pace of the decline in unemployment will slow significantly with the rate averaging 4.3 per cent.

The impact of any global downturn on the domestic economy will crucially depend on how it impacts the ICT and pharma sectors which have been the main engine of growth for the traded sector of the Irish economy.

Concentration risk and the importance of the MNE sector

In a Box to the *Commentary*, Disch et al. quantify the sizeable contribution of the information and communications (ICT) sector to domestic economic growth over the past 20 years. In particular, the substantial difference in productivity levels between the Irish ICT sector and that of all other European Union countries is highlighted. These differences have been consistent since the mid-2000s and have, indeed, been growing significantly since 2015. This does give rise to questions about the sustainability of these improvements and what exactly lies behind the consistent surge in these rates over a prolonged period of time. In many instances the productivity rates are likely to be higher here as firms have relocated intangible assets to the Irish market which boosts the capital per worker and output per worker rates substantially. The risk, therefore, is that if these assets are moved to another jurisdiction, then domestic productivity rates will drop sharply with a commensurate drop in output. These effects do not take into consideration any declines in employment that may occur due to the layoffs being announced in the sector which would further impact output.

Notwithstanding the concerns about the sustainability of these activities, the Box reinforces the importance of the multinational sector to the Irish growth story. Public policy must continue to be supportive towards inward foreign direct

investment. This includes policies around taxation, education, training and addressing the provision of social and affordable housing. It also highlights the importance of Ireland's position with the European Union.

The public finances and the implications of Budget 2023

The *Commentary* contains the customary detailed micro-level assessment of budgetary policy by the taxation, welfare and pensions (TWP) team in the Institute. A paper by Doolan et al. (2022) examines Budget 2023 from a distributional perspective. They note that while the measures that were introduced should, on average, help to insulate family incomes relative to a price-adjusted benchmark, these measures were mainly one-off in nature. Furthermore, the paper asserts that there may be a need for further one-off cost-of-living measures in the winter of 2023 if energy price rises, in particular, continue to persist in 2023.

The paper furthermore argues that once the need for one-off measures to insulate households from inflationary pressures has passed, policymakers may wish to consider benchmarking social welfare payments to re-instate this link between payments and income adequacy. This link, the paper argues, has weakened in recent times.

The public finances generally have displayed significant resilience during recent years. However, as has been previously noted, much of this is reliant on the substantial increase in corporation taxation revenues in recent times. The introduction in Budget 2023 of a rainy day fund is to be welcomed as a prudent measure. The plan is to divert taxation revenues which are perceived to be 'windfall' in nature to this fund. The sums of money involved are considerable with €4 billion of Exchequer receipts set to be allocated to the fund in 2023. Therefore, clarity and transparency are required concerning the estimation of windfalls in corporation tax as these estimates will likely result in a significant amount of funds being re-allocated from day-to-day expenditure to the fund.

Financial sector, macroprudential rules and the housing market

The increase in euro area policy rates in response to the surge in inflation has focussed attention on the impact of higher interest rates in the domestic economy. To that end, two Boxes in the *Commentary* explore the impact with particular reference to the mortgage market. One Box re-examines the issue of the policy-rate pass-through to the residential market; the Box avails of relatively new data at a euro area level to assess the degree to which the policy rate (Euribor rate) passes through to the representative mortgage rate in each euro area mortgage market. The rate of pass-through is weakest for those countries such as Ireland and Greece, which were particularly impacted by the global financial crisis (GFC), indicating that the impact of the GFC is still relevant today. The Box suggests that more competition in the domestic banking sector along with healthier balance

sheets among existing institutions would result in a greater pass-through of euro area policy rates to the domestic market.

Another Box examines the potential build-up in the debt-service ratio in the Irish residential market. The ratio captures movements in both interest rates and the mortgage loan-to-income ratio for households. Scenario analysis is conducted to assess likely future movements in this ratio in the Irish market. Between future expected increases in mortgage rates and the recent revision to the macroprudential rules by the Central Bank of Ireland, it is likely that this ratio will increase somewhat over the coming years. The timing of the revision of the loan-to-income ratio by the Central Bank from 3.5 to 4 was somewhat surprising and, with house prices increasing by double digits in the present year, it will almost certainly result in an increase in housing demand, all else equal as shown in McQuinn et al. (2021).[25] The extent to which looser credit conditions will pass through to prices is likely to be dependent on the offsetting impact of rising interest rates, both of which impact purchaser affordability. This is when housing supply in 2023 is likely to be at a lower level than was previously thought because of the impact of inflationary pressures in the construction sector. Overall, Irish mortgaged households are likely to see a significant increase in their mortgage repayment levels due to the changes in the rules and the increase in market interest rates observed.

Related to this is a Special Article in the *Commentary* by Egan et al. (2022), which examines capacity issues in the Irish economy in response to increasing housing supply. The Article notes difficulties which may arise in the labour market, inflationary pressures and the capability of the financial sector to meet the need for a sustained increase in housing output. The Article outlines a series of policy proposals to address this issue; these include increased use of modular housing, greater use of vacant homes, reform of the land market, a consistent level of public investment and specific measures aimed at increasing the level of labour supply available to the sector.

25 McQuinn, K., C. O'Toole and R. Slaymaker (2021). 'Credit access, macroprudential rules and policy interventions: Lessons for potential first time buyers', *Journal of Policy Modeling*, 43, issue 5, pp. 944-963.

Special Article

INCREASING FUTURE HOUSING SUPPLY: WHAT ARE THE IMPLICATIONS FOR THE IRISH ECONOMY?

Paul Egan, Eoin Kenny and Kieran McQuinn[26]

ABSTRACT

Given the widely acknowledged imbalance between the supply and demand for housing in the Irish residential market, policy measures are particularly focussed on significantly increasing the supply of housing over the medium term. This paper seeks to identify the implications for the Irish economy of a sustained increase in housing activity. In particular we seek to identify potential capacity constraints across different aspects of the real and financial economy, which may result from greater levels of housing supply. The paper examines the likely increase in construction employment which would be required in order to meet Government targets for housing supply and assesses where the extra workers necessary to increase construction activity are likely to come from. The paper uses a recently developed model of the Irish construction sector within COSMO – the overall model of the Irish economy – to assess the overall macroeconomic implications of increased housing supply. This is particularly beneficial in assessing the performance of the construction sector in the broader economy. The paper also focusses on the financial sector and the issue of funding greater levels of housing supply. Namely, is the traditional financial sector capable of providing the required funding, or will other sources, including greater involvement by the State itself, be necessary? Finally, the paper teases out some further policy options which may help to address some of the potential constraints.

1. INTRODUCTION

One of the more adverse outcomes to emerge from the effect of the COVID-19 pandemic on the Irish economy has been the negative impact on the supply side of the housing market (see Allen-Coghlan et al., 2020 for more on this). Public health measures introduced by the Government to restrict the spread of the virus resulted at times in all construction sites being closed. This had a particularly adverse outcome on commencements in 2020. Furthermore, some of the international supply chain issues which have been precipitated by the pandemic have seen the costs for key inputs in the housing sector increase substantially.

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Prior to the pandemic, there was an acknowledged imbalance between the supply and demand for housing in the Irish economy. Estimates by Bergin and Garcia-Rodriguez (2020) indicate that the structural demand for housing in the Irish economy is approximately 35,000 units per annum, however the actual supply of housing units in 2021 was just over 20,000 units. Housing supply levels have been gradually increasing from a low of just over 4,500 units per annum in 2013 to just over 21,000 units in 2019; however the emergence of the pandemic has seen activity levels remain close to 20,000 in 2021. Furthermore, the actual level of supply has been below the structural demand for a number of years, resulting in a significant accumulation of unrealised demand.

The publication of '*Housing for all, a new housing plan for Ireland*'[27] by the Irish Department of Housing and Local Government in September 2021 represents another initiative by the Government to increase housing supply levels. The increase in funding provided in the plan coupled with the multi-annual nature of the funding, along with the likely passing of the economic effects of the pandemic in early 2022, means that housing supply is likely to increase over the medium term.

However, a number of issues specific to the construction sector but also of relevance to the general economy are likely to emerge as housing construction levels increase. The increase in housing market activity must be seen in the context of the broader performance of the Irish economy; prior to the pandemic the domestic unemployment rate in Quarter 4 of 2019 had fallen to 4.8 per cent. As public health measures were relaxed in the context of the pandemic, the unemployment rate has still managed to decline sharply to just 5.5 per cent in March 2022, having peaked at 26 per cent in 2021. Therefore, with the rate likely to fall further in 2022, the demand for labour in the Irish economy, outside of additional activity in the construction sector, is set to increase significantly. In such a tight labour market, a key question emerges: will the construction sector be able to source the additional labour required? Also, as countries have emerged from the pandemic since mid-2021, inflation rates have been increasing sharply. The degree and persistence of this increased inflation has been further exacerbated by Russia's invasion of Ukraine. These international factors, and their domestic spill-over effects raise further questions. For example, will greater levels of housing construction in the domestic context additionally fuel inflationary pressures, which were already emerging in the Irish economy, or will a smaller gap between the demand and supply of housing lead to lower inflationary pressures through reduced housing costs? Related to the increase in inflation are the implications of monetary policy tightening by authorities across the Western world; central banks in the United States, the euro area and the United Kingdom have all been

[27] Full details are at: https://www.gov.ie/en/publication/ef5ec-housing-for-all-a-new-housing-plan-for-ireland/.

increasing policy rates. This brings a number of challenges for the construction sector.

Another potential constraint on future housing market activity is the capacity of the Irish financial sector to fund the necessary credit required for both construction activity on the one hand and mortgage provision on the other. Previous work by Duffy et al. (2016) highlighted the restrictions which may occur, particularly in the presence of new regulatory requirements brought in to address the credit market excesses of the pre-financial crisis era. Given that lending by traditional domestic financial institutions is now closely aligned with domestic deposits, can the financial sector raise the funding to match the increase in lending levels which will be required? Previously, the surge in credit provision witnessed in the period preceding the global financial crisis was increasingly funded by deposits from financial institutions abroad. However, regulatory changes brought in after the financial crisis restrict the ability of domestic financial institutions to avail of such funding.

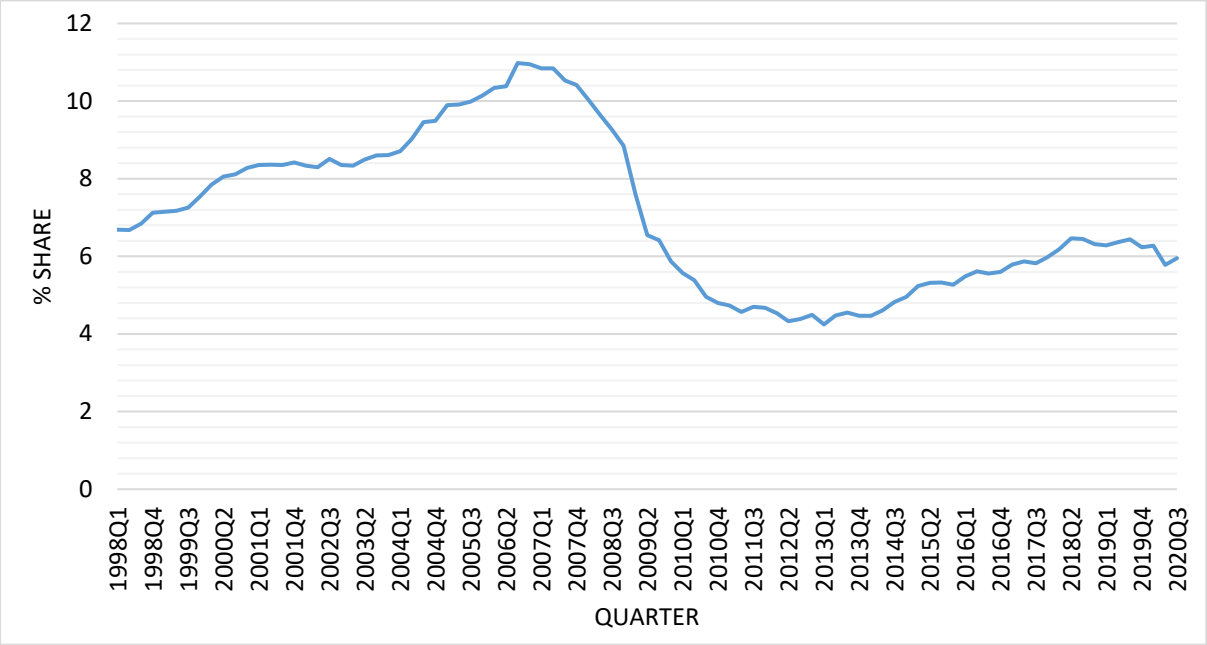
This is against the backdrop of significant changes to the financial landscape of the Irish residential market over the last decade, with the emergence of the State-supported Approved Housing Body (AHB) sector and, more substantially, the large influx of non-bank finance with global capital and private equity for large city developments becoming commonplace.

In this paper, we seek to examine the likely constraints which may impact the domestic construction sector scaling up its levels of activity. Initially, the historical relationships between housing supply, employment and migration trends are assessed. We then avail of a new addition to COSMO (Bergin et al., 2017), the existing macroeconomic model of the Irish economy, to quantify the general equilibrium impacts of the increased housing supply. Egan and Bergin (2022) present a modification of COSMO which incorporates a specific construction sector. This model is used to trace the macroeconomic impacts of increased housing supply on unemployment, disposable income, house prices and wage levels in the construction sector. We also examine the relationship between housing supply and credit extension and assess whether alternative sources of finance may be required as an alternative to traditional sources of credit. Finally, in the policy conclusions section, we discuss a variety of policy proposals which may help to alleviate some of the potential constraints.

2. LABOUR MARKET AND MIGRATION

The Irish labour market has experienced profound change over the past 25 years. Figure 1 shows the development of the share of construction employment in total employment over the period of 1998 to 2020.

FIGURE 1 SHARE OF TOTAL EMPLOYMENT IN CONSTRUCTION

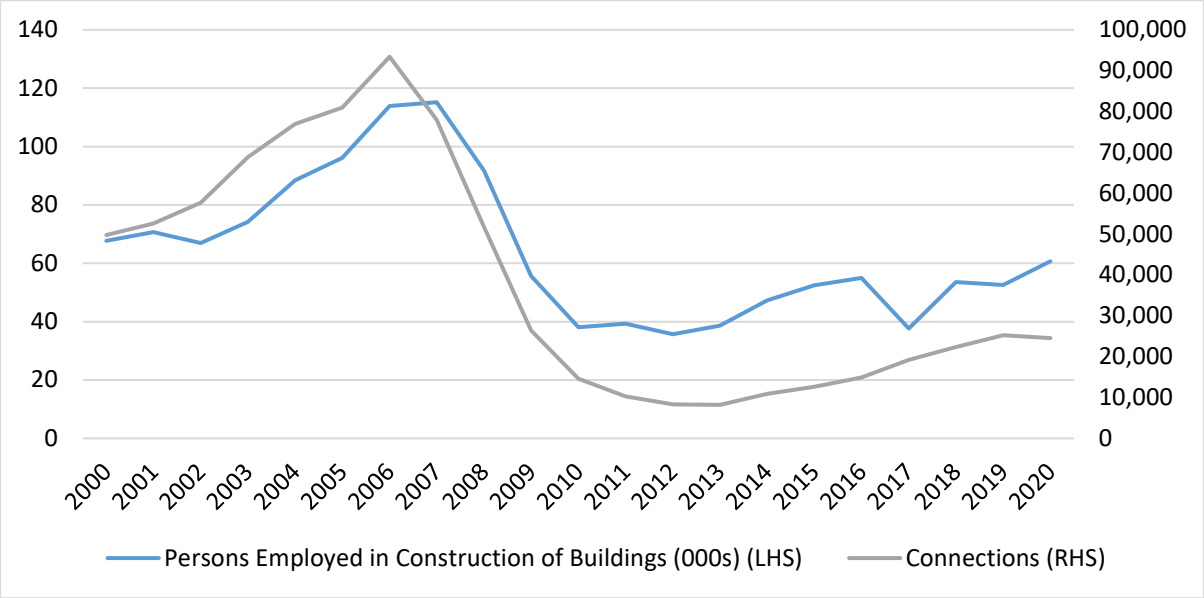


Source: Central Statistics Office and authors' calculations.

The share of total employment in construction increases from the mid-1990s until 2007 and declines sharply until 2013, when it began to stabilise and increase gradually thereafter. However, even with this recent increase, the share of construction employment in recent years has only reached rates observed in the late 1990s.

In Figure 2, the level of employment in the construction of buildings (both residential and non-residential) in Ireland is compared with the level of housing supply.

FIGURE 2 HOUSING SUPPLY AND EMPLOYMENT IN CONSTRUCTION OF BUILDINGS



Source: Central Statistics Office.

A clear relationship between housing supply[28] and employment in the construction of buildings is evident over the period.[29] While there has been an increase in employment in buildings-construction from 2013 onwards, there are two points of note. First, the numbers employed in construction are still much lower than their peak in the mid-2000s. Additionally, although employment in the construction of buildings has begun to grow steadily, housing supply has not followed suit and has indeed increased at a much slower pace.

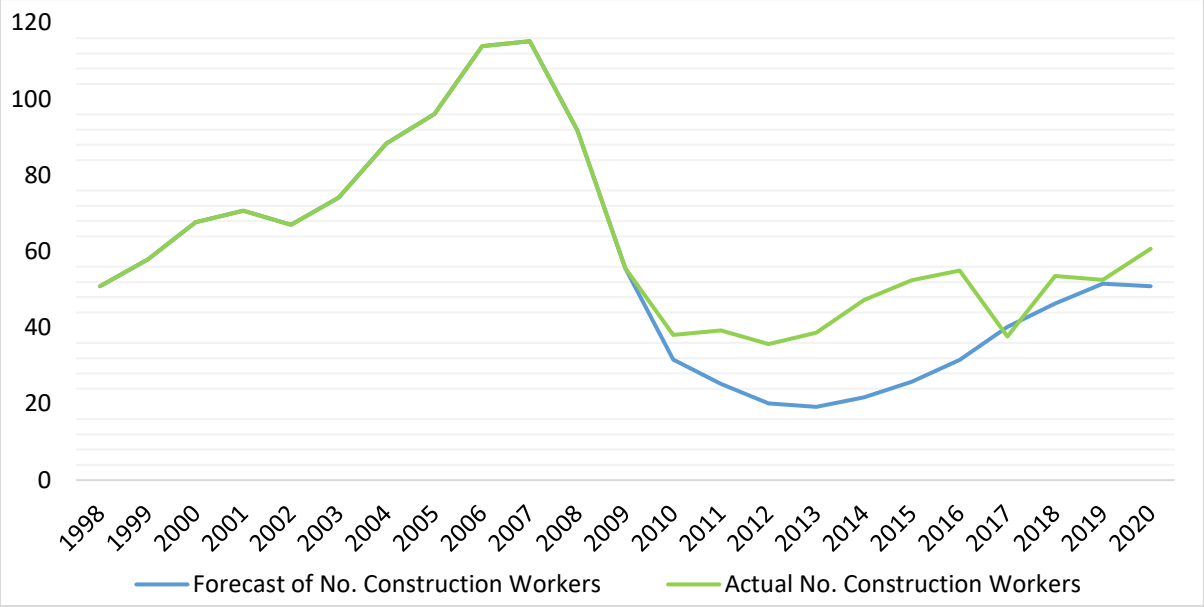
While these data represent a period of boom and bust in the construction sector, the research does suggest that if housing construction is to increase significantly in the future, the levels of those employed in the construction sector may have to increase substantially. It seems that in recent years, more workers have been employed for a given housing output. Clearly, it is the case that, while traditionally those employed in the construction sector were mainly concerned with house building, in recent years a significant number of workers have been employed in other areas of construction.

28 ESB connections have been used by the Department of Housing, Local Government and Heritage as a proxy for housing completions for many years. However, what has become clear most notably emerging from the 2008 financial crisis is that these data do not exclusively refer to housing completions but also new connections and reconnections to the electricity network. These data should not be interpreted as the number of new housing completions but rather as the number of ESB Connections. Nevertheless, the relationships in this paper are evident when using the CSO Construction and Buildings Production Index also.

29 'Persons employed in the construction of buildings' refers to those employed in the development and construction of residential and non-residential buildings.

In order to tease this relationship out further, the following empirical exercise seeks to estimate what the numbers of people employed in the construction sector would have been if the historical relationship between housing units and construction workers had held in the present. The relationship between buildings-construction employment and housing output was estimated for the period of 1998-2009. The estimate was then used to produce a counterfactual projection of construction employment over the period of 2010-2021.[30] This is then compared to the actual employment level over the period.

FIGURE 3 ACTUAL AND COUNTERFACTUAL NUMBER OF CONSTRUCTION WORKERS



Source: Central Statistics Office and authors' calculations.

The counter-factual forecast produced suggests that the decline in the number of buildings-construction workers would have been greater post-2009 if the historical relationship had held over that period. It suggests that, while there was a significant drop in buildings-construction workers employed after the financial crash, it was not as severe as it could have been based on the historical relationship between buildings-construction employment and housing output. Therefore, it is possible that some of these workers shifted from the residential side of the construction of buildings to the non-residential or commercial side of the sector. This would explain the less severe decline in buildings-construction workers compared to housing production.

It is possible that certain tasks such as home improvements reduced the impact on construction employment. Additionally, large increases in emigration after the

30 Details of the model are available, upon request, from the authors.

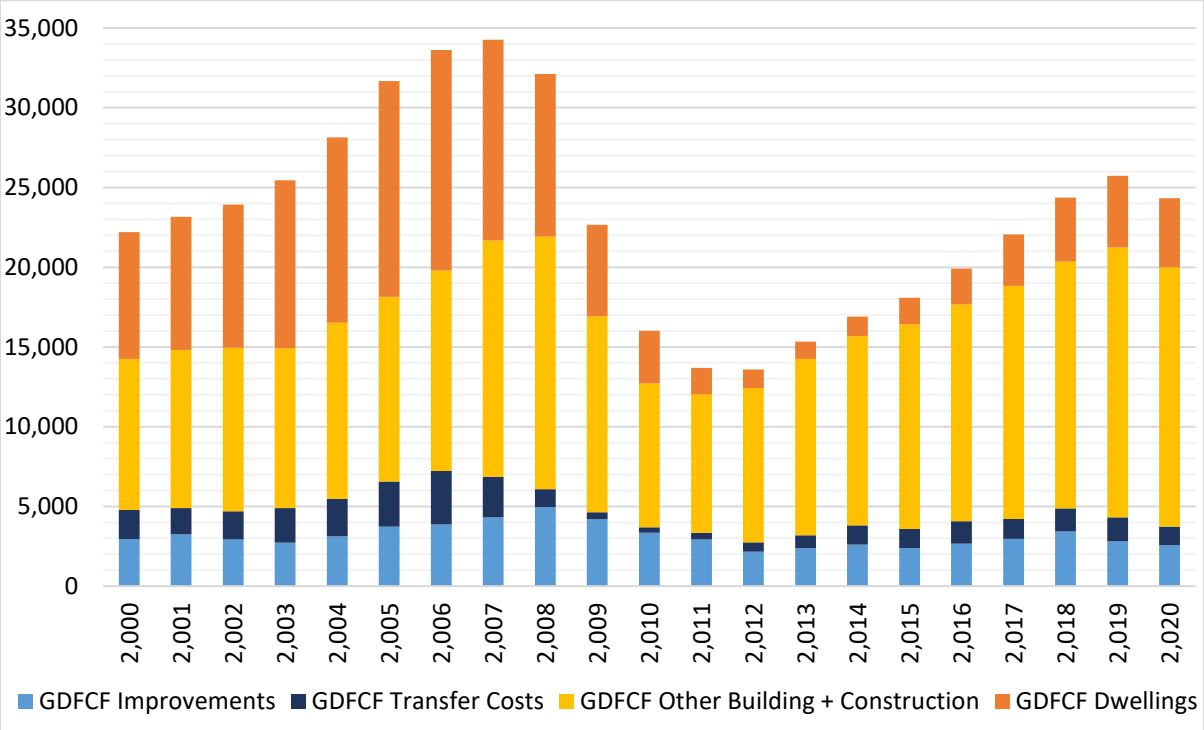
financial crash are well documented, and it is possible that high productivity workers left the country in pursuit of better economic opportunities elsewhere. This may have led to a decrease in the productivity of construction firms. Finally, the housing market has developed since the financial crash, with apartment blocks constituting a larger share of construction in recent years. This may explain the change in the relationship between housing supply and the number of workers, as apartment blocks use more prefabricated components and hence are less labour intensive.

While no data can be found giving a breakdown of the number of workers in residential buildings construction versus commercial buildings construction, it is possible to achieve a breakdown in these types of construction activity with other data.

2.1 Gross Domestic Fixed Capital Formation (GDFCF)

One way in which the relative activity in the residential versus the non-residential construction sector can be assessed is through the difference in the investment and output of buildings in the residential sector compared to the commercial sector. Gross domestic fixed capital formation (GDFCF) across the different sections of the construction sector can be observed. GDFCF is used as a measure of both investment (OECD, 2021) and construction output (Gruneberg and Folwell, 2013). Therefore, differences in GDFCF should point to important differences in activity between the residential and non-residential buildings sections. Figure 4 shows how GDFCF in the construction sector overall is broken down.

FIGURE 4 GROSS DOMESTIC FIXED CAPITAL FORMATION – SECTORS WITHIN CONSTRUCTION



Source: Central Statistics Office.

From the graph, it is apparent that while much of the contraction in the construction sector after the financial crash was in the residential or 'dwellings' section of construction, the 'other buildings' section of construction has recovered strongly since 2011. The residential sector has seen very little growth in GDFCF since the financial crash. This highlights the re-allocation of resources within the private construction sector, with the distribution of resources increasingly moving towards 'other buildings and construction', such as commercial building.

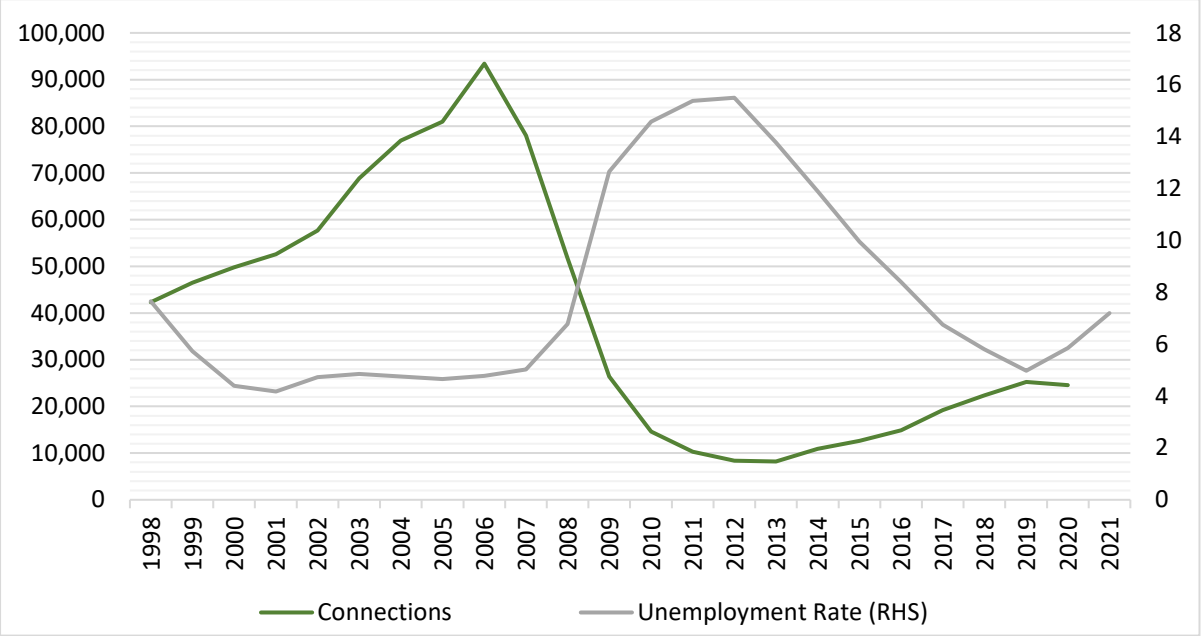
This suggests that a reallocation of resources from the commercial section of the construction sector to the residential section could help alleviate some of the potential labour constraints. It indicates that the total increase in employment required in residential construction to increase the scale of housing production may not be as great as an analysis of the total construction employment would suggest. This is discussed further in Section 5.

2.2 Migration

Another important potential source of employment in the construction sector has been the migration channel. Recent events such as the possible reduction in international mobility due to COVID-19 as well as a high cost of living in Ireland and scarcity of housing may well mitigate against this important channel (Ahern-Flynn et al., 2021).The following two graphs illustrate the relationship between both

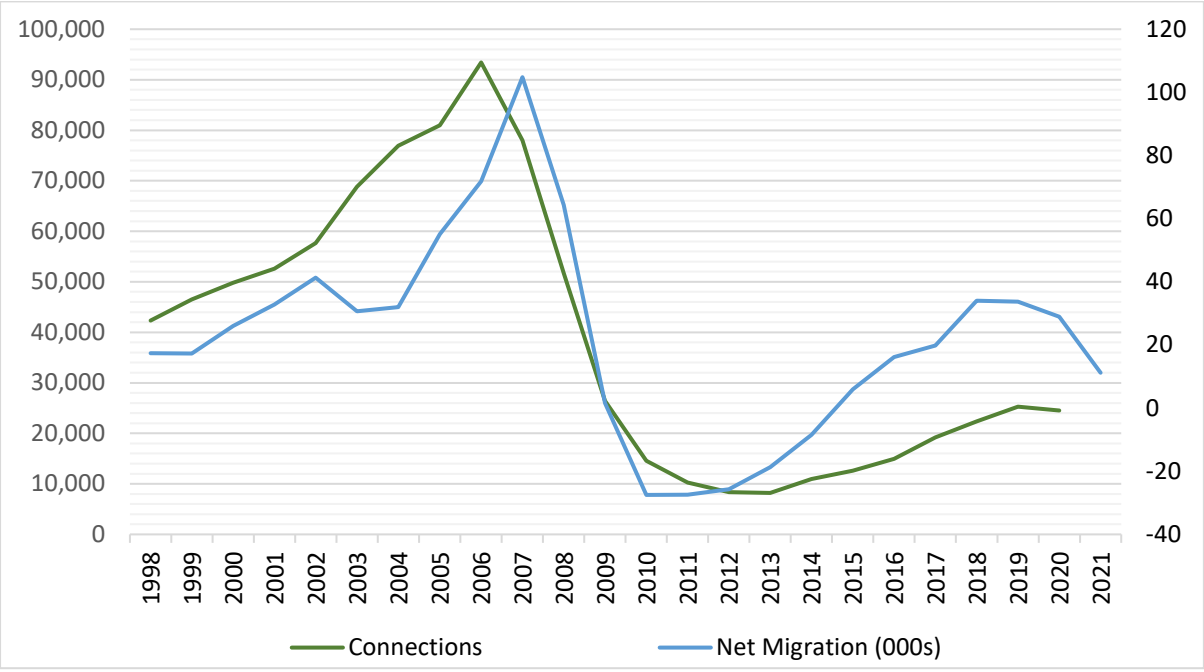
inward migration and unemployment overall with housing supply over the period 1998-2021.

FIGURE 5 HOUSING SUPPLY AND UNEMPLOYMENT



Source: Central Statistics Office.

FIGURE 6 NET MIGRATION AND HOUSING SUPPLY



Source: Central Statistics Office.

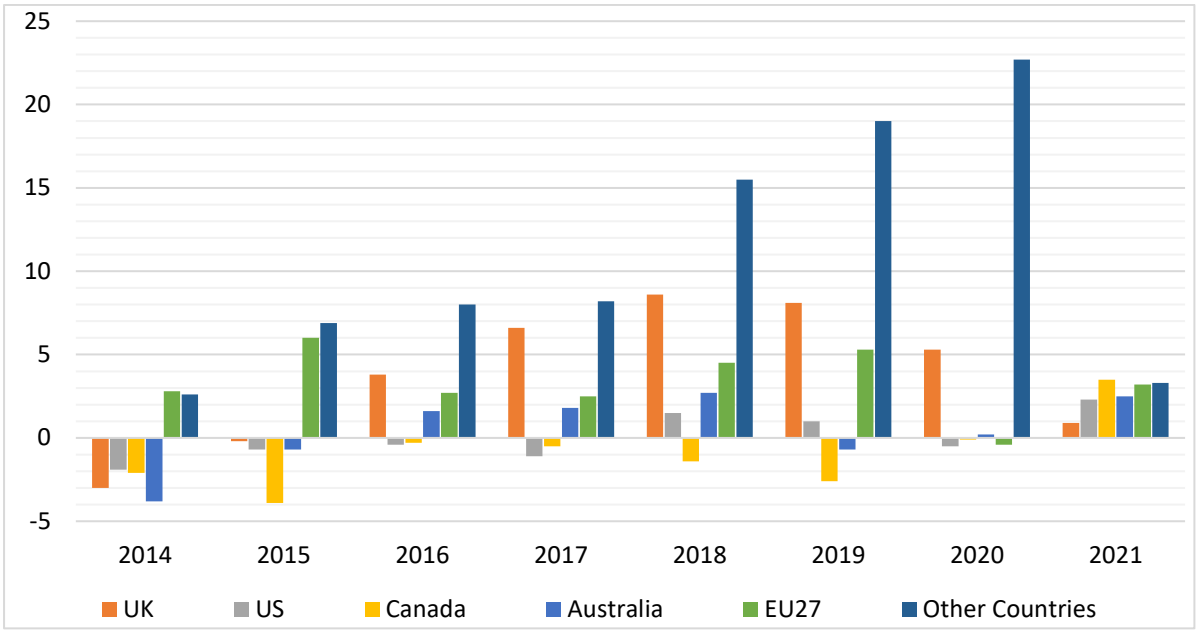
From Figure 5, one can see that low rates of unemployment are strongly correlated with higher levels of housing output. However, similar to the trend in Figure 2, a

strong decline in unemployment since 2013 has not been accompanied by an increase of the same proportion in housing supply. This is notable as the graph shows that in the past, movements in unemployment and housing supply have been quite proportionate. Of course, the data for 2020 and 2021 show unemployment and housing supply diverging once again due, mainly, to public health restrictions introduced as part of the national response to COVID-19.

This relationship is likely being driven by a combination of demand and supply factors. It is clear that if housing output is to increase, it will require an increase in employment, and hence this increased labour supply as a result of increased output is certainly a driver of this relationship. It is also true that as more people become employed, more people will be able to save to buy their own home or to upscale to higher quality housing.

As with Figure 5, Figure 6 also illustrates a clear relationship between net migration and housing supply. It suggests that inward migration has been a major contributor to the labour force in the construction sector in the past. In recent years, however, levels of net migration have been increasing without the same increases in housing output. This would indicate that many immigrants are now working in sectors outside of the construction sector, and that a higher proportion are doing so than in the past. Figures 7 and 8 examine this issue more closely by examining both the country of origin of immigrants and the sectors that immigrants from some of the more frequent countries of origin work in.

FIGURE 7 ESTIMATED MIGRATION INTO IRELAND BY COUNTRY OF ORIGIN (000S)



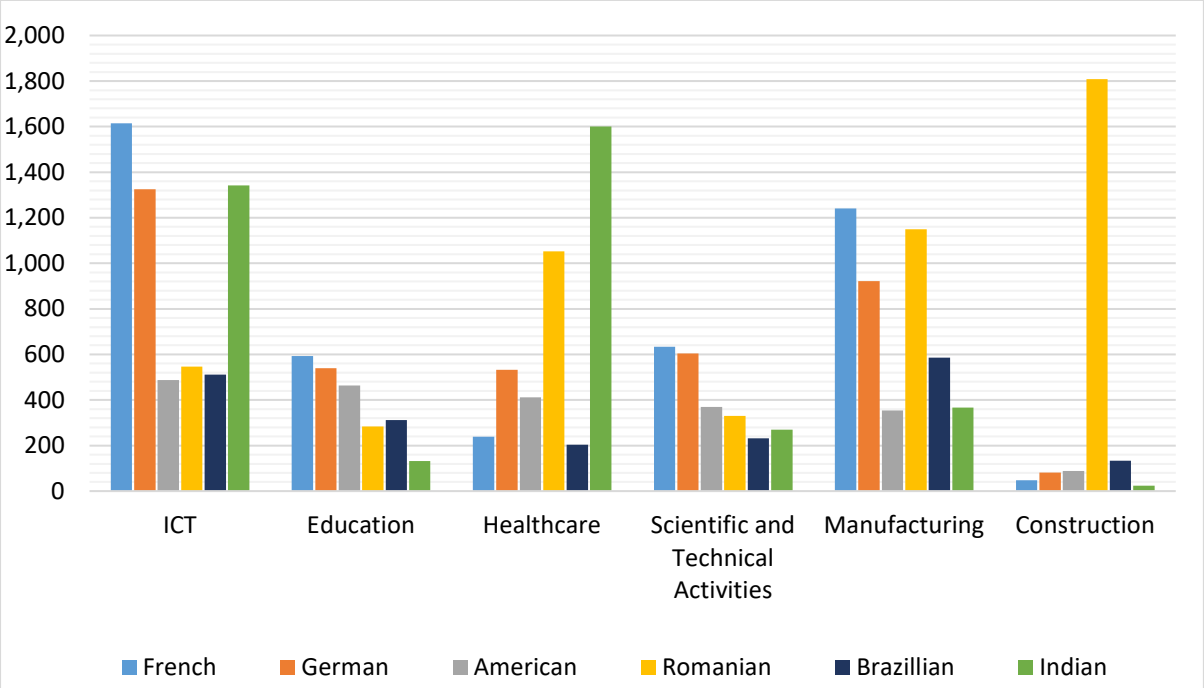
Source: Eurostat.

The EU27 and 'other countries' have been the main source of inward migration for Ireland in recent years. In the past, EU countries were the largest drivers of immigration to Ireland, particular after the accession of Eastern European countries into the EU, such as Poland and Lithuania. Over the last five years, however, those from 'other countries' were the largest group of immigrants in Ireland, with sizeable increases in immigration from this group in particular from 2018 onwards. It is likely that this is also an effect of Brexit, as Britain has tightened its immigration policies since leaving the EU, with non-UK citizens now requiring a visa to work or study there. It is also interesting to see that inward migration from the UK increased to much higher levels after the Brexit referendum in 2016.

In terms of future inward migration, Figure 7 shows that, in both 2020 and 2021, there were substantial declines in migration. It is difficult, however, to assess whether this downturn can be attributable to the global impacts of COVID-19 or whether it is more to do with Irish-specific issues.

It is also important to assess the nature of immigrants coming to live and work in Ireland and whether they are, for example, inclined to work in the construction sector. In order to look at this issue, Figure 8 examines the sectors that non-Irish nationals in Ireland were working in as of 2016. It shows the results for six of the 12 highest non-Irish migrants' countries of origin.

FIGURE 8 NON-IRISH NATIONALS WORKING IN IRELAND (2016)



Source: Central Statistics Office.

As can be seen, the influx of construction workers is minor compared to other sectors such as ICT and manufacturing. This would suggest that policymakers need to appraise whether construction skills should, for example, be added to the critical skills occupation list. This would make it easier for migrants from outside of the European Union to gain a visa on the basis that they have 'critical' skills – in this case, construction skills – through the attainment of a Critical Skills Employment Permit (CSEP).[31] As can be seen in Figure 8, this policy has been successful in attracting ICT, health and engineering professionals.

The relatively high cost of housing itself can prove a challenge in attracting migrants and maintaining the overall competitiveness of the domestic economy as noted by the National Competitiveness Council (National Competitiveness Council, 2021). It is also true that increased immigration will lead to higher levels of demand for housing and hence will put further upward pressure on house prices in the short term. Finally, it is also clear that housing conditions for immigrants in Irish society are already sub-optimal; McGinnity et al. (2022) found that immigrants tend to be concentrated in the private rental sector and have a higher risk of overcrowding and homelessness than Irish-born citizens.

An additional important consideration in the context of future potential labour shortages is the issue of climate change and, in particular, the targets set out in the Government's Climate Change Action Plan. These will have significant implications in terms of future housing targets being met. For example, a sizeable increase in the demand for labour and materials in retrofitting public buildings and residential dwellings could result in an increase in tender costs and crowding out of house building.

Additionally, the sectoral emissions ceilings introduced under the Action Plan could necessitate a substantial fall in the construction sector's carbon intensity of production. This could be particularly binding in the case of cement, which is a central component of housing construction. The Action Plan calls for a reduction in emissions in residential and commercial buildings by 20 per cent by 2025 and by 45 per cent by 2030.

3. INFLATION AND MACROECONOMIC EFFECTS

The recent rise in inflation has significant implications for the domestic construction sector. The presence of increased costs on the supply side of the residential property market could exacerbate the imbalance already observed

[31] The critical skills employment permit is fully explained here: Critical Skills Employment Permits - DETE (enterprise.gov.ie).

between housing supply and demand. Initially high rates of inflation were being driven by a certain number of factors: fluctuations in raw materials prices; supply bottlenecks; tight labour markets; and finally, base effects from the drop in prices in 2020 (Beckmann et al., 2021; European Commission, 2022; Rees and Rungcharoenkitkul, 2021). Therefore, it had been thought by many that inflation would return below the ECB's target of 2 per cent by the end of 2022. However, the invasion of Ukraine and the subsequent economic sanctions placed on Russia have led to the persistence of inflation due to further shocks to the energy market and new shocks to the food sector, as Russia and Ukraine provide large amounts of the global grain supply. As a result, it is now expected that higher-than-target inflation levels will persist into 2023 (European Commission, 2022; McQuinn et al., 2022).

The spike in inflation will have a short-term impact on the housing market, and there could be longer-term effects due to tightening labour markets, reduced migration, and increased prices of materials and wages. Hence, it is necessary to examine these issues more closely in terms of their potential constraint on supply-side activity.[32]

3.1 Supply chains

Many of the current inflationary pressures are a consequence of supply-chain bottlenecks lingering from the pandemic and shocks to the energy and food market from the war in Ukraine. Therefore, it is important to assess how these inflationary factors are likely to evolve over the short to medium term. Supply bottlenecks began arising in Spring 2020 and were mainly brought on by the pandemic. There are many factors that have contributed to supply chain issues. During COVID-19, consumption shifted away from services due to restrictions, which caused a rise in the consumption of durable and manufactured goods. This meant a rise in the demand for raw materials and intermediates such as wood, metal and chemicals. As mentioned previously, these are significant inputs in the construction sector. Lockdowns across the world also disrupted shipping and transport, while sporadic outbreaks of the virus led to further dislocations. This remains an issue, with strict lockdowns recently in effect in China, for example.

The economic downturn caused by the pandemic meant many firms began preparing for a reduction in production. When the recovery came, bullwhip effects meant that many supply chain participants were unprepared for the pick-up in demand (Beckmann et al., 2021; Rees and Rungcharoenkitkul, 2021). The large swings in construction activity over the last two years due to public health

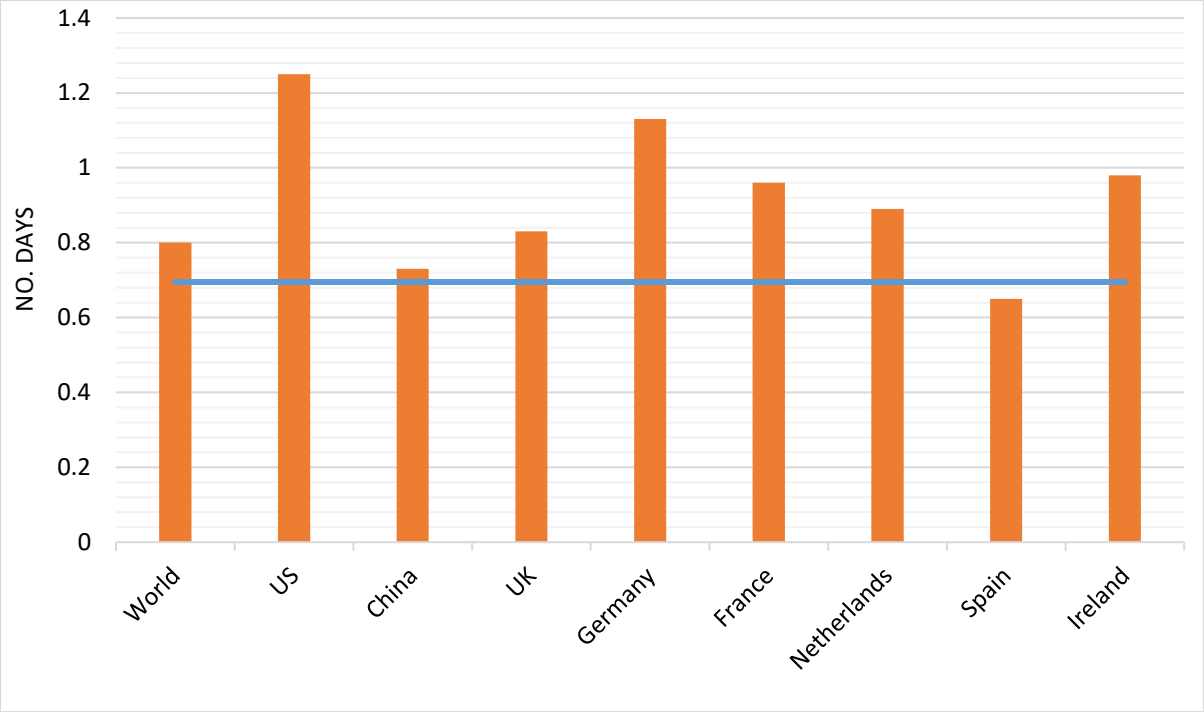
[32] It should be noted that there is some variation in an international context as to the source of the present inflationary pressures; some US commentators tend to attribute the inflationary pressures to pandemic-era stimulus measures, whereas some European commentators focus on the role played by the conflict in the Ukraine.

restrictions would have made it quite difficult for firms to acquire any level of stock with great certainty. Another factor which has impacted the recovery of supply-chains is the pace of the recovery, which has been much quicker than expected, leading to supply chains being overwhelmed by large increases in demand.

While these are significant issues, they are mainly short-term issues, from an international perspective. The pace of the economic recovery will likely slow down which will allow supply chains to catch up with demand. Also, as the economy continues to recover, consumption will likely be reallocated from goods to services. This should lead to lower demand for raw materials and intermediate goods which should lead to less upward pressure on prices (Beckmann et al., 2021; Rees and Rungcharoenkitkul, 2021). However, as mentioned, the Irish housing market is experiencing large levels of excess demand at this time. Therefore, domestically, the prices of materials will likely continue to rise, albeit at a slower pace.

There are, however, other issues which could present longer-term problems. One such issue is the actual structure of supply chains – their complexity makes them hard to repair when a shock arises and they have been built to be efficient, not resilient. The issues regarding supply chains have persisted for longer than was initially thought. One major issue is the shortage of containers for container ships to transport goods (De Santis, 2022). For example, between 2019 and 2021, the times container ships spent in ports increased by 11 per cent and 42 per cent in the Netherlands and Germany respectfully (UNCTAD, 2022). A country breakdown of the median time spent in ports is shown below.

FIGURE 9 MEDIAN TIME IN PORTS FOR CONTAINER SHIPS IN 2021 AGAINST THE 2018-2019 GLOBAL AVERAGE



Source: UNCTAD, De Santis (2022) and authors' calculations.

There is also concern about the global demand for a digital and green transition of the world economy. This demand emerged due to the increasingly clear effects of climate change and has now been compounded as countries seek to become more independent in terms of energy production, given the effects that the war in Ukraine and subsequent energy embargos on Russia have had on the international energy market. These shifts in demand will see the importance of certain goods change significantly. For example, demand for renewable energies and IT and electronics goods have increased over the last few years, and these shifts in demand have caused issues with supply chains (Rees and Rungcharoenkitkul, 2021). Ireland is also seeking to make these transitions and hence will not be immune to supply chain disruptions that may occur as a result.[33]

Overall, it seems as though the supply chain bottlenecks will subside in the short term, especially as the pace of the global economic recovery slows.

3.2 Inflation and input costs

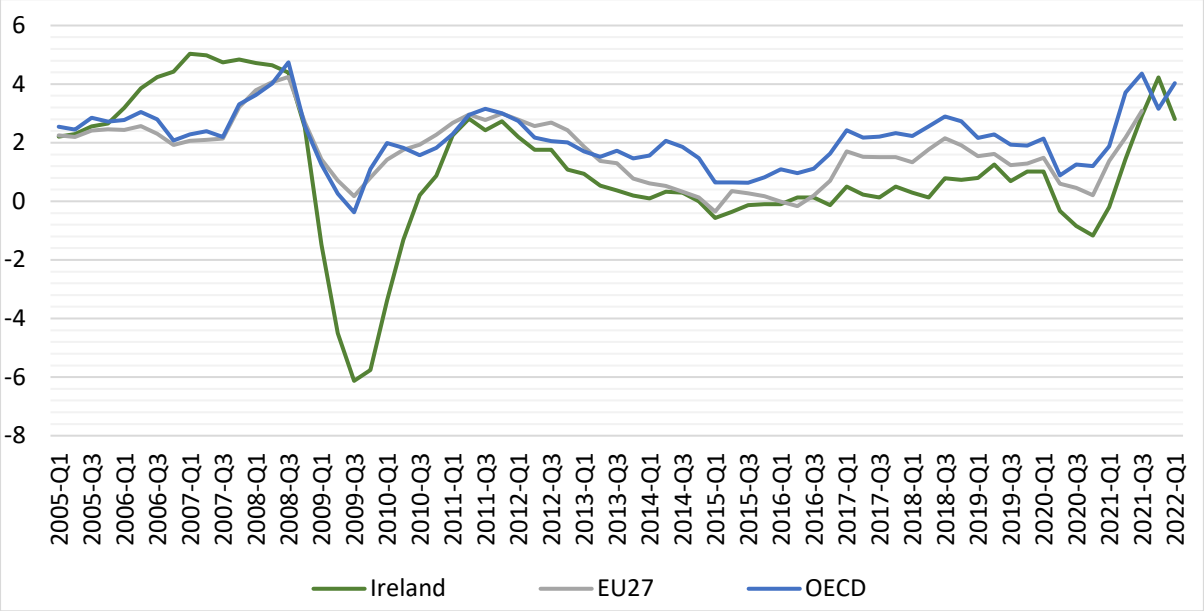
It is unclear when supply chain structures will fully recover but the damage that supply chain disruptions have caused is quite evident. Inflation of building

[33] As an aside, one way the government has proposed to aid in the green transition is to retrofit large amounts of existing houses to reduce their carbon footprint. However, this project would compete for similar resources as those needed to increase the housing supply, particularly labour.

materials and increased wages to manage an increased cost of living have led to concerns surrounding the viability of projects from many construction firms.

To provide some context for the recent increase in inflation, Figure 9 presents the core inflation rate, which excludes energy and food prices, for Ireland, the EU and the OECD.

FIGURE 9 CORE INFLATION (% ANNUAL GROWTH)

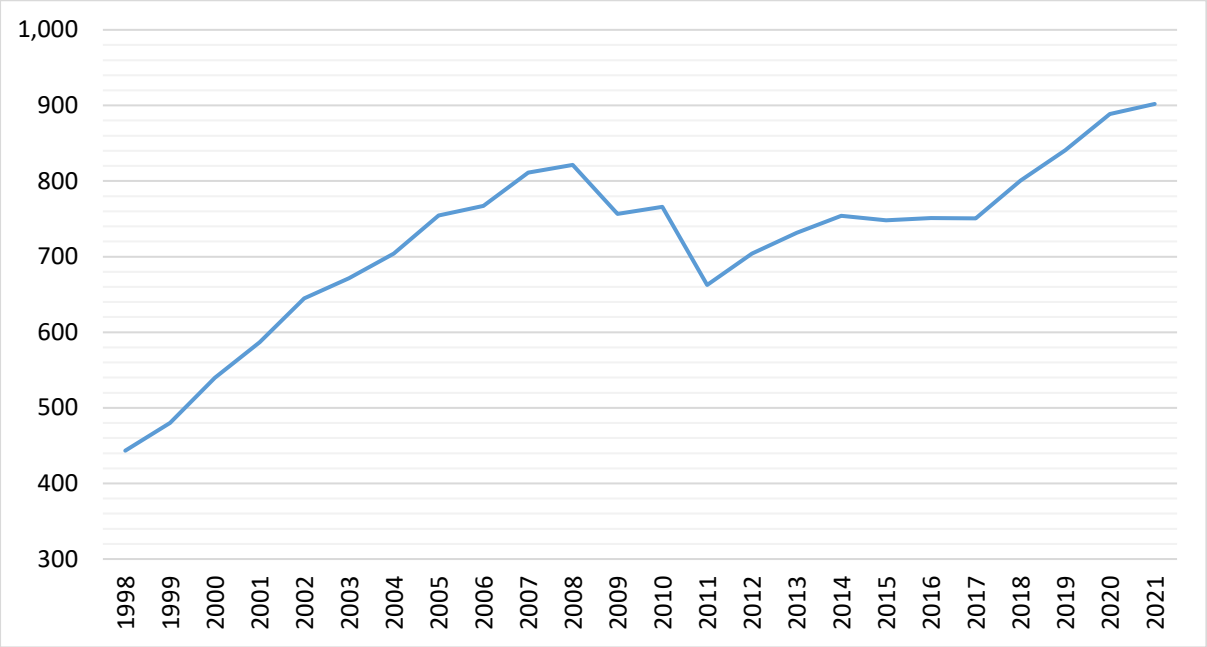


Source: OECD.

Core inflation was relatively constant over the last decade, hovering just above/ below 2 per cent. The onset of COVID-19 and the ensuing restrictions saw an economic contraction and hence a drop in prices. In 2021, a clear increase in prices can be observed and this recovery has now surpassed pre-pandemic levels. Therefore, what effects will this surge in inflation have on construction and how long will those effects last?

It is informative, in that regard, to examine recent developments in construction sector wages. It is recognised that labour markets are tightening and this is true of the Irish construction sector also (Ahern-Flynn et al., 2021). One would expect, therefore, that this would lead to an increase in wages. Figure 10 plots the average weekly earnings in the construction sector.

FIGURE 10 AVERAGE WEEKLY EARNINGS (€) – CONSTRUCTION SECTOR

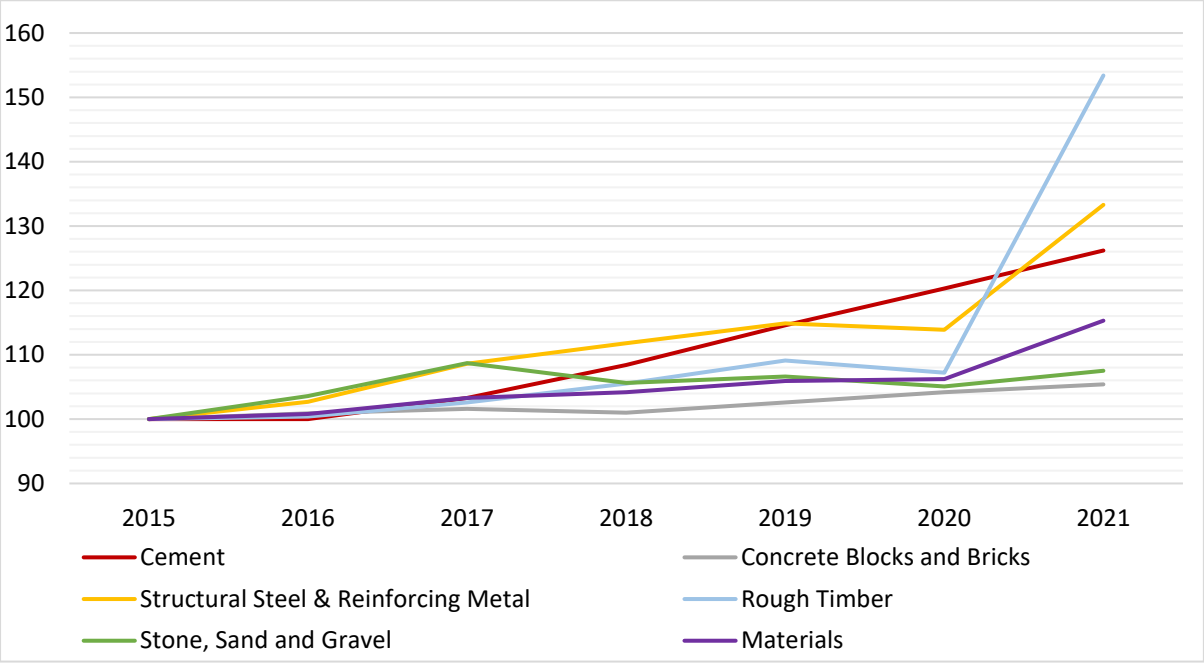


Source: Central Statistics Office.

Average weekly earnings in the Irish construction sector have been rising slowly but steadily since 2012. This likely reflects the tightening labour market and higher cost of living in Ireland. Significantly, this represents an increasing input cost as far as the construction sector is concerned. When labour markets tightened in the early 2000s, large inflows of migrants after the expansion of the EU saw an increase in the domestic labour force. However, the record numbers of inflows recorded at that time are unlikely to materialise again due to a variety of factors such as COVID-19, the relatively high cost of living in Ireland and the improving economic conditions in many of the countries where migrants came from back in the 2000s. Ahern-Flynn et al. (2021) estimate that demand for employment in the construction sector could reach 60,000 workers a year by 2025. Therefore, it is likely that this trend of increasing wages will continue.

Another significant development in the sector is that of other input costs such as the cost of materials. Very large increases in the cost of materials have been reported in Ireland, with the price of structural steels increasing by 27 per cent from February 2021 to February 2022. Similarly large increases have been reported for timber, and smaller but significant increases have been recorded for many other materials (Central Statistics Office, 2022). Figure 11 shows some of these domestic trends in input prices.

FIGURE 11 WHOLESALE PRICE INDEX (2015 = 100)

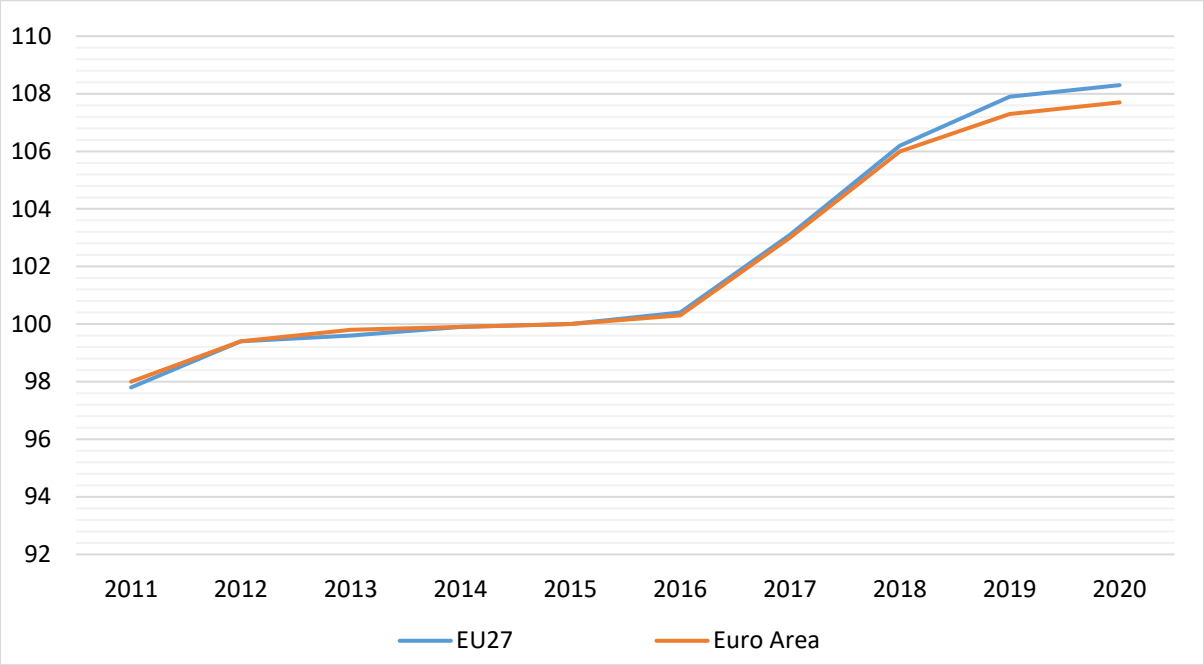


Source: Central Statistics Office.

Prices for certain inputs have increased significantly since 2020; Figure 11 highlights the sharp increase in the price of timber, structural steel and cement. The prices of other inputs, such as concrete blocks, have remained relatively stable. Nevertheless, it is clear that input prices have been increasing steadily since 2015 and are now increasing at a much faster pace.

The international nature of these price changes can be observed from Figure 12 which plots the prices for materials for both the EU27 and the Euro Area with input costs rising across Europe.

FIGURE 12 PRICES OF MATERIALS (INDEX BASE 2015 = 100)



Source: Eurostat.

Prices of materials have been on the rise over the past decade, with the extent of price increases intensifying from 2016 onwards. It is expected that these increases will continue also, given expected increases in demand for a number of nonferrous metals arising as a consequence of expanding renewable energies, the switch to electromobility, and additional efforts to expand IT infrastructure (Beckmann et al., 2021). Given these international factors, coupled with the large imbalance between demand and supply in the domestic housing market, the cost of inputs will likely continue to rise. Materials such as concrete, steel, wood, stone etc. are key components of housing construction and so these increased costs will have a significant effect on the construction sector's ability to produce the increased rates of housing supply required.

Domestically, the cost of land and certain issues such as 'land banking' have been subject to much discussion. This paper explores the issue of land in Section 5.4 as a greater role for the Land Development Agency (LDA) is examined as a means of dealing with these issues.

Finally, the surge in inflation observed across countries since the COVID-19 pandemic has prompted the main international monetary authorities such as the Federal Reserve and the European Central Bank to increase policy rates. The resulting impact on lending rates throughout the economy will also have significant implications for the construction and mortgage markets. This is particularly the case if the increase in rates is a precursor to a new era of higher interest rates on a persistent basis. Some of the more significant impacts include higher mortgage

repayments and hence housing demand, the business models of the buy-to-let (BTR) sector and their ability to secure capital, the cost and availability of development finance from the financial sector, and the cost of borrowing for AHBs.

3.3 Macroeconomic implications of increased housing construction

In this section, we assess the overall macroeconomic impact of increased housing supply. In particular, we avail of new developments in relation to COSMO (COre Structural MOdel) (Bergin et al., 2017) which is a macro-econometric model of the Irish economy designed for both economic projections and policy analysis (for examples of its uses see Bergin et al., 2019 and Conefrey et al., 2018).

COSMO already includes a detailed financial block, which describes the evolution of variables relevant to the housing market including mortgage credit, arrears, house prices and completions. It did not, however, include a detailed construction sector, despite the overall importance of the sector to the Irish economy.[34] The construction sector was instead included with other activities that focus on servicing the domestic economy in the 'non-traded sector'. Therefore, any shock or policy scenario could not separately distinguish the impacts to the construction sector or how these impacts feed through the rest of the economy. With this in mind, Egan and Bergin (2022) outline a modification of COSMO which incorporates a specific construction sector.[35] Incorporating specific relationships for the key variables in the construction sector provides much more realistic linkages between the activity of the real and financial economy.

The new construction sector consists of nine estimated equations, a calibrated production function as well as a number of identity equations. For the purposes of this updated version of COSMO, the construction section refers to the NACE Rev.2 sectors F and L. Sector F (Construction) includes construction of buildings (both residential and non-residential), civil engineering and specialised construction activities while Sector L (Real Estate Activities) includes the buying and selling of real estate and the management of real estate. The equations in the construction sector include estimations for the level of production, investment, employment, wages, average hours worked, profits and fossil fuel consumption.[36]

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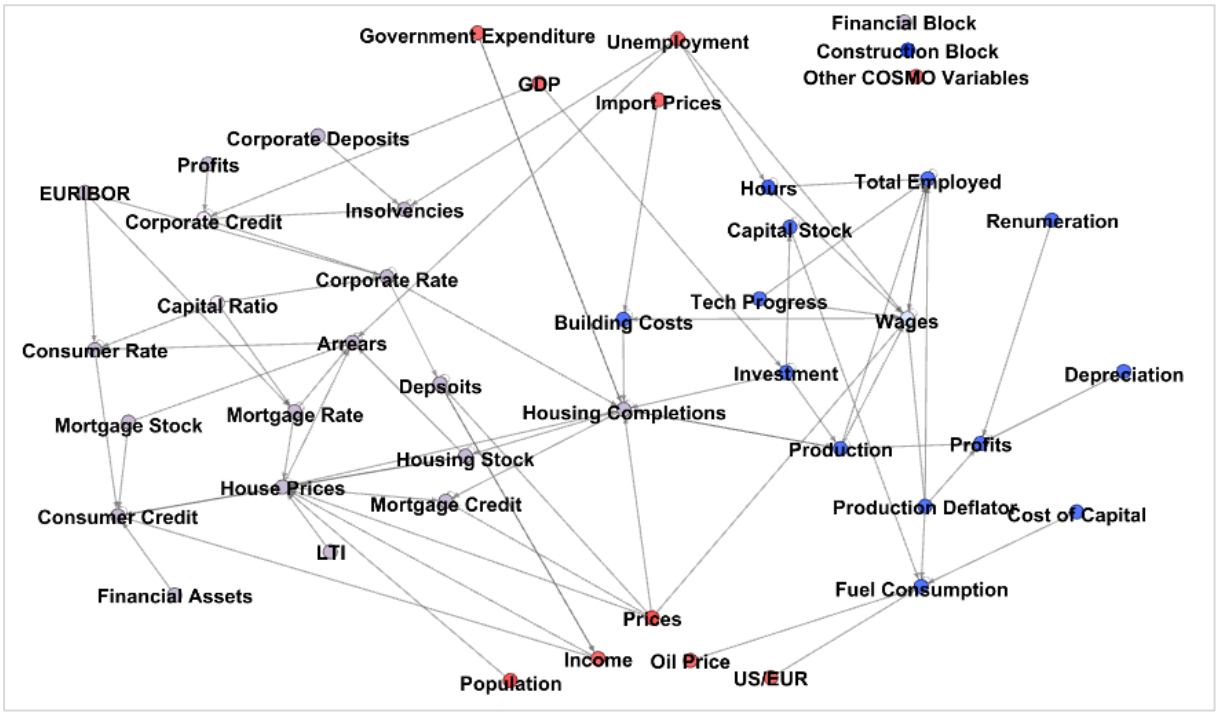
34 The construction sector (composed of NACE Sectors F and L) represented 8.3 per cent of total gross value added (GVA) in 2020 and 6.7 per cent of employment in 2021.

35 Note this development of COSMO was funded by the Department of Housing, Local Government and Heritage through its housing research programme with the ESRI. More details are available here: https://www.esri.ie/current-research/housing-research-programme.

36 A full description of the estimated equations and the overall econometric structure of the construction sector can be found in Egan and Bergin (2022).

As mentioned, Egan and Bergin (2022) argue that this modification to COSMO reinforces the links between the financial block and the real economy via the construction sector. This in turn leads to richer analysis in terms of policy shocks and dynamic simulations, and nests potential changes in the construction sector within the broader real and financial economy. In particular, the newly disaggregated construction sector establishes key relationships between output in the sector, the level of dwelling completions, house prices, the level and cost of corporate lending and the wider financial side of the Irish economy. Figure 13 provides a simplified dependency graph of the construction sector, financial block and wider COSMO which emphasises the relationship between the real and financial side of the economy.

FIGURE 13 SIMPLIFIED DEPENDENCY GRAPH OF CONSTRUCTION SECTOR, FINANCIAL BLOCK AND WIDER COSMO



Source: Egan and Bergin (2022).

3.4 Shock to dwelling completions

The Government's Housing for All plan (Department of Housing, Local Government and Heritage, 2021) targets annual new dwelling completions of 35,000 units. COSMO's baseline projection for completions over the 2022-2030 period is approximately 25,000 units per annum. Therefore, we apply a representative shock by increasing the number of dwelling completions by 10,000 units. This figure represents the total number of new dwellings relative to COSMO's baseline. As the model is broadly linear, the results of shocks are relatively invariant to the baseline used. It should also be noted that the linear nature of the model also means, however, that parameters do not depend on the state of the economy or

the degree of slack in the labour market. It is also important to stress that this is very much a 'synthetic' shock in which completions are exogenously increased by 10,000 units to test the effect on other relevant variables. The increase is not a one-off shock, but a permanent shift in the number of completions beginning at year $t0$.

The impulse responses from the shocks to the number of completions can be seen in Figure 14. As production in the construction sector is in part determined by completions, this variable rises above the baseline. Employment and wages in the sector are in turn driven by the level of production and so both also increase relative to the baseline,[37] with higher labour demand also serving to put upwards pressure on wages. Profits of construction firms also increase from the higher level of production. Overall, the increase in housing output of 10,000 would increase construction wages by approximately 1 per cent in the long run. This suggests that increasing housing output to 35,000 units per annum would not lead to significant wage inflation in the sector.

At the macro level, the increase in the production of one of the key sectors of the economy leads to an increase in GDP while the additional employment in the sector feeds into the total level of employment, thereby reducing the overall unemployment rate in the economy. The increase in wages in the construction sector also leads to higher overall disposable income. While the increased income from the strengthening economy puts upward pressure on house prices, this is strongly overridden by the large increase in the number of completions causing house prices to fall significantly below the baseline. In terms of magnitude, the elasticity of house prices would appear to be quite strong based on the simulation, with house prices falling by around 12 per cent from its baseline by year t+8. This is based on the relationship between housing completions and house prices as described in the financial block of COSMO (see Egan et al., 2022 for details). It should be noted however that this simulation assumes that the 10,000 units does not distinguish between private and social housing, and therefore simulates the impact of an increase in 'market' dwellings only.

[37] With regard to changes in employment in the sector, the scenario described here reflects a situation in which the supply of construction labour is relatively elastic.

FIGURE 14 10,000 UNIT SHOCK TO NEW DWELLING COMPLETIONS

Source: Authors' calculations.
Note: All responses are in per cent deviation from the baseline with the exception of the unemployment rate which is percentage point deviation.

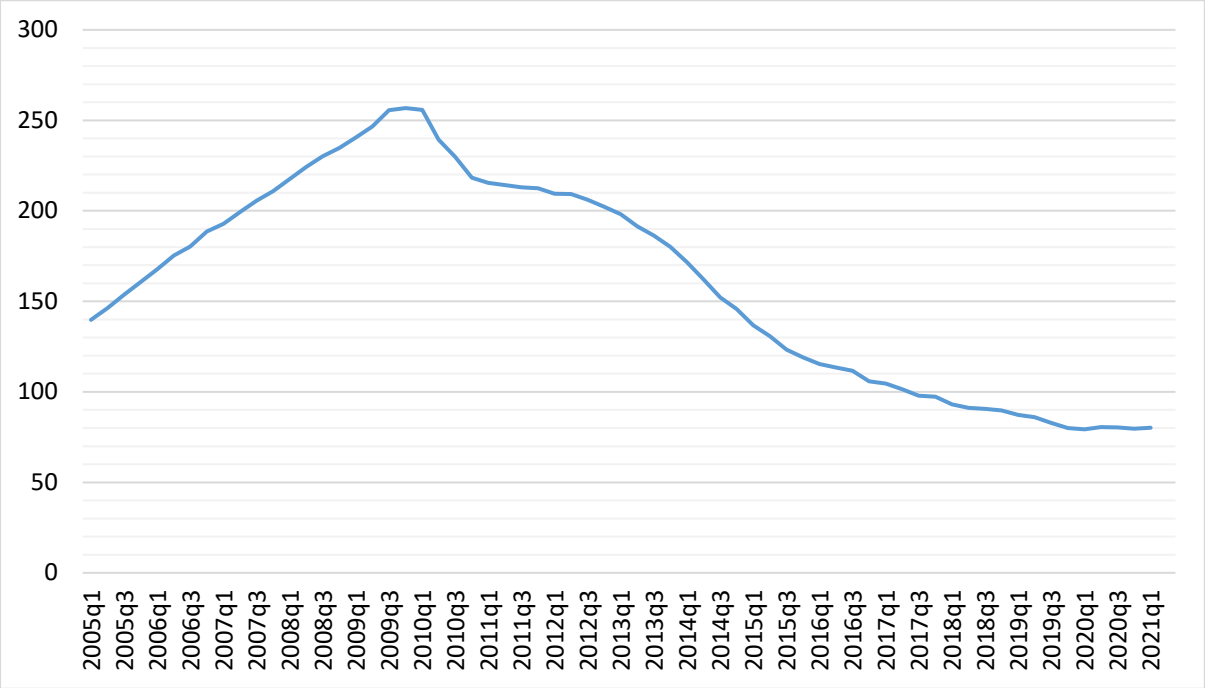
Of course, in an environment of higher costs, the ability to attain funds becomes more important for the viability of housing projects, both for firms and individuals. In the following section, we focus on the funding of increased housing construction.

4. FUNDING OF INCREASED CONSTRUCTION ACTIVITY

The performance of the financial sector can have a major impact on the supply side of the construction sector. This is particularly the case in the Irish residential market over the period 2000 to the present. The significance of these effects was felt, in particular, after the financial crisis in 2008. Going forward, as noted by Duffy et al. (2016), there are significant challenges as to whether the financial sector has the potential capacity to meet a substantial increase in housing market activity.

Figure 15 plots total credit issued to Irish-resident private sector enterprises as a percentage of adjusted Gross National Income. This provides an assessment of the overall size of the financial sector vis-à-vis the size of the real economy.

FIGURE 15 NATIONAL CREDIT-TO-GNI* RATIO

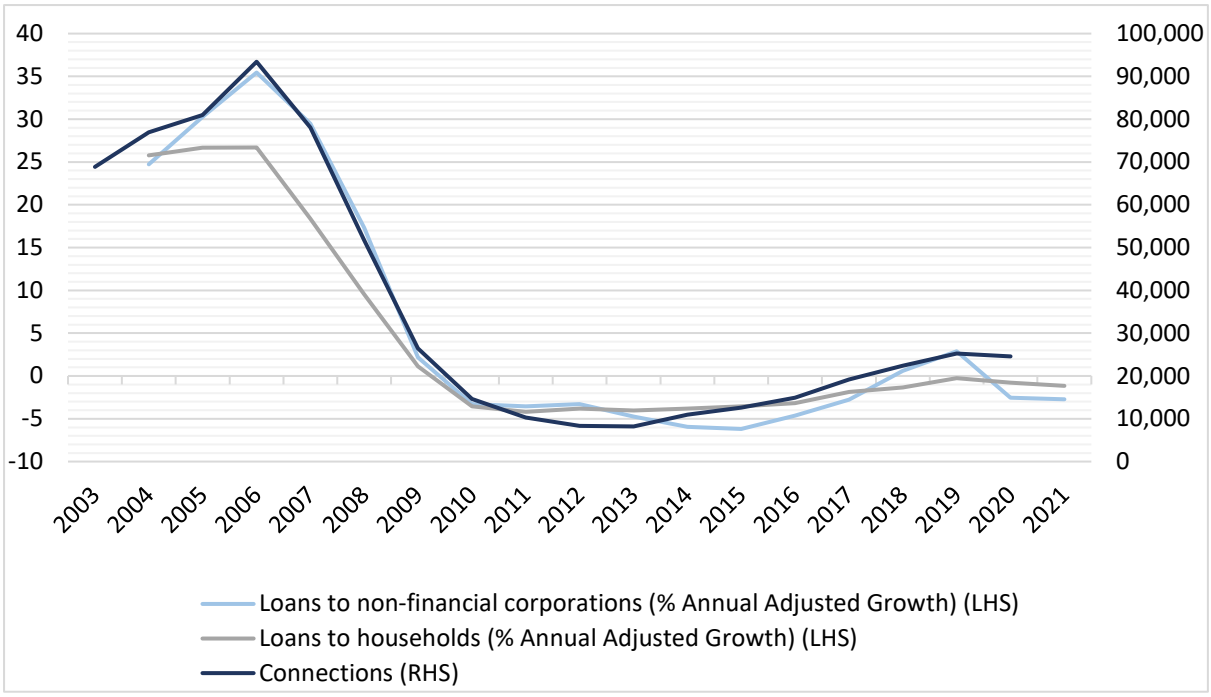


Source: Central Bank of Ireland.

The extent to which the level of credit increased as a proportion of the size of the economy in the lead up to the global financial crisis (GFC) can be observed from Figure 15. Since the GFC, however, there has been a steady decline in this ratio, as the amount of credit extended decreased, and both the financial and household sectors were forced into a period of deleveraging.

A significant change in the regulatory environment occurred in Ireland after the financial crash, with a range of macroprudential regulations being introduced to prevent credit institutions from lending in an unsustainable manner as had been done during the Celtic Tiger period. This, along with a fall in demand in the residential sector, led to a sizeable decline in loan approvals to both households and non-financial corporations in the aftermath of the GFC. The growth rates of these approvals are graphed against housing supply in Figure 16, and a clear relationship can be seen.

FIGURE 16 GROWTH RATE OF LOANS SUPPLY AND HOUSING SUPPLY

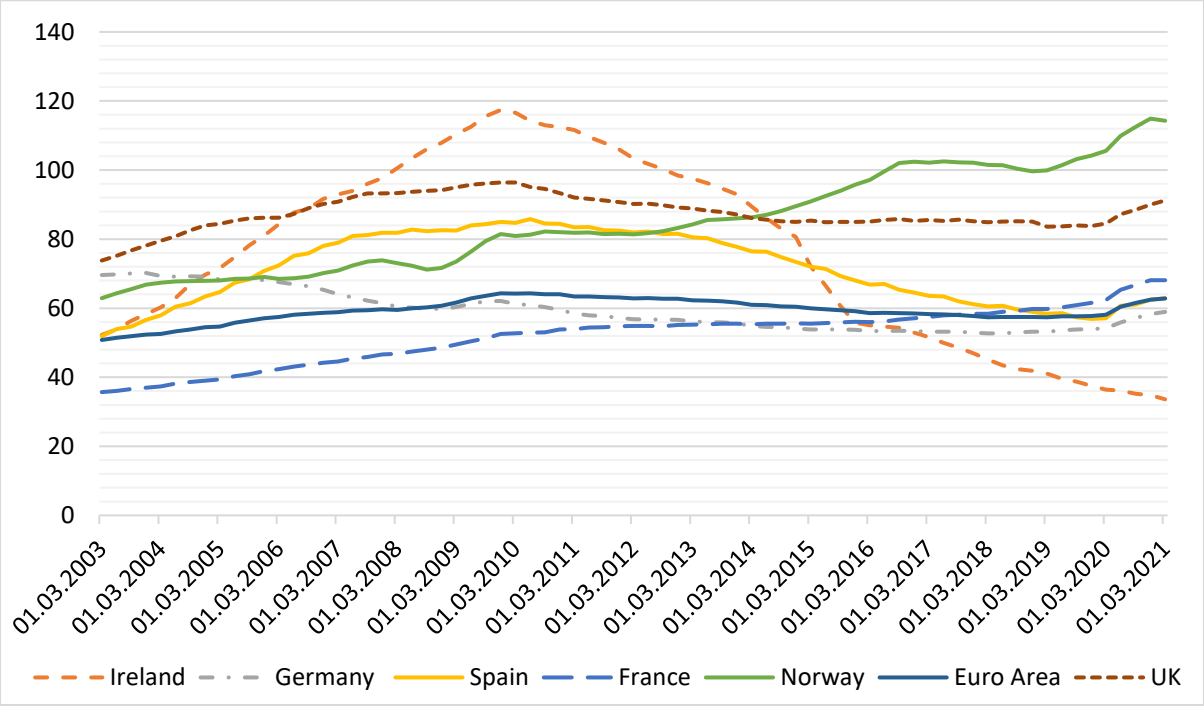


Source: Central Statistics Office.

It is clear that there is a high degree of correlation between both loans-to-households and loans-to-non-financial corporations and housing supply. This suggests that increases in housing supply may be delayed due to a lack in the availability of credit. McQuinn et al. (2021) cited the difficulty in obtaining a mortgage as preventing a significant number of people, deemed to be creditworthy, from entering the housing market due to a variety of factors including inability of certain cohorts of the population to save the required deposits now required. However, it should be noted that an increase in the provision of credit would feed into higher house prices through increased demand (McQuinn et. al., 2021; Lyons, 2021).

Secondly, and more significantly, housing supply is highly influenced by the amount of credit being supplied. It is informative to compare the Irish credit market with developments in comparable European countries. Figure 17 shows the development of household credit-to-GDP across several EU countries.

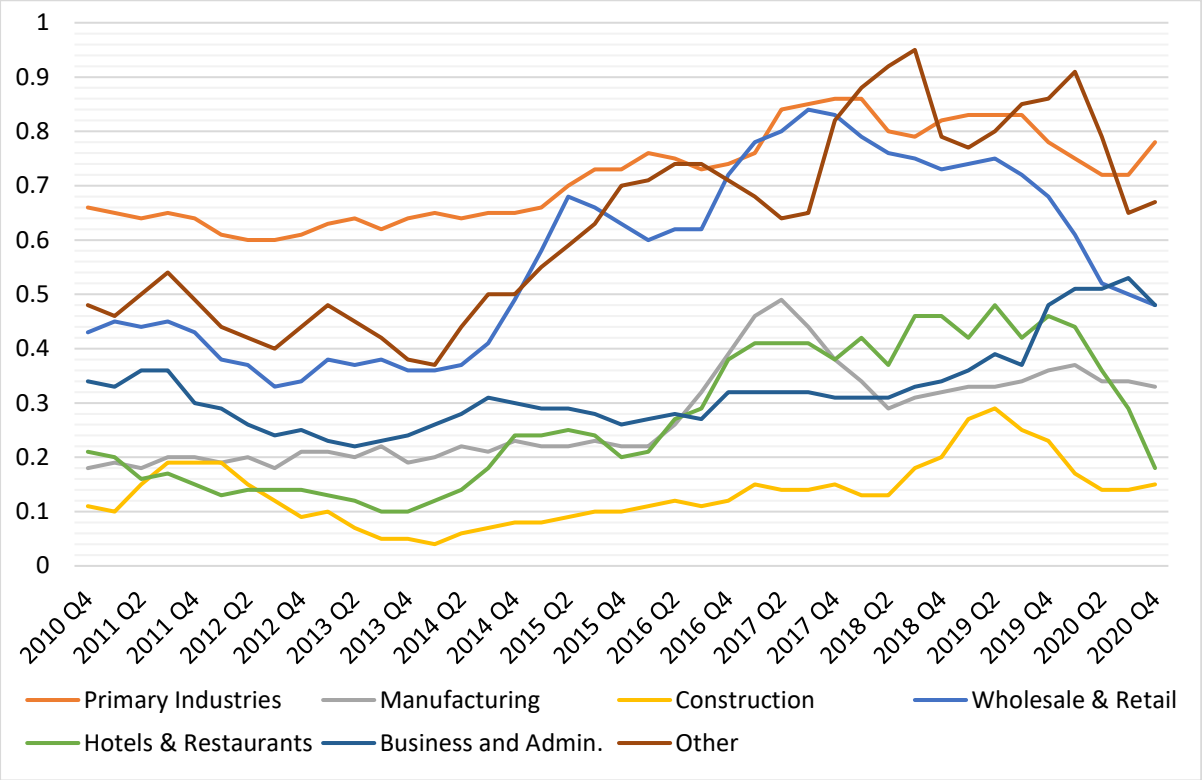
FIGURE 17 HOUSEHOLD CREDIT-TO-GDP FOR SELECT EUROPEAN COUNTRIES (%)



Source: Bank for International Settlements.

In a similar fashion to many of the trends examined so far, one can see that household credit in Ireland as a percentage of GDP peaked in the late 2000s, before declining substantially. The Irish ratio has continued to decline further below the Euro Area average and the ratios in other countries shown above since 2013. This is a result of declining levels of both the demand for and supply of credit. These low levels of Irish household credit also represent the stock of credit at certain points in time. Hence, it is helpful to assess gross new lending to SMEs in the Irish economy to determine if there are barriers to credit on the business side also. Figure 18 presents new lending for each sector since 2010.

FIGURE 18 GROSS NEW SME LENDING BY SECTOR



Source: Central Statistics Office.

Since 2014, new lending across most sectors of the economy has been increasing. It is noticeable that the growth of new lending for construction has, however, been slower than other sectors. It began to increase at a faster rate in 2018 but then declined again at the end of 2019 and into 2020. Hence, the stocks of credit in the construction sector are likely to remain lower than that in other sectors over the short to medium term.

The key question is whether the domestic financial sector has the capacity to fund its lending to the required extent going forward. Figure 19 plots total credit extended and traditional deposits for the Irish financial sector over the period 2003 to 2021. Historically, during the period of the Celtic tiger, there was a significant gap between lending and traditional deposits. This gap was funded by domestic financial institutions borrowing funds from foreign institutions (see McCarthy and McQuinn, 2017, for more on this).

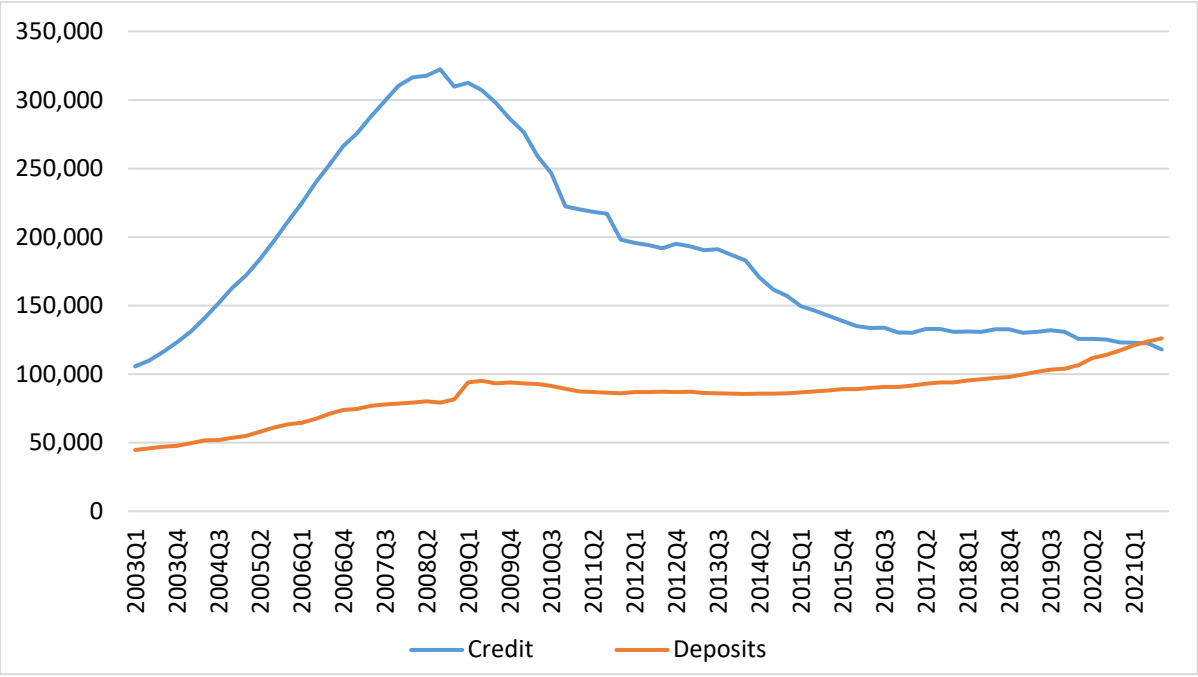
The Financial Measures Programme (CBI, 2011) which was introduced during the re-capitalisation of the Irish banking sector outlined a required path for Irish banks' loan-to-deposit ratios. This requirement on the liability side of their balance sheets sought to address one of the key fragilities of Irish banks' balance sheets, which was the overreliance on short-term wholesale funding (Honohan et al., 2010). The issue is that banks face a maturity mismatch between their assets and

liabilities which gives rise to liquidity risk. Retail deposits, particularly those of households, are viewed as less vulnerable to investor flight and thus not subject to the same roll-over risk that characterises short-term money market funding.

The impact of the financial crisis along with the regulatory changes which accompanied it has meant that Irish financial institutions have to rely on traditional deposits as their main source of funding. From the graph it is clear that at present both credit extended and deposit levels are broadly similar. This suggests that it would require a significant increase in the level of deposits to fund a sizeable expansion in bank credit. Consequently, there are significant question marks concerning the potential for the domestic financial system to fund the expansion in housing activity required to meet the underlying demand in the market.

A related legacy of the financial crisis is the need for Irish financial institution to carry relatively greater levels of capital for any increase in lending. Real estate lending requires larger risk-weights for Irish institutions as they still hold a significant amount of non-performing loans from the 2007-2010 period. This also serves to limit the capability of the domestic financial sector from increasing its lending levels.

FIGURE 19 TOTAL CREDIT EXTENDED AND TRADITIONAL DEPOSIT LEVELS AMONGST IRISH CREDIT INSTITUTIONS (€ MILLION): 2003-2021

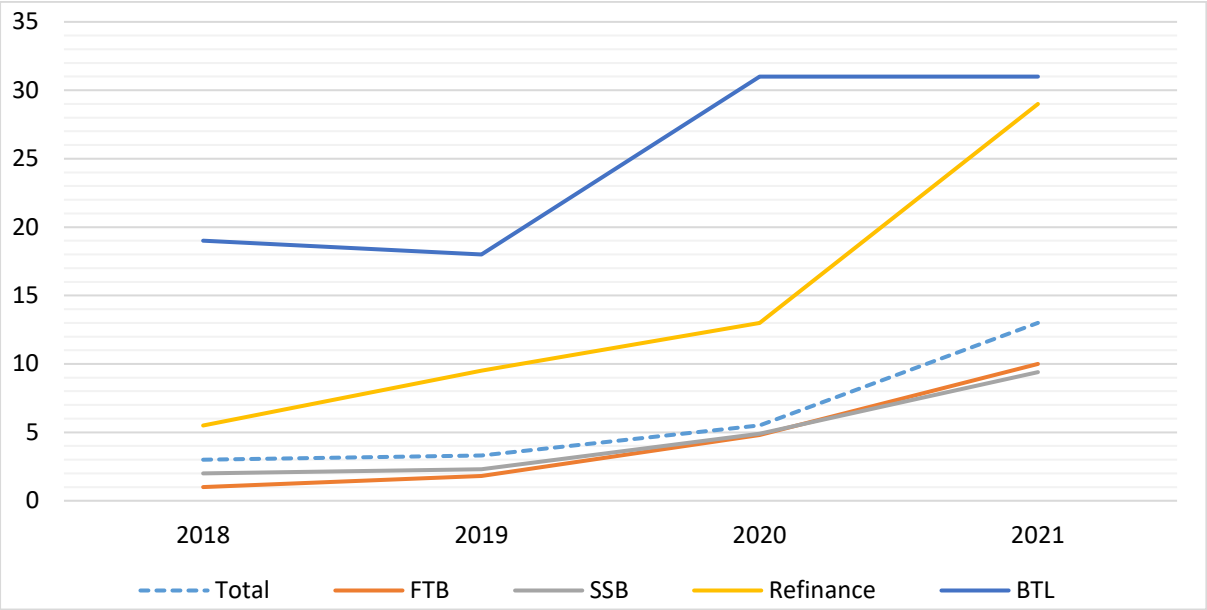


Source: Central Bank of Ireland.

Most of the discussion around lending has centred on traditional bank lending, however, the overall financial landscape of the Irish residential market is now much

more mixed. The role of approved housing bodies (AHBs) has expanded over the last decade in an attempt to increase the volume of affordable housing. There has also been a large increase in the activity of Non-Bank Financial Institutions (NBFIs) over the last 20 years, particularly from REITS and investment funds (Gaffney and Hennessy, 2022; Lyons, 2021). The greater financial mix is a positive development in the Irish market as it promotes competition in the financial sector. NBFIs can also offer informational advantages to borrowers in one particular sector. It should be noted that non-bank finance also tends to be quite volatile and highly cyclical, particularly if regulation of these bodies is inadequate. Fleckenstein et al. (2020) show that cyclicality in non-bank finance explains a large share of the lending decline during both the financial crash and the COVID-19 pandemic. Nevertheless, NBFIs have seen their market share in the Irish mortgage market grow significantly since 2018, particularly in refinance and buy-to-let mortgages. This can be observed from Figure 20, which plots the share of total new mortgage lending in each market segment accounted for by NBFIs over the period 2018-2021.

FIGURE 20 SHARE OF TOTAL NEW MORTGAGE LENDING IN EACH MARKET SEGMENT ACCOUNTED FOR BY NBFIS:



Source: Gaffney and Hennessy (2022).

5. POLICY OPTIONS

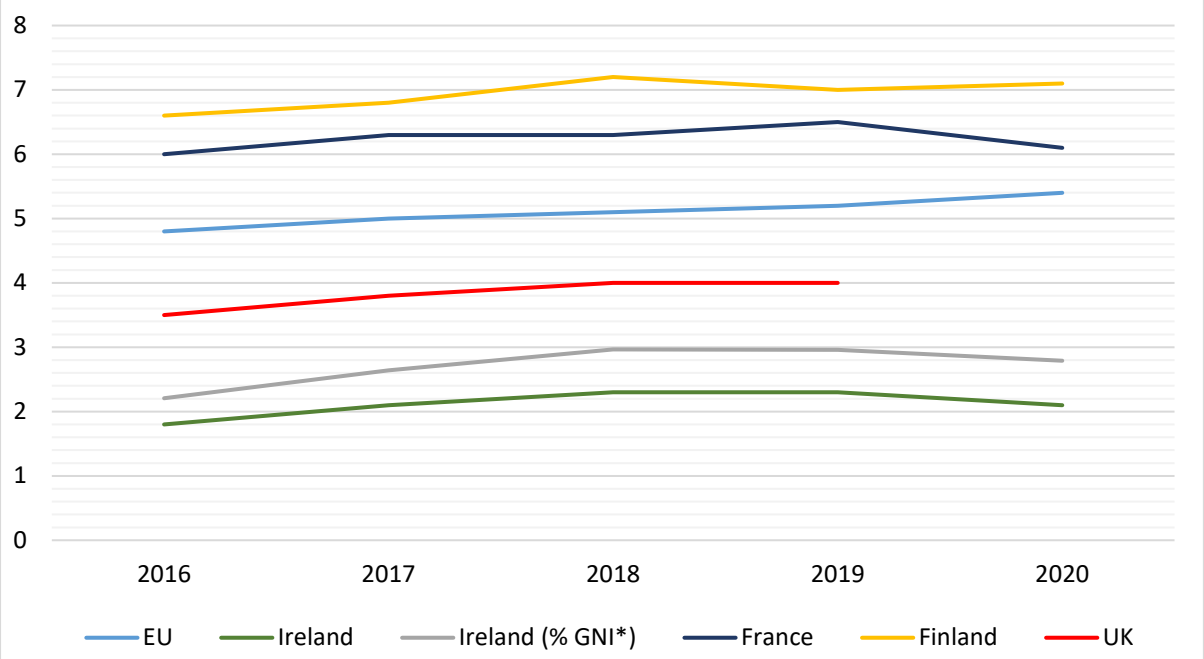
Having outlined many of the challenges which are likely to confront the domestic economy in significantly scaling up housing construction, in this section we outline a number of possible policy actions that could be taken to ease the burden many of these constraints impose.

5.1 Public investment

Investment is an important resource in the provision of housing. Section 2.1 recognises this importance by examining GDFCF in different sections of the construction sector. Section 4 also acknowledges this by examining the current financial markets and allocation of credit as these areas have a large impact on the private sector's ability to invest and produce housing units. This section seeks to take a closer look at Irish investment in housing in comparison to other European countries. Figure 21 shows the levels of investment in housing as a percentage of GDP across several European countries.

Investment is an important indicator in the provision of housing. Section 2.1 examines GDFCF in different sections of the construction sector, while Section 4 evaluates current financial markets and the allocation of credit which have a large impact on the private sector's ability to invest and produce housing units. This section seeks to take a closer look at Irish investment in housing in comparison to other OECD and European countries. Figure 21 shows the levels of total investment in housing as a percentage of GDP across several European countries.

FIGURE 21 INVESTMENT IN HOUSING (GDFCF % GDP)

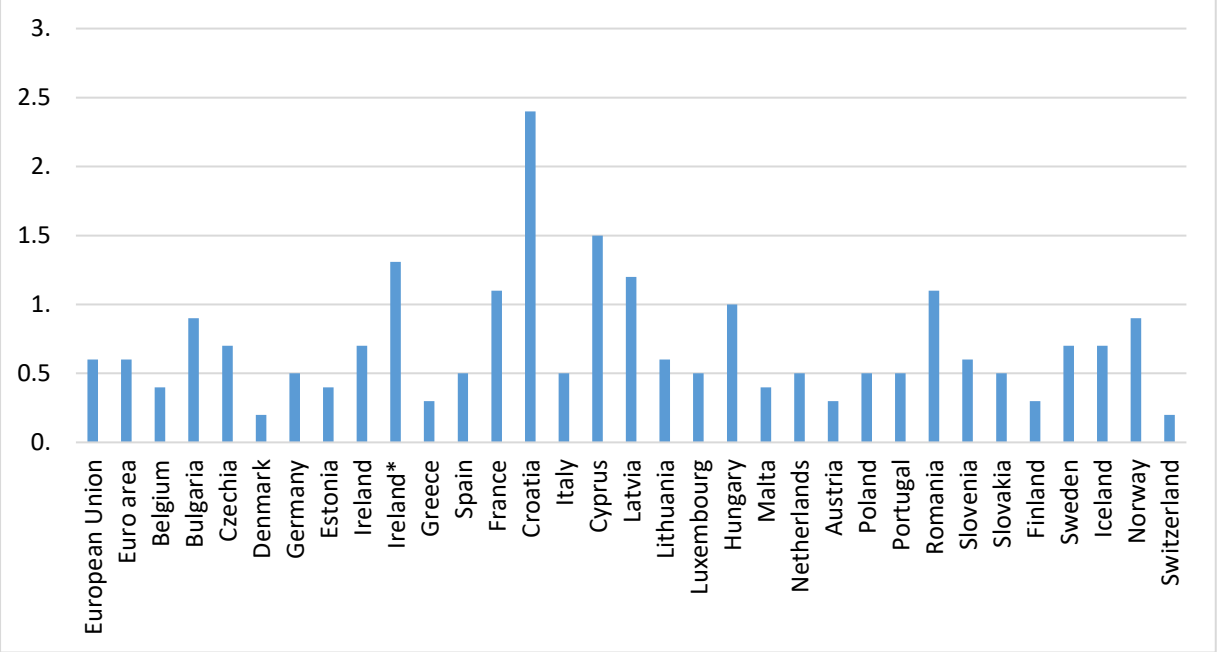


Source: Eurostat.

Ireland's levels of investment as a proportion of GDP and as a proportion of GNI* are somewhat lower than many other European countries in recent years and lower than the EU average.

In terms of public expenditure on housing it is useful to compare domestic expenditure levels with those of other European countries. Eurostat publishes data on 'Government expenditure on housing and community amenities'.[38] This is based on general government expenditure data for 'housing and community amenities' (according to the Classification of the Functions of Government – COFOG).[39] Figure 22 presents data in 2020 for a sample of European countries as a percentage of GDP.

FIGURE 22 TOTAL GOVERNMENT EXPENDITURE ON HOUSING AND COMMUNITY AMENITIES, 2020 (% OF GDP)



Source: Eurostat.

From the graph it is clear that when expressed as a percentage of GDP, Irish expenditure levels are at the average rate across countries (0.7 per cent of GDP). However, this changes when the expenditure level is expressed as a percentage of GNI* (Ireland*). In that instance, expenditure levels are 1.3 per cent of national income.[40] Nevertheless, as noted in OECD (2020) on average across 32 OECD countries for which data are available, public investment (capital transfers as well as direct investment) in housing and community development increased gradually from 2000 up until the Global Financial Crisis, followed by a significant decline in the years after the GFC. Since then, public investment has, on average, failed to return to 2000 levels.

38 https://ec.europa.eu/eurostat/databrowser/view/gov_10a_exp/default/table?lang=en.

39 https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Classification_of_the_functions_of_government_(COFOG).

40 Not all publicly provided housing is included in this amount. For example, in an Irish context output from approved housing bodies (AHBs) and the Housing Finance Agency (HFA) is not included.

A number of commentators have called for greater levels of State investment in the domestic housing sector. McQuinn (2021) highlights how the current interest rate regime and forecasted growth rates for the Irish economy make it possible to provide for a significant increase in public sector funding for housing investment. This may be accompanied by policy changes of the EU fiscal rules, which could see national Governments enabled to provide greater levels of public investment in areas such as housing.

Finally, the onset of a higher interest rate environment does introduce a note of caution as far as increased government borrowing is concerned. Because of this changed policy environment, the Irish Government, like most Western economies, is less well placed to increase government borrowing than it was at the onset of the recent inflationary period.

5.2 Vacant homes

Greater use of vacant homes is another policy option to address the imbalance between housing demand and supply. In GeoDirectory's most recent *Residential Buildings Report*, they identify 90,158 vacant homes and 22,096 derelict homes. These homes are spread across the country, with lower vacancy rates in urban areas and the Greater Dublin Area (GDA). Nevertheless, these homes represent finished units that are lying idle. Therefore, some of these 90,158 units could be added to the housing stock with much less labour or materials than would be needed for the same number of new units.

There is some debate on how it would be best to bring these vacant units into the housing stock, with some wanting local authorities and Approved Housing Bodies to play a large part in order to allow for an increase in the stock of public and affordable homes. Others have suggested grant schemes to aid individuals to purchase and rejuvenate these units. However, it has been claimed by many that grant schemes such as this can place further upward pressure on prices (McQuinn et al., 2021). One policy that has been implemented as part of Budget 2023 is a tax on vacant homes, which will charge those who own homes and allow them to remain vacant. It is hoped that this will bring vacant housing into the market.

Another initiative to be welcomed in this regard is a compulsory purchase order scheme (CPO) which is being introduced by local authorities.[41] The proposal is that

[41] https://www.gov.ie/en/publication/256b4-vacant-homes/?referrer=http://www.housing.gov.ie/housing/home-ownership/vacant-homes/vacant-homes#:~:text=Compulsory%20Purchase%20Order%20(CPO)%20Programme%20for%20Vacant%20Homes,-

local authorities will purchase vacant properties through their compulsory purchase powers even where these dwellings are not suitable for social housing.

5.3 Modular homes

Another policy option is the greater use of technology in addressing the need for greater levels of construction. There are now alternative methods of construction that could overcome constraints on labour and materials as well as provide better value for money, and do so with a smaller carbon footprint.

One such method is that of factory-built (or modular) houses. This refers to houses that are made in factories off-site. The different elements of the house are then transported and assembled on-site. This method requires much less labour, produces housing units approximately 50 per cent faster than traditional methods and is typically 10-20 per cent cheaper (Eastman and Sacks, 2008; Hussein et al., 2021; MacAskill et al., 2021). This method also ensures a factory-standard house that can be quality assured. The carbon footprint of these houses is smaller than traditional houses due to less waste and higher energy efficiency (Hussein et al., 2021). Finally, these houses can be mass produced, which could see the delivery of a high volume of housing in a short-space of time (Murray, 2018). It is acknowledged that establishing a factory (or factories) would constitute a significant expense, therefore a commitment to build a certain number of units is required for the approach to be cost efficient. An example of a company producing these houses is BoKlok – an IKEA-owned company that produces factory-made housing in Sweden, Norway, Finland and the UK. BoKlok produces timber-frame houses quickly and at low cost.

Other methods include 3-D printing and new alternative inputs. The obvious advantages to these alternative methods are that they would aid in overcoming labour shortages and large increases in the prices of materials. However, there are other advantages also. These methods would be much more environmentally friendly as they could produce houses using low-carbon materials. They also produce much less waste and are more efficient when produced at scale.

The use of modular construction on a widespread basis may also present an opportunity for 'crowding in' between the State and the private sector. A commitment by the State to build a certain number of modular units per annum may lead to the production technology being more commercially viable in the Irish market and hence available to the domestic construction sector.

A%20major%20programme&text=It%20is%20expected%20that%20local,not%20suitable%20for%20social%20housing
.

Also, the greater use of modular homes would help with increased output in the residential property market being consistent with the emissions targets outlined for the construction sector under the Government's Action Plan on Climate Change.

5.4 Land market

Another area where policy could potentially have a significant impact is in greater regulation of the land market. Sweeney (2022) recently outlines key difficulties with the Irish land market. Land prices in Ireland have been volatile historically, with changes in house prices causing land prices to vary substantially mainly due to land speculation.

A key recommendation from Sweeney (2022) is that a national agency such as the Land Development Agency be used to acquire and regulate the use of land for residential development. Such a body would have the capacity to acquire both public and private land and develop the land for residential purposes. This would result in the speculative component of land prices being greatly reduced resulting in a potentially sizeable reduction in a key cost of housing construction. It would appear that this is one area where domestic policy could have a significant impact on the cost of building a house.

However, it should be noted that given the highly litigious nature of the Irish property sector, the legal challenges in acquiring land in this manner would likely be significant.

Fully serviced land could then be allocated to the LDA, the local authority, an AHB, or to the private market. This would lead to active land development and centralised land management based on long-term planning. It would also avoid the possibility of private developers, local authorities, and AHBs all attempting to acquire the same development land causing the price to increase.

5.5 Labour supply

As discussed throughout the paper, labour supply will be an extremely important element of increased residential construction. Hence, labour supply policies will be required to ensure that labour supply is sufficient. As discussed in Section 2, an increased level of employment has been concentrated in the commercial or non-residential side of the construction sector since 2013. This is largely due to the fact that there is simply a greater level of activity in the commercial construction sector at present. If the State were to increase investment and commit to building a large number of units per annum, the increased activity would cause an increase in the demand for labour for residential construction. This would see a greater number of construction workers shift to the residential side of the sector. Additionally, as

was mentioned above, it is believed that larger levels of State involvement would lead to increased private investment due to lower perceived risk, i.e. crowding in, which would likely see further movement of labour and also investment from the commercial construction sector to the residential construction sector. This would make sense given the current trajectory of remote/hybrid working and the effect that will have on the demand for office space.

Additionally, the importance of migration historically has also been discussed in Section 2.2. In order to attract construction workers to Ireland, it is worth considering the addition of certain construction skills to the Critical Skills Employment Permit (CSEP) list. The CSEP has historically been used to attract high-skilled workers such as ICT and Engineering professionals and also workers whose skills are deemed in short-supply, such as nurses and midwives. Therefore, certain roles/skills in the construction sector could be identified and added to the CSEP list to attract workers currently in short supply. These skills may include bricklayers, carpenters, roofers, electricians, and other roles that are fundamental to the building process.

It is also possible to source these skills and workers domestically through training. One avenue the government has been keen to explore is that of apprenticeships, with the launch of an action plan in 2021 with the goal of increasing the number of registered apprentices to 10,000 per year by 2025. The action plan sets out to achieve this by creating a new National Apprenticeship Office to drive reforms. The State will provide a grant for employers to take on apprentices with a top-up grant for certain skills, such as the construction skills listed above, as well as non-financial supports such as recruitment and supervision of apprentices. It is understood that the public sector will also begin to offer apprenticeship positions.[42] It is important that the provision of these training schemes would be impervious to the business cycle in the construction sector. The occurrence of the financial crash in 2008 resulted in a large decrease in construction activity and a decrease in construction apprenticeship registrations of 93 per cent during the economic downturn (Ó Murchadha and Murphy, 2016). The apprenticeship model in Ireland is yet to fully recover, and this has contributed to the skills shortage observed in the sector today. A notable feature of apprenticeships is that they do not just provide cheap labour in the form of semi-skilled operatives, they also develop young workers into construction managers and other skilled roles where a background in the sector is key (Ó Murchadha and Murphy, 2016). Hence, increased apprenticeship and training programmes will also prove an important source of labour in the coming years.

42 The Government's action plan can be read here: 00c012f4-531c-4578-b8bb-179db4351939.pdf (www.gov.ie).

6. CONCLUSION

This paper has identified potential constraints in many areas of the Irish economy as the domestic construction sector is set to increase its scale of residential output. These constraints range from employment and migration to financial and funding conditions. It is clear that a number of constraints are evident in the provision of extra housing. Furthermore, it is evident that the recent period of inflationary pressures observed generally will exacerbate some of these pressures. The paper has also availed of new developments in COSMO, the macroeconomic model of the Irish economy, to examine the impact of increased housing construction on a number of key housing and general economy variables. This has the benefit of nesting analysis of the residential sector within the broader economy.

The paper has also proposed ways of ameliorating over the medium to long term the challenges that are identified in scaling up housing output. This is possible through increased State investment in the housing sector, tackling vacant housing, diversifying production methods and structural reform of the land market. These policies would lead to a larger public and affordable housing stock, a greater balance of investment between the residential and non-residential sides of the construction sector, and in certain instances the 'crowding in' of private investment in the market.

Finally, it is imperative that any policy measures introduced to stimulate activity in the housing market must be consistent and coherent with those necessary to achieve the targets set out in the Government's Action Plan on Climate Change.

BIBLIOGRAPHY

Ahern-Flynn, H., G. Brady and F. O'Brien (2021). *Quarterly Economic Outlook Q4 2021 – IBEC*. Irish Business and Employers Confederation (IBEC).

Allen-Coghlan M., K. McQuinn and C. O'Toole (2020). 'Assessing the impacts of COVID-19 on the Irish property market: An overview of the issues', Special Article, *Quarterly Economic Commentary*, Autumn, Dublin: The Economic and Social Research Institute.

Beckmann, J., K.-J. Gern, P. Hauber, N. Jannsen and U. Stolzenburg (2021). *Rising Inflation: Transitory or Cause for Concern?* European Parliament's committee on Economic and Monetary Affairs (ECON).

Bergin A. and A. Garcia-Rodriguez (2020). *Regional demographics and structural housing demand at a county level*, Economic and Social Research Institute Research Series No. 111, December.

Bergin A., N. Conroy, A. Rodriguez, D. Holland, N. McInerney, E. Morgenroth and D. Smith (2017). 'COSMO: A new Core Structural MOdel for Ireland'. Working paper No. 553, Economic and Social Research Institute (ESRI).

Bergin, A., P. Economides, A. Garcia-Rodriguez and G. Murphy (2019). 'Ireland and Brexit: modelling the impact of deal and no-deal scenarios', Special Article, *Quarterly Economic* Commentary, Economic and Social Research Institute (ESRI), accessed at https://doi.org/10.26504/qec2019spr_sa_bergi.

Central Bank of Ireland (2011). *Financial measures programme report*, Central Bank of Ireland, March.

Central Statistics Office (2022). *Wholesale Price Index February 2022.* URL https://www.cso.ie/en/releasesandpublications/er/wpi/wholesalepriceindexfebruary2022/ (accessed 12.04.22).

Central Statistics Office (2022). *Wholesale Price Index October 2021*, Available at: https://www.cso.ie/en/releasesandpublications/er/wpi/wholesalepriceindexoctober2021/ (accessed 12.10.21).

Conefrey, T., G. O'Reilly and G. Walsh (2018). *Modelling External Shocks in a Small Open Economy: The Case of Ireland*, National Institute Economic Review, National Institute of Economic and Social Research, 244(1), 56-63.

De Santis, R.A. (2022). *Sources of supply chain disruptions and their impact on euro area manufacturing* (No. 8/2021), ECB Economic Bulletin. European Central Bank.

Department of Housing, Local Government and Heritage (2021). *Housing for All – a New Housing Plan for Ireland*, Report, Department of Housing, Local Government and Heritage.

Duffy D., D. Foley, N. McInerney and K. McQuinn (2016). 'Demographic change, long-run housing demand and the related challenges for the Irish banking sector', in *Ireland's Economic Outlook*: The Economic and Social Research Institute, December.

Eastman, C.M. and R. Sacks (2008). 'Relative Productivity in the AEC Industries in the United States for On-Site and Off-Site Activities', *Journal of*

Construction Engineering and Management, 134, 517-526. https://doi.org/10.1061/(ASCE)0733-9364(2008)134:7(517)

Egan, P and A. Bergin (2022). 'The Impact of Government Spending on the Construction Sector and Housing Market – The Case of Ireland', Working Paper, ESRI.

Egan, P., K. McQuinn and C. O' Toole (2022). 'A Revised Financial Satellite Model for COSMO', Working Paper, Economic and Social Research Institute.

European Commission Directorate General for Economic and Financial Affairs (2022). *European economic forecast: Winter 2022* (Interim). Publications Office, LU.

Fleckenstein, Q., M. Gopal, G. Gutierrez Gallardo and S. Hillenbrand (2020). 'Nonbank Lending and Credit Cyclicality', *SSRN Journal.* https://doi.org/10.2139/ssrn.3629232.

Gaffney, E. and C. Hennessy (2022). *Non-bank mortgage lending in Ireland: recent developments and macroprudential considerations*. Central Bank of Ireland.

Gruneberg, S. and K. Folwell (2013). 'The use of gross fixed capital formation as a measure of construction output', *Construction Management and Economics* 31, 359-368. https://doi.org/10.1080/01446193.2013.790555.

Honohan, P., D. Donovan, P. Gorecki and R. Mottiar (2010). 'The Irish banking crisis: regulatory and financial stability policy', MPRA paper 24896, University Library of Munich.

Hussein, M., A.E.E. Eltoukhy, A. Karam, I.A. Shaban and T. Zayed (2021). 'Modelling in off-site construction supply chain management: A review and future directions for sustainable modular integrated construction', *Journal of Cleaner Production*, 310, 127503. https://doi.org/10.1016/j.jclepro.2021.127503.

Lyons, R. (2021). *Institutional investment and the private sector in Ireland*, report for Irish Institutional Property.

MacAskill, S., S. Mostafa, R.A. Stewart, O. Sahin and E. Suprun (2021). 'Offsite construction supply chain strategies for matching affordable rental housing demand: A system dynamics approach', *Sustainable Cities and Society*, 73, 103093. https://doi.org/10.1016/j.scs.2021.103093.

McCarthy, Y. and K. McQuinn (2017). 'Credit conditions in a boom and bust property market: Insights for macro-prudential policy', *The Quarterly Review of Economics and Finance*, 64(C). pp. 171-182.

McGinnity, F., I. Privalko, H. Russell, S. Curristan, A. Stapleton and J. Laurence (2022). *Origin and integration: Housing and family among migrants in the 2016 Irish Census*. ESRI and Department of Children, Equality, Disability, Integration and Youth. https://doi.org/10.26504/bkmnext422.

McQuinn, K. (2021). 'With 'g' greater than 'r', should we be borrowing to increase Irish housing supply?', Special Article, *Quarterly Economic Commentary*, Economic and Social Research Institute. https://doi.org/10.26504/QEC2021SUM_SA_McQuinn.

McQuinn, K., C. O'Toole and R. Slaymaker (2021). 'Credit access, macroprudential rules and policy interventions: Lessons for potential first time buyers', *Journal of Policy Modeling*. https://doi.org/10.1016/j.jpolmod.2021.03.013.

McQuinn, K., C. O'Toole, W. Disch, E. Kenny and E. Shiel (2022). *Quarterly Economic Commentary*, Spring 2022. Economic and Social Research Institute.

Murray, P. (2018). *Factory-made Housing: a solution for London?* New London Architecture, London.

National Competitiveness Council (2021). *Response to Ireland's Competitiveness Challenge 2021*, Publication of the Government's response to the National Competitiveness and Productivity Council report. Available online at https://www.competitiveness.ie/publications/2021/council%20welcomes%20government%20response%20to%20recommendations.pdf.

Ó Murchadha, E. and R. Murphy (2016). *Rethinking apprenticeship training for the construction industry in Ireland*. School of Surveying and Construction Management, Dublin Institute of Technology, Bolton St, Dublin 1, Ireland.

OECD (2020). 'Public spending on support to social rental housing as % GDP'. Available at: https://www.oecd.org/housing/data/affordable-housing-database/housing-policies.htm.

OECD (2022). 'Investment (GFCF)' (indicator). https://doi.org/10.1787/b6793677-en (accessed on 06 December 2022).

Rees, D. and P. Rungcharoenkitkul (2021). *Bottlenecks: Causes and Macroeconomic Implications*. Bank for International Settlements.

Sweeney, R. (2022). *Trading Places: TASC report on land and housing*. TASC, 28 Merrion Square, Dublin 2.

UNCTAD (2022). *Review of Maritime Transport 2022*. United Nations Conference Of Trade and Development, United Nations Publications 405 East 42nd Street, New York, New York 10017 United States of America.

DISTRIBUTIONAL IMPACT OF TAX AND WELFARE POLICIES: BUDGET 2023

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ABSTRACT

Budget 2023 was focused on providing relief to households experiencing reduced purchasing power due to rapid inflation, which is predicted to persist into 2023. In this Special Article we analyse the distributional impact of these reforms. Budget 2023 was unusual as many reforms were one-off measures specifically addressed at combatting cost of living pressures. Compared to a price-indexed 2022 baseline, Budget 2023 left households across the income distribution better off, with the lowest 10 per cent of households experiencing the largest gain; an increase of 1.4 per cent of disposable income. These income gains are driven by one-off measures, with the majority of permanent tax-benefit parameters either being frozen or increased below forecast inflation. Once inflation stabilises – and the need for further one-off measures diminishes – policymakers may wish to consider the adequacy of welfare payments in providing an appropriate standard of living at current market prices.

1. INTRODUCTION

Budget 2023 was announced amidst increasing policy concern about the rising cost of living, as evident in the Budget being brought forward by two weeks to late September. Inflationary pressures that had emerged in the wake of the COVID-19 pandemic and associated shock to spending patterns were amplified by the Russian invasion of Ukraine. This led to a rapid rise in energy prices which Barrett et al. (2022) showed resulted in a substantial increase in energy poverty (households spending more than 10 per cent of disposable income on energy services), with Lydon (2022) and Doorley et al. (2022) highlighting the disproportionate impact of the wider inflationary surge on low-income, elderly and rural households (owing to the fact that energy and food products make up a larger share of their overall expenditure). While policymakers had initially responded to these concerns with a range of measures announced in a 'cost of living package' on 10 February 2022, further increases in inflation – particularly energy inflation – had eroded much of

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the gains from this, leading policymakers to promise measures directed at the rising cost of living in Budget 2023.[44]

In this Special Article we examine the tax and welfare measures announced in Budget 2023. We begin by outlining and assessing the taxation measures in Section 2, before turning to consider the social welfare measures in Section 3. Section 4 presents our analysis of the distributional impact of these measures using SWITCH – the ESRI tax and benefit microsimulation model – as well as the cumulative impact of tax and welfare reforms announced to date by the coalition Government over the period 2020 to 2023. Section 5 concludes.

2. TAXATION MEASURES

Table 1 lists the main taxation measures announced in Budget 2023 alongside the full-year cost estimated by the Department of Finance. While most income tax credits rose in nominal terms, the proportional increase of around 4 per cent was below both the Department of Finance's forecast rate of inflation (7 per cent) and the Central Bank of Ireland's forecast compensation per employee (5.8 per cent). This amounts to an effective tax increase, as these credits are worth less to taxpayers in real terms, while a greater share of aggregate earnings will be exposed to the top 40 per cent rate of tax (i.e. 'fiscal drag').

44 See, for example, https://www.irishtimes.com/ireland/2022/09/08/government-renews-commitment-to-budget-cost-of-living-measures-ahead-of-expected-interest-rate-rise/.

TABLE 1 MAIN BUDGET 2023 TAXATION MEASURES AND ESTIMATED COST

	Cost, € million
Income Tax	
€75 increase to tax credits and rise in Standard Rate Cut-Off	1,226
Rent Tax Credit	200
Universal Social Charge	
USC second band increase from €21,295 to €22,920	77
Housing	
Help-to-Buy extension to 31 Dec 2024	83
Extension of Living City Initiative	0.5
Pre-Letting Expenses	2
Vacant Home Tax	-3
Defective Concrete Products Levy[45]	-80
Carbon Tax	
+€7.50 per tonne of carbon	-151
Excise Duties	
+€0.50 on a packet of 20 cigarettes	-54
Small Cider Producers Excise Relief Scheme	1
Special Exemption Order excise fee reduction	2
VAT	
Zero VAT on newspapers and digital editions	32.5
Zero VAT on defibrillators	0.4
Zero VAT on non-oral Hormone Replacement Therapy	0.8
Zero VAT on non-oral Nicotine Replacement Therapy	0.8
Misc.	
Flat rate compensation percentage for farmers reduced from 5.5% to 5%	-38
Bank Levy extended to the end of 2023	-87
NORA levy reduced to zero	*
One-off cost-of-living measures	
Extension of excise reduction to end of Feb 2023	117
Extension of 9% VAT rate for gas and electricity to the end of Feb 2023	45
Extension of 9% VAT for the hospitality sector to end of Feb 2023	*
20% reduction in public transport extended to end of Dec 2023	194

Source: Budget 2023 Expenditure Report and Budget 2023 Draft Budgetary Plan.
Notes: Costs are in millions of euro per annum and are full year costs for 2023. One-off cost-of-living measures are estimated costs up to a pre-announced end date. Some small schemes are excluded. * indicates no costing was available.

Similarly, the freeze to most Pay Related Social Insurance (PRSI) and Universal Social Charge (USC) thresholds in nominal terms amounts to an effective tax increase for many taxpayers. The main exception to these effective direct tax increases was the change made to the income tax standard rate cut-off (SRCO is the point at which the higher income tax rate of 40 per cent begins to apply). This

[45] Estimated yield from the Defective Concrete Product Levy was reduced to €32 million after the levy was reduced to 5 per cent.

rose by €3,200, meaning a single or individually assessed person will now start paying the 40 per cent rate on earnings above €40,000 (up from €36,800). This represents a proportionate rise of 8.7 per cent, thus outpacing both forecast inflation and earnings growth.

The Government also announced a range of tax measures aimed at addressing issues relating to housing. This includes a new income tax credit for private renters worth €500 per year for those living in unsupported private rental accommodation.[46] This was amended in the Finance Bill to be extended to parents of third-level students who pay their child's rent in Rental Tenancy Board registered leases. The credit will benefit middle income households most as those earning less than circa €18,000 per annum will not have sufficient tax liabilities to benefit from the credit. All renters above this income level will experience a reduction in their income tax liabilities of €500 per year, which will somewhat mitigate the decline in housing affordability for middle income renters shown by Roantree et al. (2022).

The Minister for Finance also announced two new housing related taxes. The first of these is a new Vacant Home Tax which imposes a triple rate of Local Property Tax (LPT) on certain vacant properties. The tax is a welcome supply-side measure of the kind recommended by Morley et al. (2015), Morgenroth (2016), and the Commission on Taxation and Welfare (2022). However, given the low predicted yield (€3 million), the small number of properties affected (less than 9,000),[47] and the relatively low main rate of LPT (0.1029 per cent), the new tax is unlikely to have a material impact on housing supply. This contrasts with the second of the new housing related taxes, a new levy on certain concrete products at the point of first supply to part-fund the (Mica) Defective Concrete Blocks Redress Scheme. Given robust (inelastic) demand for housing and evidence of elastic supply with respect to both prices and costs (Lyons and Günnewig-Mönert, 2022), the economic burden of this new levy is likely to fall on the residents of newly built homes rather than on industry, exacerbating issues of affordability that have been highlighted by Roantree et al. (2022), Doval Tedin and Faubert (2020), and Corrigan et al. (2019) amongst others.

Elsewhere, although the pre-announced increase of €7.50 per tonne of carbon via the carbon tax was implemented on petrol and diesel, the 2 cent per litre levy on diesel and petrol – the NORA levy – was reduced to zero to directly offset the carbon tax at petrol and diesel prices. Other indirect tax measures announced

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46 The Finance Bill 2022 noted that those receiving supported rent from a housing authority, social housing support, a social welfare source or residing in a cost rental accommodation as per the Affordable Housing Act 2021 would not be eligible to avail of the credit.

47 See https://www.oireachtas.ie/en/debates/question/2022-10-18/278/.

include the zero-rating of VAT on newspapers and digital editions, defibrillators, hormone replacement therapy and nicotine replacement therapy. Some cost-of-living measures introduced during 2022 were also extended for a portion or all of 2023. Reductions in VAT from 13.5 to 9.5 per cent for the hospitality sector, gas and electricity were extended until the end of February 2023. The reduction in (non-carbon) excise duties of 20c per litre on petrol and 15c per litre on diesel was also extended until the end of February 2023, while the 20 per cent reduction to public transport will continue for the whole of 2023.

3. SOCIAL WELFARE MEASURES

The Budget also included a number of changes to social welfare parameters alongside a number of temporary measures aimed at cushioning household incomes from supply-side driven inflation. Personal rates of payments for social welfare schemes were increased by €12 per week, with proportionate rises to additional payments for qualifying children and adults. Undifferentiated increases in personal rates of payment have been a recurrent theme across multiple Budgets (see, for example, Roantree et al., 2018; 2021). As there is much variation in the rates of payments across the social welfare system, undifferentiated increases have the effect of changing the connection between levels of payments and adequacy in an ad hoc way that generates uncertainty for, and inequality across, claimants. Increasing rates of payments as a fixed percentage would maintain the relativities within the current system and would – supplemented by a more regular benchmarking exercise – represent a more coherent approach to the setting of welfare payments.

There were also notable reforms to other payments. The Working Family Payment income limits increased by €40 per week and will equate to a €24 increase in weekly payments to those in receipt of the scheme. The income limit and eligibility for the Fuel Allowance also changed quite substantially. For those single and aged under 70, the Fuel Allowance income limit is set as the maximum weekly state contributory pension rate plus €120 per week. As the maximum state contributory pension rate rose by €12 and the additional income buffer rose from €120 to €200 per week, this will expand the recipient base of Fuel Allowance. The Fuel Allowance will be more generous to those aged over 70 from January 2023 onward, with maximum income limits of €500 (a 35 per cent increase) for singles and €1,000 for couples (a 67 per cent increase). However, despite these changes, most permanent changes to the welfare rates were below the forecast rate of inflation for 2023.This will lead to an erosion of purchasing power for those reliant on fixed income sources if one-off measures are not repeated or welfare payments are not significantly increased in Budget 2024.

The welfare package in the Budget was heavily tilted towards one-off welfare and universal payments to mitigate inflation-induced strain on household finances. Three universal energy credits were announced, payable in November 2022, January 2023 and March 2023. This is a significant fiscal outlay, totalling €1.2 billion. A double payment of Child Benefit will also be paid on 1 November 2022. Additionally, a series of one-off lump sums for those in receipt of specific benefits was announced, with payment occurring during November 2022. Those in receipt of Working Family Payment, Disability Allowance, Carer's Support Grant, Blind and Invalidity Pensions receive a €500 lump sum, while those in receipt of the Living Alone and Fuel Allowance receive €200 and €400 respectively. A double payment of most social welfare schemes will also occur in the week commencing 17 October 2022 and has been labelled an 'Autumn bonus'. To help third-level students, there was also a one-off €1,000 reduction to the student contribution for the 2022/2023 academic year.

On the non-cash benefit side, GP Visit Cards are to be made available to all those in households with income less than €46,000 per annum. The roll-out of GP Visit Cards to so many citizens will require negotiation with GPs. There is evidence that this can take time. The announcement of a roll-out of GP visit cards to six- and seven-year-olds was first announced as part of Budget 2020. It was announced again as part of Budget 2022 but has not yet occurred.

The National Childcare Scheme (NCS) saw an increase in the universal subsidy rate from €0.50 per hour to €1.40 per hour. The income limits and rates of payment of the income assessed component of the NCS were not adjusted. A recent survey of 505 parents with children in registered childcare revealed that half of parents were unaware of financial support available through NCS (IPSOS, 2022). This was contrasted to the very high awareness (>90 per cent) of the Early Childhood Care and Education (ECCE) scheme, which offers up to 15 hours of free care per week to pre-school children. Imperfect take-up of welfare schemes is common and there is clearly significant room for increasing awareness of the NCS amongst parents.

TABLE 2 MAIN BUDGET 2023 SOCIAL WELFARE MEASURES AND ESTIMATED COST

	Cost € million
General	
+€12 (under 66) welfare payments, proportionate increase for qualified adults	436.2
+€12 (over 66) welfare payments, proportionate increases qualified for adults	447.3
+€2 for qualified child	30.4
Working Family Payment	
+€40 per week to income thresholds	16.8
Fuel Allowance	
Threshold for >70s increased to €500 per week for singles and €1,000 for couples	53.5
Threshold increase from €120 to €200 above the maximum rate of the State Contributory Pension	9.8
Disregard Disablement Benefit from assessable means	0
Disregard half-rate Carer's Allowance from assessable means	0
Domiciliary Care Allowance	
Increase personal rate by €20.50 per month	14.1
Extend eligibility to parents of children in acute hospital up to six months post-birth	1
Blind Pension and Disability Allowance	
€25 increase in earnings disregard	1
National Childcare Scheme	
Universal subsidy increased from €0.50 per hour to €1.40 per hour	121
Misc.	
€5 increase to top-up payment to Community Employment, TUS and Rural Social Scheme	7.8
+€2,470 to the Farm Assistance income disregard	0.5
Development of a Pilot Food Poverty Programme	0.4
Extend JobPlus scheme for disadvantaged and minority groups	0.1
Free School Books Scheme	42
One-off cost-of-living measures	
3x €200 household energy credits	1,200
Halloween Bonus	316.4
Fuel Allowance €400 lump sum	148.5
Child Benefit Double Payment	170.4
Living Alone Allowance €200 lump sum	46
Working Family Payment €500 lump sum	23
Disability Allowance, Carer's Support Grant, Blind and Invalidity Pension €500 lump sum	175
€1,000 third-level student contribution fee reduction, €1,000 increase to SUSI grant for postgraduate students and one-third decrease in contribution fee for Apprentices	106

Source: Budget 2023 Expenditure Report.
Notes: Costs are in millions of euro per annum and are mostly full year costs for 2023. One-off cost-of-living measures are yields for 2022, except for the three energy credits which will be payable from November 2022, January 2023 and March 2023. Some small schemes are excluded.

4. DISTRIBUTIONAL ANALYSIS

We use SWITCH (the ESRI's tax benefit microsimulation model) and ITSim (an indirect tax microsimulation tool jointly developed by researchers at the ESRI and the Department of Finance) to assess the combined impact of taxation and welfare policy changes on households' incomes. The range of policy reforms modelled is detailed in Appendix 1. SWITCH is linked to data from the 2019 Survey of Income and Living Conditions (SILC), the primary source of information on household incomes collected annually by the CSO. The data are reweighted to be representative of the 2019 population (in terms of demographics, employment, income and social welfare) and uprated to reflect price and income growth between 2019 and the year of analysis. The scale, depth and diversity of this survey allows it to provide an overall picture of the impact of the policy changes on Irish households, which cannot be gained from selected example cases. ITSim estimates the indirect taxes (VAT and excise duties, including carbon taxes) paid by Irish households on the basis of their reported expenditure, collected by the CSO's nationally representative Household Budget Survey (HBS) in 2015-2016.[48]

In a typical year, we estimate the distributional impact of the new Budget and compare this to a counterfactual inflation-indexed system. However, using forecast inflation for 2023 alone in this exercise would fail to account for the very high unexpected inflation rate in 2022. For this reason, we take a three-year perspective and prepare three sets of baseline and reform scenarios that enable us to estimate the change in living standards due to policy changes between 2020 and 2023.

These baseline and reform scenarios investigate the effect of policy changes between (i) 2020 and 2022 (ii) 2022 and 2023 and (iii) 2020 and 2023 on the distribution of income, compared to a scenario of price indexation in each case (Table 3). Given the prevalence of one-off measures announced for 2022 and 2023, each set of scenarios examines the effect of permanent policy changes separately to the effect of one-off measures. None of our three baseline scenarios include any one-off measures. Temporary interventions do not make up part of the permanent policy system and are therefore excluded when constructing a reference point against which current policy changes can be compared.

[48] Incomes are uprated to 2023 levels using earnings indices, and expenditures are uprated to 2023 levels using price growth indices.

TABLE 3 SUMMARY OF BASELINE AND REFORM SCENARIOS

	2020 - 2022			2022 - 2023			2020 - 2023		
	Base 1	Reform 1		Base 2	Reform 2		Base 3	Reform 3	
One-off policies included?	No	No	Yes	No	No	Yes	No	No	Yes
Policy	2020	2022	2022	2022	2023	2023	2020	2023	2023
Indexed to	2022	-	-	2023	-	-	2023	-	-
Indexed by (%)	11.1	-	-	7.1	-	-	19	-	-
Data	2019	2019	2019	2019	2019	2019	2019	2019	2019
Uprated to	2022	2022	2022	2023	2023	2023	2023	2023	2023

Source: Authors' analysis.
Notes: Indexation inflates policy parameters to a given year using CPI. Uprating inflates income levels in the underlying data to a given year using a mixture of earnings and price indices. We use 2022 and 2023 inflation forecasts from the Department of Finance provided at the time of Budget 2023 announcement and available in Department of Finance (2022). One-off policy measures refer to schemes introduced in the Cost-of-Living Budget announced in February 2022 (see Doorley et al., 2022) and specific policies announced in Budget 2023 and listed in Table 2.

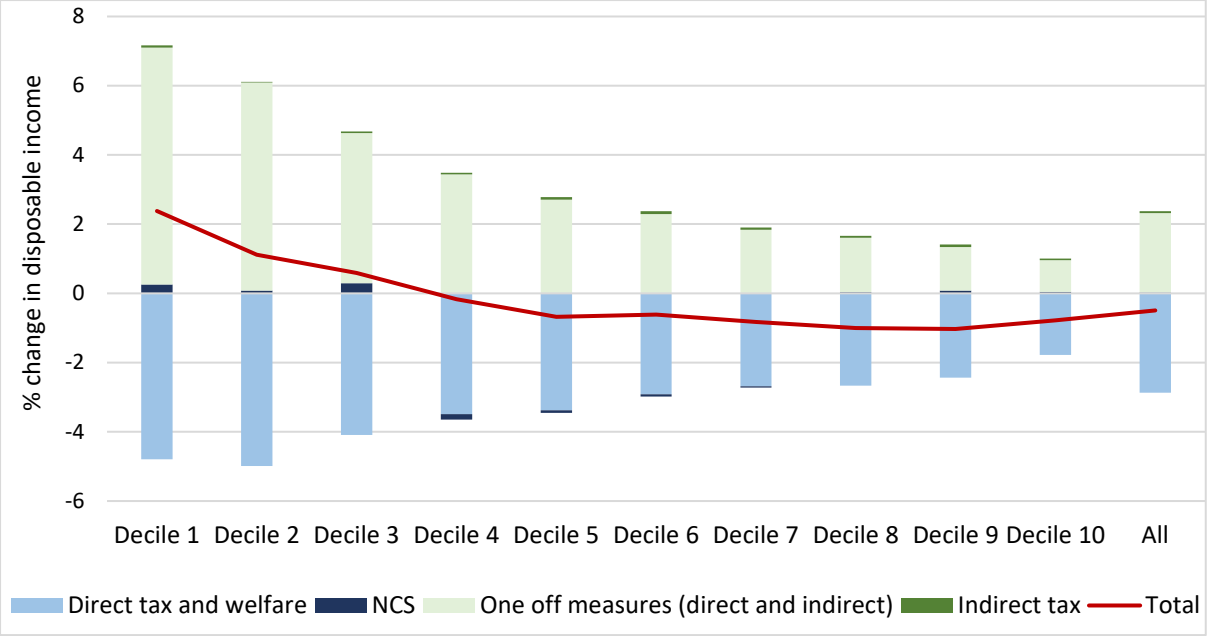
We use SWITCH to calculate households' social welfare entitlements, tax liabilities and net incomes under each system. ITSim calculates households' VAT and excise liabilities, complementing this. The baseline systems are inflation-indexed meaning that the tax credits, bands, thresholds and welfare payments are inflated by the indexation factors included in Table 3, e.g. the 2020 policy parameters increase 11.1 per cent in Base 1, with this factor representing inflation in 2021 and forecast inflation for 2022. Price-indexing provides a benchmark that maintains the purchasing power of households who depend on welfare (at least to the extent that inflation transpires to be no higher than forecast). Wage growth is often cited as a more distributionally neutral benchmark as it ensures equal income growth across the income distribution and keeps average tax rates constant. However, with price growth far outpacing wage growth in 2022, price growth seems a more appropriate benchmark for this exercise.[49]

The effect of policy reform 2020-2022

Figure 1 illustrates the impact of direct tax and welfare and indirect tax policies in 2022 across the distribution of household income, adjusted for family size, with the population divided into ten equally sized groups (deciles) ordered from lowest- to highest income. The reference set of policies is a price-indexed version of the 2020 policy system (disregarding pandemic related policies). The effect of direct tax and welfare measures, indirect tax measures, temporary measures and changes to the National Childcare Scheme are shown separately with the total effect represented by the solid red line.

[49] See Callan et al. (2019) for a discussion of indexation options and the associated issues they raise.

FIGURE 1 THE EFFECT OF BUDGETS 2021 AND 2022 ON THE DISTRIBUTION OF INCOME COMPARED TO A PRICE INDEXED 2020 POLICY



Source: Authors' calculations using ITSim linked to the 2015-2016 Household Budget Survey uprated to 2022 prices, and SWITCH run on 2019 Survey of Income and Living Conditions data and uprated to 2022 income levels.
Notes: Deciles are based on equivalised household income, using CSO national equivalence scales.

Permanent tax and welfare reforms between 2020 and 2022 leave households worse off on average, compared to inflation-proofed policies. The pattern of losses is regressive with low income households losing close to 5 per cent of disposable income compared to losses of 2 per cent of disposable income for higher income households. This pattern reflects the fact that permanent increases to welfare payments did not keep pace with inflation over this period. Higher income households benefit more from the tax band and tax credit increases, which came closer to matching inflation. As a result, income losses in the higher deciles are less pronounced.

Indirect tax policy changes and reforms to the National Childcare Scheme have a small effect on household income across all deciles. Indirect tax reforms result in small increases to household disposable income while the effect of the National Childcare Scheme is mixed across the income distribution. Extensions to the Universal Subsidy and increased hours of subsidised childcare drive positive gains in some deciles, while the freezing in cash terms of the income bands for eligibility for the income-assessed component bring about small losses in others.

One-off measures for 2022 provide substantial support, particularly to lower income households. Temporary measures increase household disposable incomes by 6.8 per cent in the lowest income decile, on average. This positive effect continues across higher income households at diminishing magnitudes, with the

highest income decile benefitting by 0.9 per cent. On average, across all households, the one-off measures increase household incomes by 2.3 per cent. One-off interventions such as energy credits, fuel excise cuts and VAT cuts on electricity and gas benefit lower income households more in relative terms, due to their lower incomes. Lower income households also benefit to a greater extent from one-off social welfare benefit payments announced as part of Budget 2023, such as the one-off Fuel Allowance payment scheduled for November 2022.

On average, Budget 2021 and Budget 2022 (including one-off measures) reduce average household incomes by 0.5 per cent compared to an inflation-indexed 2020 system. Despite the overall loss, there is a progressive pattern to income changes. Income gains are observed in the lowest three deciles (2.4 per cent in decile one), with small income losses occurring in deciles four, five and six and larger losses identified in deciles seven to ten (1 per cent in decile nine). On average, policy measures, particularly temporary ones, protect low-income households from inflation in a progressive manner and insulate richer households from larger income losses.

The effect of Budget 2023

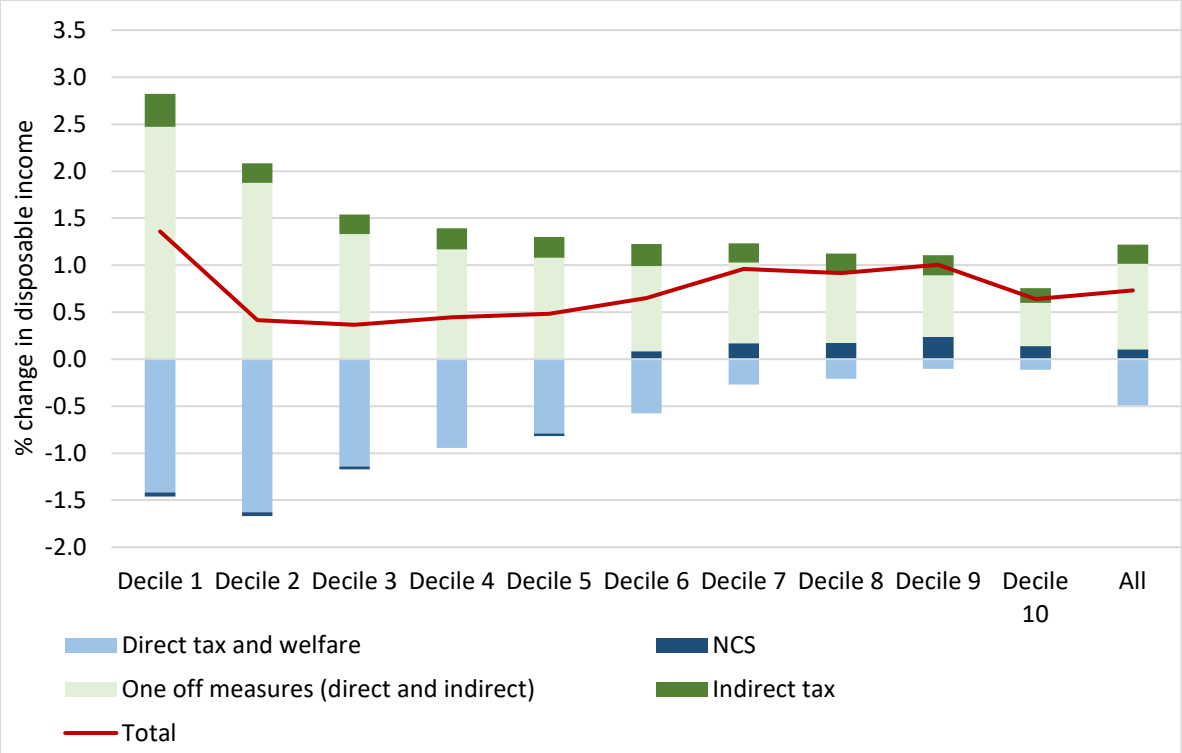
Next, we consider the effect of Budget 2023 compared to an inflation-indexed set of 2022 policies. We employ an indexation factor of 7.1 per cent, corresponding to the Department of Finance's 2023 inflation forecast (Department of Finance, 2022). Figure 2 shows the effect of changes to indirect tax, direct tax and welfare, the NCS, and one-off measures announced as part of Budget 2023 that will come into effect in 2023. The baseline is a price-indexed version of the 2022 tax-benefit system temporary measures.

Permanent direct tax and welfare measures do not keep pace with forecast inflation for 2023 in any decile. Lower income households rely more on welfare payments, which were increased below forecast inflation. Higher income households benefit more from the increases to income tax bands and credits, which come closer to matching price increases. Permanent indirect tax policy changes provide an income gain of 0.2 per cent, on average, across deciles. The increase in the rate of subsidy for the universal component of the NCS mainly benefits higher income households whose income is above the limit for the more generous income-assessed component. The freezing of this income limit means that some lower income households lose their entitlement to the income-assessed component of the NCS, resulting in small losses in disposable income in the lower half of the income distribution.

One-off measures increase incomes by 0.9 per cent on average with some variation across the income distribution. Households in the lowest income decile experience

average income gains of almost 2.5 per cent while those in the highest income decile experience gains of just under 0.5 per cent. This progressive pattern is largely driven by the fact that one-off universal payments, like the energy credit, have a greater relative impact on low-income households.

FIGURE 2 THE EFFECT OF BUDGET 2023 ON THE DISTRIBUTION OF INCOME COMPARED TO A PRICE INDEXED 2022 POLICY



Source: Authors' calculations using ITSim linked to the 2015-2016 Household Budget Survey uprated to 2023 prices, and SWITCH run on 2019 Survey of Income and Living Conditions data, uprated to 2023 income levels.
Notes: Deciles are based on equivalised household income, using CSO national equivalence scales.

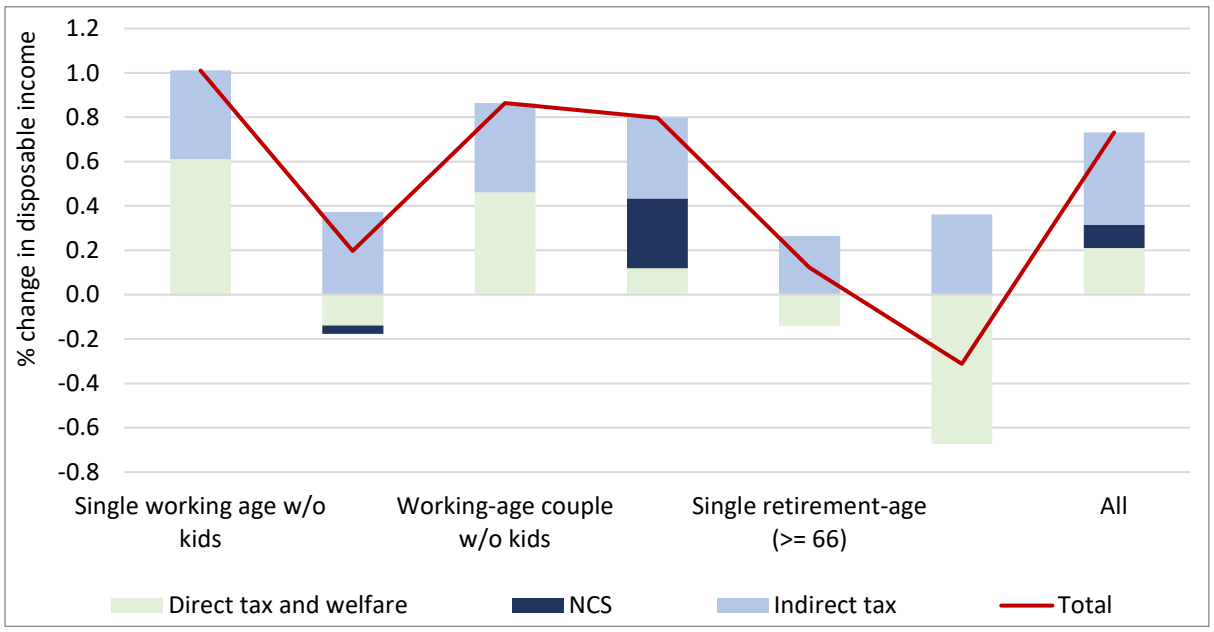
Once again, large one-off measures more than compensate for the set of pre-existing tax-benefit policy changes being outpaced by inflation. Overall, including one-off measures, Budget 2023 leaves households better off on average compared to an inflation-indexed 2022 system. The lowest income decile benefits most (1.4 per cent), with lower gains in the second to sixth decile and tenth decile, and slightly higher gains in deciles seven to nine.

We further examine Budget 2023 by household type, by gender, by earning status and by its effect on income inequality and poverty. All results relate to the Base 2/ Reform 2 with temporary measures scenario, with all one-off policies excluded from the price-indexed 2022 baseline but with one-off policies for 2023 included in the reform.

Figure 3 displays the impact of direct tax and welfare measures and indirect tax policies of Budget 2023 by household type. We show the effect of the NCS separately to other direct tax and welfare to illustrate its effect on the population of families with children. Working-age single and couple households experience income rises of between 0.8 and 1 per cent of household disposable income, compared to an inflation-indexed budget. These household types benefit both from direct and indirect tax and welfare changes. Lone parents and retirement age singles make smaller income gains. Both suffer losses from direct measures, but indirect tax changes counteract these losses for lone parents and partly counteract them for retirement age couples. We observe small losses for lone parents due to the nominal freeze in the rate of the income assessed component of the NCS. The rise in the universal subsidy outweighs this for couples with children who experience a modest gain in disposable income.

Lone parents and retirement age couples benefit relatively less from Budget 2023 than other household types as (i) lone parents are disproportionately affected by the freeze to child benefit and (ii) increases to both the contributory and non-contributory state pensions are further below forecast inflation than increases to working age payments, meaning that retirees fare relatively worse than working-age cohorts. Lone parents and those in retirement are also more likely to be dependent on social welfare compared to other population subgroups, leaving them more exposed to income losses when welfare payments rise less than inflation.

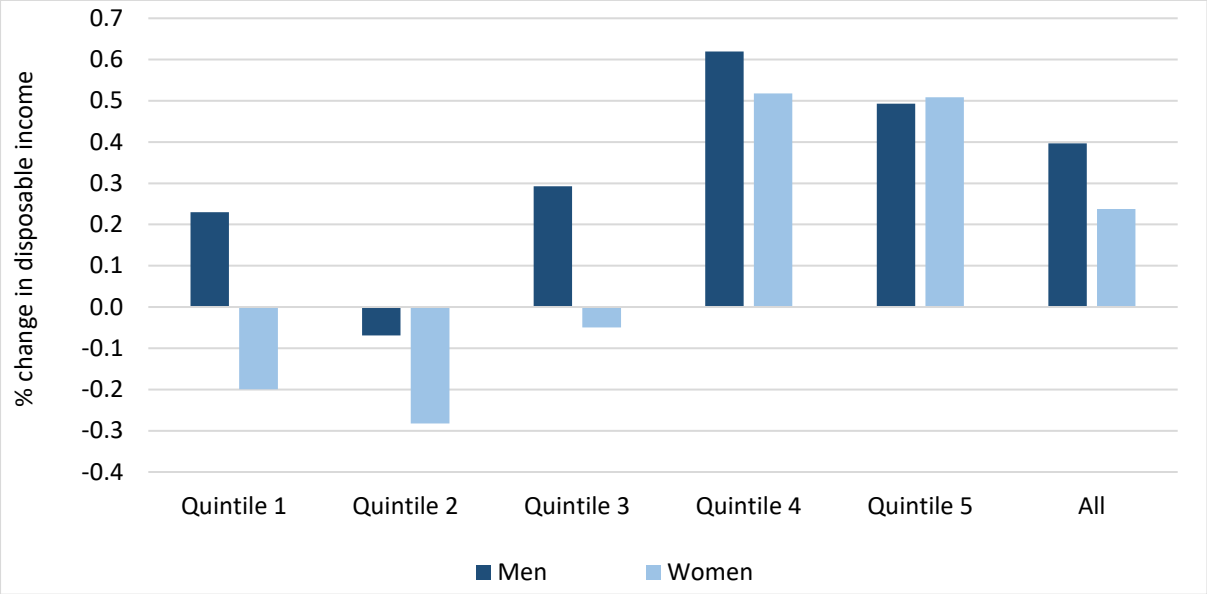
FIGURE 3 THE EFFECT OF BUDGET 2023 BY HOUSEHOLD TYPE COMPARED TO A PRICE INDEXED 2022 POLICY



Source: Authors' calculations using ITSim linked to the 2015-2016 Household Budget Survey uprated to 2023 prices, and SWITCH run on 2019 Survey of Income and Living Conditions data, uprated to 2023 income levels.

Figure 4 charts the estimated effects of direct tax and welfare policy changes from Budget 2023 by gender.[50] We assume that income is split evenly between individuals in a couple. Compared to a price-adjusted budget, our analysis suggests that men benefit slightly more than women from Budget 2023, with a disparity of about 0.5 percentage points in decile 1. The gaps are largest in the lower income deciles. This reflects the fact that women are less likely than men to be employed and benefit relatively less from tax cuts and more from welfare increases.

FIGURE 4 THE EFFECT OF BUDGET 2023 (DIRECT TAX AND WELFARE) BY GENDER COMPARED TO A PRICE INDEXED 2022 POLICY

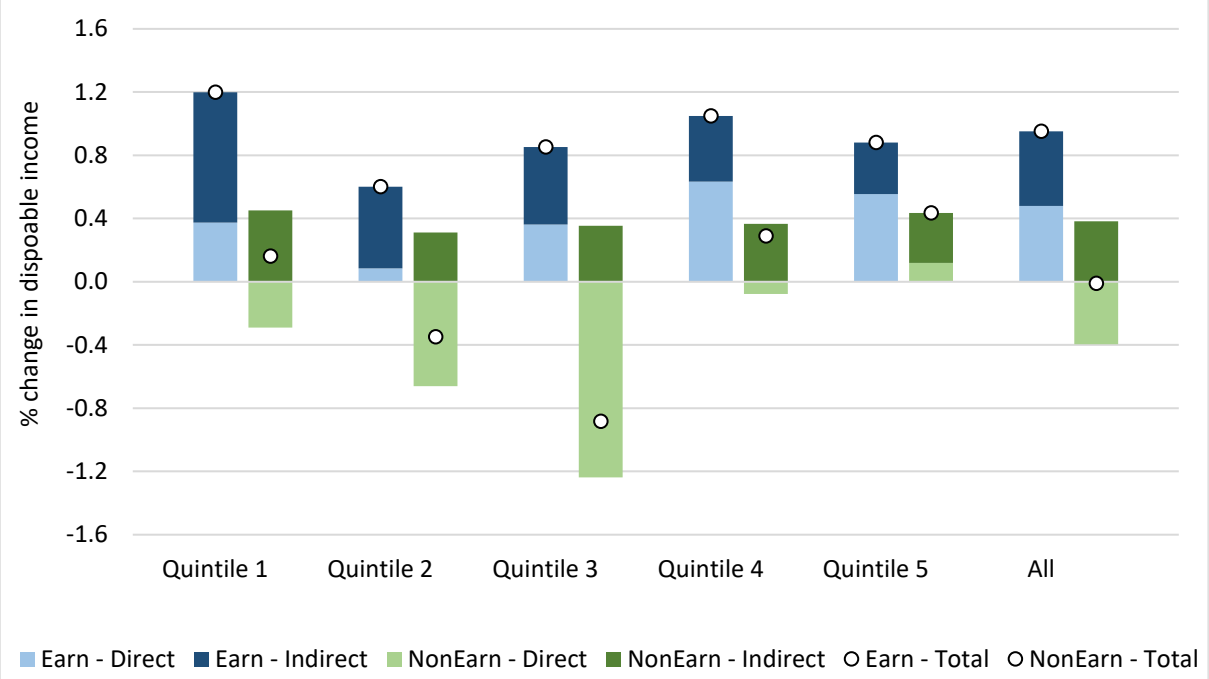


Source: Authors' calculations using SWITCH run on 2019 Survey of Income and Living Conditions data, uprated to 2023 income levels.
Notes: Income is assumed to be fully shared between members of a couple. Quintiles are based on equivalised household income, using CSO national equivalence scales.

Examining the effects of direct tax and welfare and indirect tax changes by earning status, Figure 5 suggests that earners gain relatively more than non-earners from Budget 2023. Higher earners benefit more from direct tax and welfare changes such as above forecast inflation increases to the income tax band. Earners at the lower end of the distribution benefit from the increase to the Working Families Payment income limit. They also gain relatively more from indirect measures such as reduced VAT rates and lower public transport fares. Non-earners in the middle and lower end of the income distribution are left worse off compared to inflation-proofed 2022 policies as a result of below forecast inflation increases to most welfare payments.

50 It is not possible to estimate the gender impact of indirect tax changes using ITSim as expenditure data are collected at the household level. The average income changes in this chart are therefore not directly comparable to those in Figures 2, 3 and 5 as indirect tax changes are excluded.

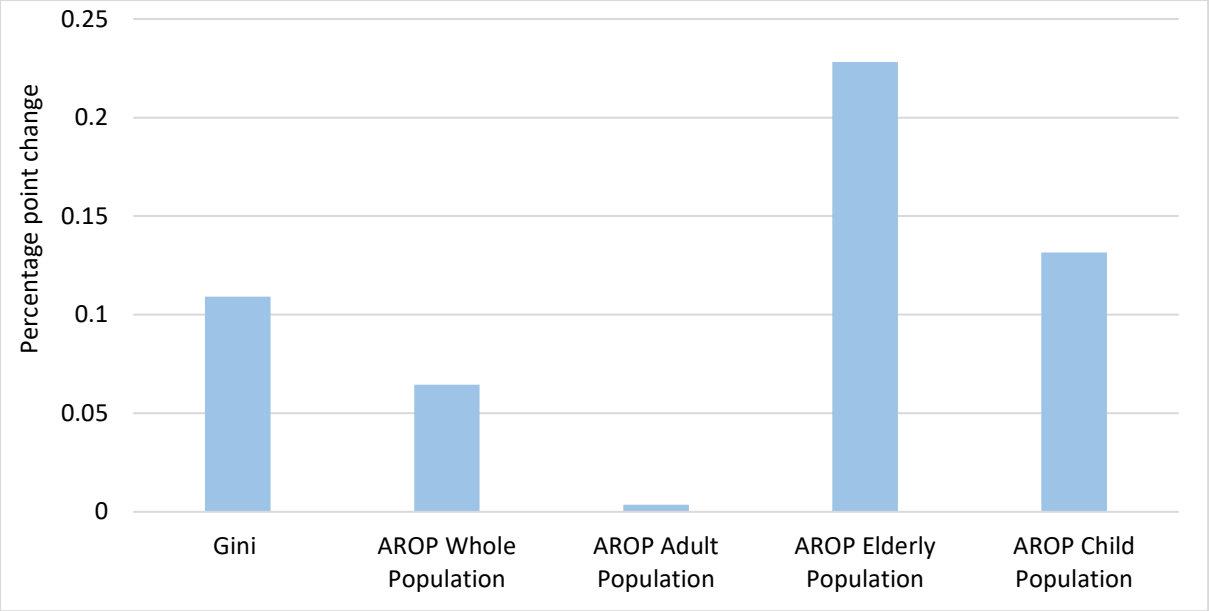
FIGURE 5 THE EFFECT OF BUDGET 2023 BY EARNING STATUS COMPARED TO A PRICE INDEXED 2022 POLICY



Source: Authors' calculations using ITSim linked to the 2015-2016 Household Budget Survey uprated to 2023 prices, and SWITCH run on 2019 Survey of Income and Living Conditions data, uprated to 2023 income levels.
Notes: Quintiles are based on equivalised household income, using CSO national equivalence scales.

Figure 6 shows the estimated effect of Budget 2023 on inequality and 'at risk of poverty' (AROP) measures. Compared to an inflation-indexed system, income inequality, as measured by the Gini index, increases by just over 0.1 percentage point. AROP rates increase across the entire population, but most notably for the elderly and for children. This highlights the fact that these groups are systematically more reliant on social welfare payments, many of which increased below inflation.

FIGURE 6 THE EFFECT OF BUDGET 2023 ON INCOME INEQUALITY AND POVERTY COMPARED TO PRICE-INDEXED 2022 POLICIES



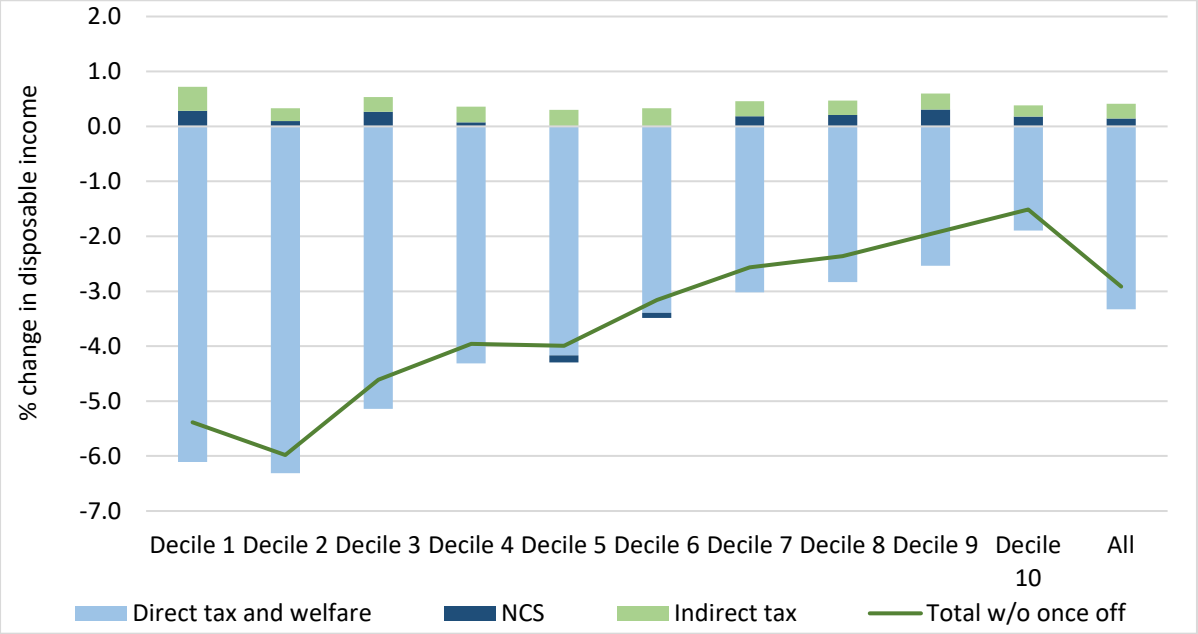
Source: Authors' calculations using SWITCH run on 2019 Survey of Income and Living Conditions data, uprated to 2023 income levels.
Notes: The poverty rate is calculated based on a poverty line equal to 60 per cent of median equivalised disposable income. The CSO equivalence scale is used. Working age defined as aged 18-65 and children as those under age 18.

The effect of permanent policy reform 2020-2023

We next consider how the outlook for households may change if one-off policies are not repeated. To do so, we compare a 2023 policy system without one-off policies to an inflation-indexed 2020 system (Base 3/Reform 3 without temporary measures). Policy parameters in the baseline are indexed by 19 per cent, matching inflation that has occurred and is forecast to occur in 2021, 2022 and 2023.

Figure 7 shows the effects of permanent policy changes in Budget 2023 compared to an inflation-indexed 2020 policy environment. On average, households lose 2.9 per cent of disposable income. Income losses are regressive with lower-income deciles experiencing the greatest erosion in purchasing power. Losses range from 6 per cent in decile 2 to 1.5 per cent in decile 10. There are small average gains across the income distribution resulting from reforms to indirect taxes and the NCS. The average losses, therefore, are overwhelmingly driven by changes to the direct tax and welfare system. This illustrates that permanent policy changes are insufficient to protect the vast majority of households from current and forecast inflation, particularly those with the lowest incomes.

FIGURE 7 DISTRIBUTIONAL ANALYSIS 2020-2023 WITHOUT ONE-OFF MEASURES



Source: Authors' calculations using ITSim linked to the 2015-2016 Household Budget Survey uprated to 2023 prices, and SWITCH run on 2019 Survey of Income and Living Conditions data, uprated to 2023 income levels.
Notes: Deciles are based on equivalised household income, using CSO national equivalence scales.

Comparing Budget 2023 without one-off measures to an inflation-indexed 2020 policy setting conveys the magnitude of the challenge that will be faced in maintaining household living standards when one-off policies lapse. Compared to indexing tax and welfare policies in line with inflation since 2020, Budget 2023 leaves households worse off on average. The permanent budgetary changes – specifically the extension of the standard rate cut-off band – benefit higher income households most, leading to steeper losses for lower income households compared to higher income households.

5. CONCLUSION

Budget 2023 introduced a range of permanent and one-off cost-of-living measures. While these will, on average, insulate households relative to a price-adjusted benchmark, the one-off nature of many of the measures means an erosion of the real purchasing power of structural rates of payments within the social welfare system. There may be a need for further one-off cost-of-living measures in the Winter of 2023 if price rises, particularly energy related, persist next year. Targeted measures will reduce the risk of adding additional demand-side inflationary pressures to the economy.

Once the need for one-off measures to insulate households from inflationary pressures has passed, policymakers may wish to consider benchmarking social welfare payments to reinstate the link between payments and income adequacy.

REFERENCES

Barrett M., N. Farrell and B. Roantree (2022). *Energy poverty and deprivation in Ireland*. ESRI Research Series 144.

Callan, T., C. Keane and M. Regan (2019). *Assessing the distributional impact of budgetary policy: the role of benchmarks and indexation*, Budget Perspectives 2020/2.

Commission on Taxation and Welfare (2022). *Foundations for the Future: Report of the Commission on Taxation and Welfare.*

Corrigan, E., D. Foley, K. McQuinn, C. O'Toole and R. Slaymaker (2019). 'Exploring Affordability in the Irish Housing Market', *The Economic and Social Review,* Vol. 50(1), pp 119-157.

Department of Finance (2022). *Budget 2023 Economic and Fiscal Outlook*.

Doorley, K., M. Regan and B. Roantree (2022). 'The distributional effects of inflation and prospects for income growth', Box B in *Quarterly Economic Commentary* Spring 2022.

Doval Tedin, M.J. and V. Faubert (2020). 'Housing Affordability in Ireland (2020)'. Economic Brief 061, European Commission Directorate-General for Economic and Financial Affairs.

IPSOS (2022). *Childcare Survey of Parents 2022*.

Lydon R. (2022). 'Household characteristics, Irish inflation and the cost of living'. *Economic Letter* Vol 2022(1). Central Bank of Ireland.

Lyons, R. and M. Günnewig-Mönert (2022). 'Housing prices, macro-prudential rules and the elasticity of housing supply: Evidence from Ireland', Working Paper.

Morgenroth, E. (2016). *Housing supply and house price trends: A county level analysis*, ESRI Research Note 2016/1/1, Economic and Social Research Institute, Dublin.

Morley, C., D. Duffy and K. McQuinn (2015). 'A review of housing supply policies', *Quarterly Economic Commentary*: Special Article, Economic and Social Research Institute, Dublin

Roantree, B., M. Bercholz, K. Doorley, C. Keane and M. Regan (2018). 'Budget 2019: Tax and Welfare Changes', *Quarterly Economic Commentary*- Winter 2018 Special Article.

Roantree, B., K. Doorley, T. Kakoulidou and S. O'Malley (2021). Budget 2022, *Quarterly Economic Commentary,* Winter 2021 Special Article.

Roantree, B., M. Barrett and P. Redmond (2022). *Poverty, income inequality and living standards in Ireland*: 2nd annual report.

APPENDIX 1

TABLE A.1 REFORMS MODELLED IN DISTRIBUTIONAL ANALYSIS

Taxation	Cost, €m	Modelled
Income Tax		
€75 increase to tax credits and rise in Standard Rate Cut-Off	1,226	✓
Rent Tax Credit	200	✓
Universal Social Charge		
USC second band increase from €21,295 to €22,920	77	✓
Housing		
Help-to-Buy extension to 31 Dec 2024	83	
Extension of Living City Initiative	0.5	
Pre-Letting Expenses	2	
Vacant Home Tax	-3	
Defective Concrete Products Levy	-80	
Carbon Tax		
+€7.50 per tonne of carbon	-151	✓
Excise Duties		
+€0.50 on a packet of 20 cigarettes	-54	✓
Small Cider Producers Excise Relief Scheme	1	
Special Exemption Order excise fee reduction	2	
VAT		
Zero VAT on newspapers and digital editions	32.5	✓
Zero VAT on defibrillators	0.4	✓
Zero VAT on non-oral Hormone Replacement Therapy	0.8	
Zero VAT on non-oral Nicotine Replacement Therapy	0.8	
Misc.		
Flat rate compensation percentage for farmers reduced from 5.5% to 5%	-38	
Bank Levy extended to the end of 2023	-87	
NORA levy reduced to zero	*	✓
One-off cost-of-living measures		
Extension of excise reduction to end of Feb 2023	117	✓
Extension of 9% VAT rate for gas and electricity to the end of Feb 2023	45	✓
Extension of 9% VAT for the hospitality sector to end of Feb 2023	*	✓
20% reduction in public transport extended to end of Dec 2023	194	✓
Social Welfare	**Cost, €m**	**Modelled**
General		
+€12 (under 66) welfare payments, proportionate increase for qualified adults	436.2	✓
+€12 (over 66) welfare payments, proportionate increases qualified for adults	447.3	✓
+€2 for qualified child	30.4	✓
Working Family Payment		
+€40 per week to income thresholds	16.8	✓

Contd.

TABLE A.1 CONTD.

Social Welfare	Cost, €m	Modelled
Fuel Allowance		
Threshold for >70s increased to €500 per week for singles and €1,000 for couples	53.5	
Threshold increase from €120 to €200 above the maximum rate of the State Contributory Pension	9.8	✓
Disregard Disablement Benefit from assessable means	0	
Disregard half-rate Carer's Allowance from assessable means	0	
Domiciliary Care Allowance		
Increase personal rate by €20.50 per month	14.1	
Extend eligibility to parents of children in acute hospital up to six months post-birth	1	
Blind Pension and Disability Allowance		
€25 increase in earnings disregard	1	✓
National Childcare Scheme		
Universal subsidy increased from €0.50 per hour to €1.40 per hour	121	✓
Misc.		
€5 increase to top-up payment to Community Employment, TUS and Rural Social Scheme	7.8	
+€2,470 to the Farm Assistance income disregard	0.5	
Development of a Pilot Food Poverty Programme	0.4	
Extend JobsPlus scheme for disadvantaged and minority groups	0.1	
Free School Books Scheme	42	✓
One-off cost-of-living measures		
3x €200 household energy credits	1,200	✓
Halloween Bonus	316.4	✓
Fuel Allowance €400 lump sum	148.5	✓
Child Benefit Double Payment	170.4	✓
Living Alone Allowance €200 lump sum	46	✓
Working Family Payment €500 lump sum	23	✓
Disability Allowance, Carer's Support Grant, Blind & Invalidity Pension €500 lump sum	175	✓
€1,000 third-level student contribution fee reduction, €1,000 increase to SUSI grant for postgraduate students and one-third decrease in contribution fee for Apprentices	106	✓

Source: Budget 2023 Expenditure Report and Budget 2023 Draft Budgetary Plan.

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