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KIERAN MCQUINN, CONOR O'TOOLE AND DÓNAL O'SHEA

QUARTERLY ECONOMIC COMMENTARY

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Winter 2024

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SUMMARY TABLE

	2022	2023	2024	2025
Output (real annual growth %)				
Private consumer expenditure	10.9	4.9	2.6	3.2
Public net current expenditure	3.0	4.2	4.3	3.8
Investment	4.1	2.8	-23.4	19.9
Modified investment	10.4	-4.3	4.1	6.8
Exports	13.6	-6.0	9.8	4.3
Imports	16.4	1.3	8.3	5.7
Gross domestic product (GDP)	8.7	-5.7	-1.1	4.5
Modified domestic demand	9.1	2.7	3.2	4.1
Prices (annual growth %)				
Consumer Price Index (CPI)	7.8%	6.3%	2.1%	1.0%
Labour market				
Employment levels ('000)	2,639	2,705	2,760	2,811
Unemployment levels ('000)	122	121	125	125
Unemployment rate (as % of labour force)	4.4%	4.3%	4.3%	4.2%
Public finance				
General government balance (€bn)	8.6	7.5	23.4	9.4
General government balance (% of GDP)	1.7	1.5	4.6	1.8

The Irish economy – Forecast overview

- As we approach the end of the year, the Irish domestic economy looks set to register strong growth in 2024. We expect modified domestic demand (MDD) to increase by 3.2 per cent in 2024 before growing to 4.1 per cent in 2025 driven by real income growth and higher housing investment.
- Overall gross domestic product (GDP) is expected to decline on the back of large intellectual property investment outflows and increased imports.
- Overall, the robust performance means that the labour market has seen a continued increase in employment, with unemployment near to its historically low rate. A research note to the *Commentary* by O'Shea (2024) looks at trends in the Irish labour share over the past 25 years.
- Exchequer receipts have also performed strongly in 2024. Even in the absence of the 'Apple payment', we believe the adjusted general government balance (GGB) will be around 2 per cent of GDP this year.
- However, for 2025, there are notable downside risks, in particular with the potential for the new US administration to implement the economic policies outlined during the presidential campaign. A box by Fitzgerald highlights the ongoing importance of US investment in the Irish economy.
- The prospect of a global trade war, given the Trump administration's proposals on tariffs, the impact of taxation policy on intellectual property location, allied to the possible targeting of the pharmaceutical sector based in Ireland, could have particular implications for both activity levels in the domestic economy and for the Exchequer receipts.
- If these impacts materialise more quickly than expected, particularly those on the public finances, some aspects of planned future expenditure levels outlined in Budget 2025 may have to be revised in the new year.
- While Budget 2025 had a welcome significant commitment to investment in the Irish economy going forward, there were other elements in the Budget which could have been more targeted, as suggested by Doorley et al. (2024).
- With house prices experiencing a resurgence in the present year, the *Commentary* devotes a significant amount of attention to house price dynamics. A box by Egan and McQuinn assesses the sustainability of recent movements while a special article by Kumar Verma and McQuinn (2024) examines the potential influences on house price expectations.

Domestic and international outlook

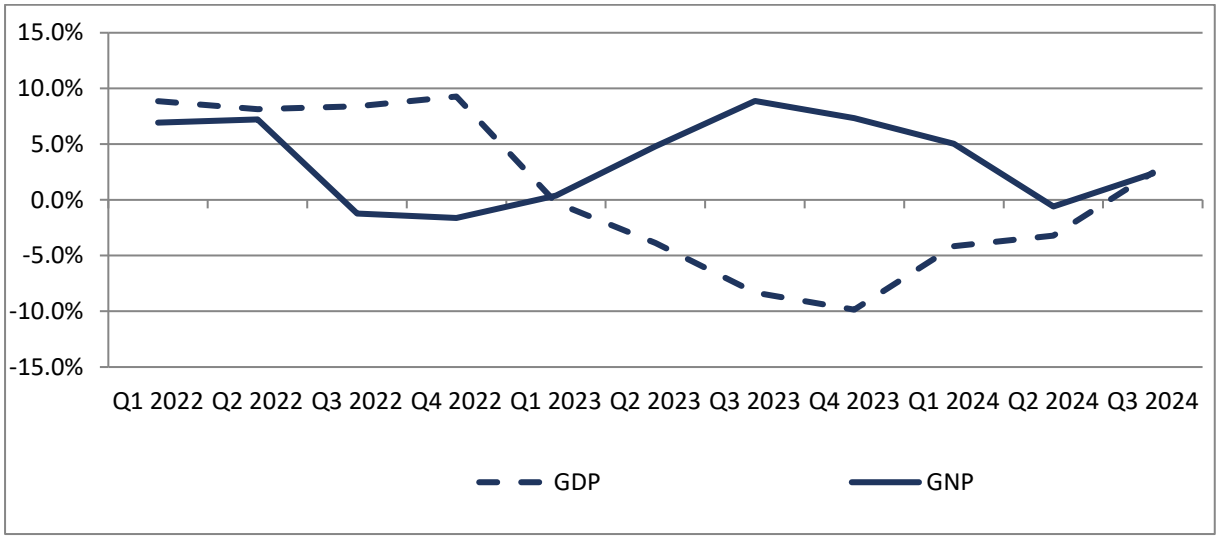
OVERALL OUTLOOK

Dual economy trends continue as multinational risks rise

Ireland's economy continues to display considerable differences in volatility between the multinational dominated sectors and the domestic activity. With a low unemployment rate, quicker than expected disinflation throughout 2024 and high savings rates, households continue to increase spending in a robust fashion. The multinational sector is showing signs of recovery following weak export performance throughout 2023 and in the first two quarters of 2024. In particular, pharmaceutical exports grew strongly in Q3 2024.

Figure 1 highlights the recovery in GDP in Q3 2024, driven by strong export growth. GDP had been experiencing negative growth since the beginning of 2023. It has recovered to grow by 2.5 per cent in Q3 2024.

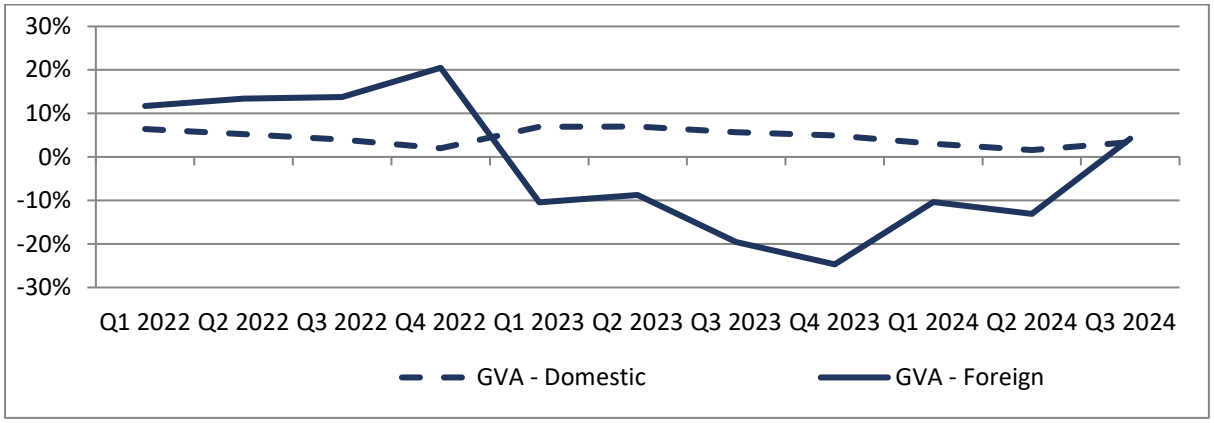
FIGURE 1 GDP AND GNP GROWTH – YEAR-ON-YEAR – CONSTANT PRICES (SA)



Source: Central Statistics Office.
Note: SA=Seasonally adjusted.

The *Commentary* has previously discussed the dual nature of economic activity in Ireland. Figure 2 presents the breakdown of growth in gross value added (GVA) into two sectors defined by the Central Statistics Office (CSO) as foreign-dominated or domestic-oriented. The downward pressure on headline growth in recent quarters has come from the foreign-dominated sector. This trend reversed in Q3 2024, with a growth rate in GVA for the foreign-dominated sector of 4.2 per cent. The domestic-oriented sector has displayed consistent positive growth.

FIGURE 2 GVA GROWTH – YEAR-ON-YEAR – DOMESTIC VS FOREIGN DOMINATED SECTORS – CONSTANT PRICES (SA)



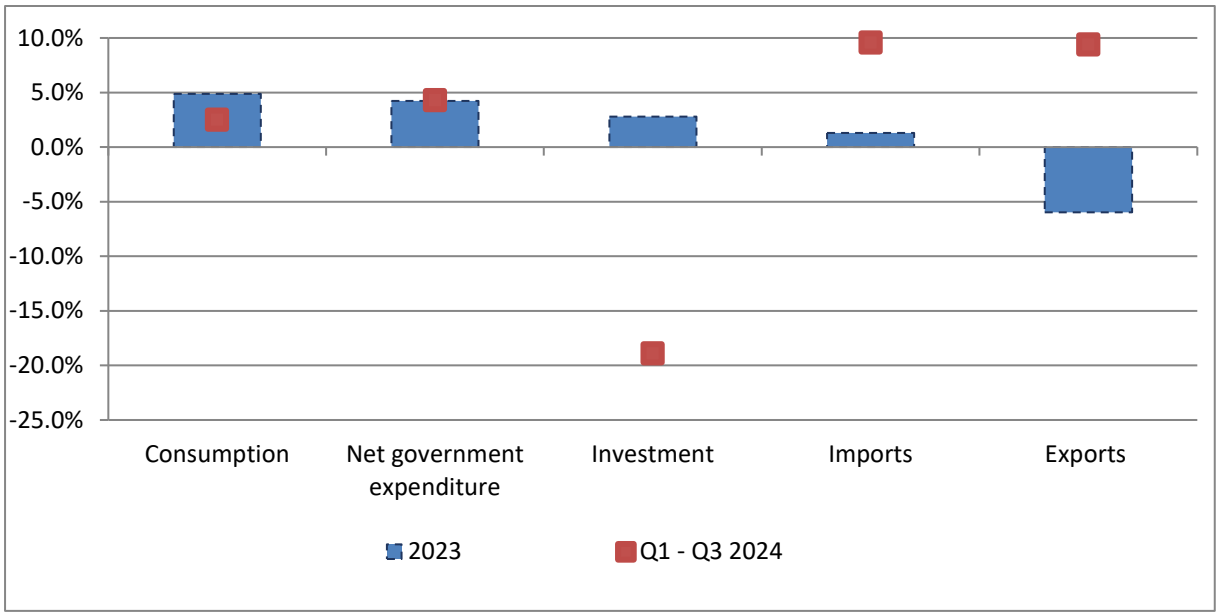
Source: Central Statistics Office.

Figure 3 presents data for the expenditure components of GDP: consumption, government spending, investment, imports and exports. We present the year-on-year growth for 2023 compared to 2022 in blue. For 2024, we compare the first three quarters of 2024 with the same period in 2023 (red).

Growth in household consumption has slowed in 2024, standing at 2.5 per cent for the first three quarters of the year compared with 4.9 per cent in 2023. Net government expenditure is following a similar trend of strong growth to 2023. While overall exports declined in 2023, this trend has reversed in the present year. Exports are up 9.3 per cent for the three quarters, with the largest increase registered in Q3. This comes on the back of a rebound in pharmaceutical exports, continued robust computer services exports as well as increases in the outflows of intangible capital.

The headline growth rate for 2024 of investment is -18.9 per cent, largely attributable to movements in intellectual property in the second quarter of the year. Overall investment figures for the Irish economy can be misleading. Below, we discuss investment in more detail, including modified investment. We also discuss in more detail each of the components of GDP.

FIGURE 3 COMPONENTS OF GDP GROWTH – YEAR-ON-YEAR – CONSTANT PRICES (SA)



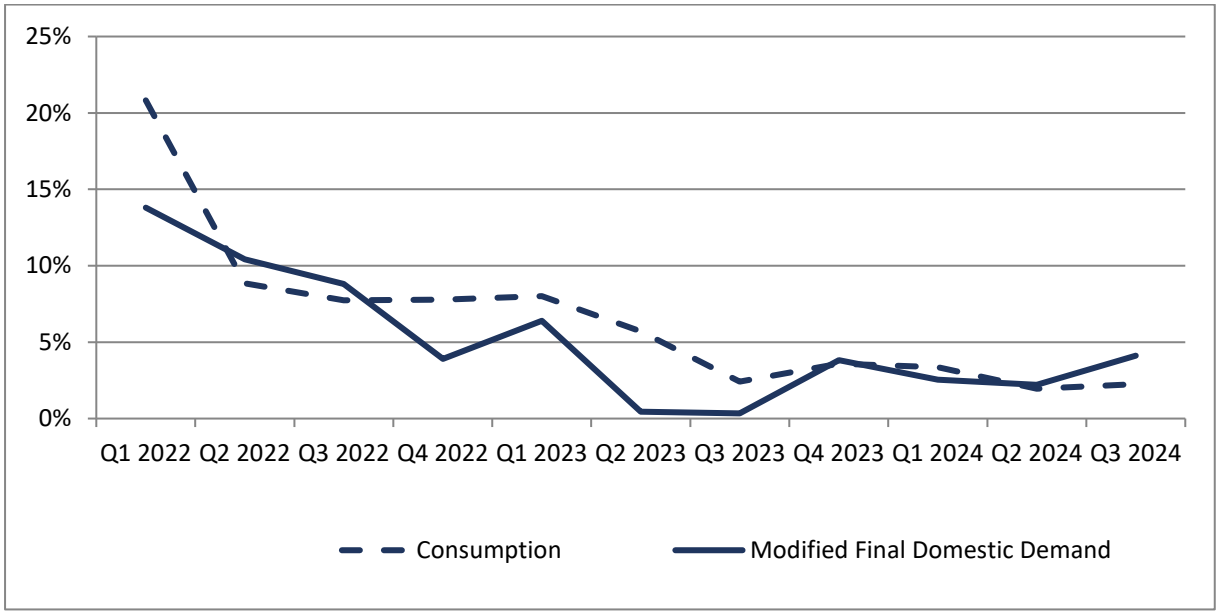
Source: Central Statistics Office.

Figure 4 presents two measures of the underlying performance of the domestic economy that show consistent positive growth this year. During 2023, there was a difference between consumption growth and growth in modified final domestic demand (MDD).[1] This difference was attributable to subdued investment activities because MDD captures some of the movements in investment.

Growth in personal household consumption has remained stable having fallen from double digit highs in 2022. Growth in modified final domestic demand increased to 4.1 per cent in Q3 2024.

1 Modified domestic demand (MDD) is the adjusted domestic demand calculation that replaces overall investment, with the modified series removing aircraft leasing and R&D intellectual property.

FIGURE 4 CONSUMPTION AND MODIFIED FINAL DOMESTIC DEMAND – YEAR-ON-YEAR GROWTH – CONSTANT PRICES (SA)



Source: Central Statistics Office.

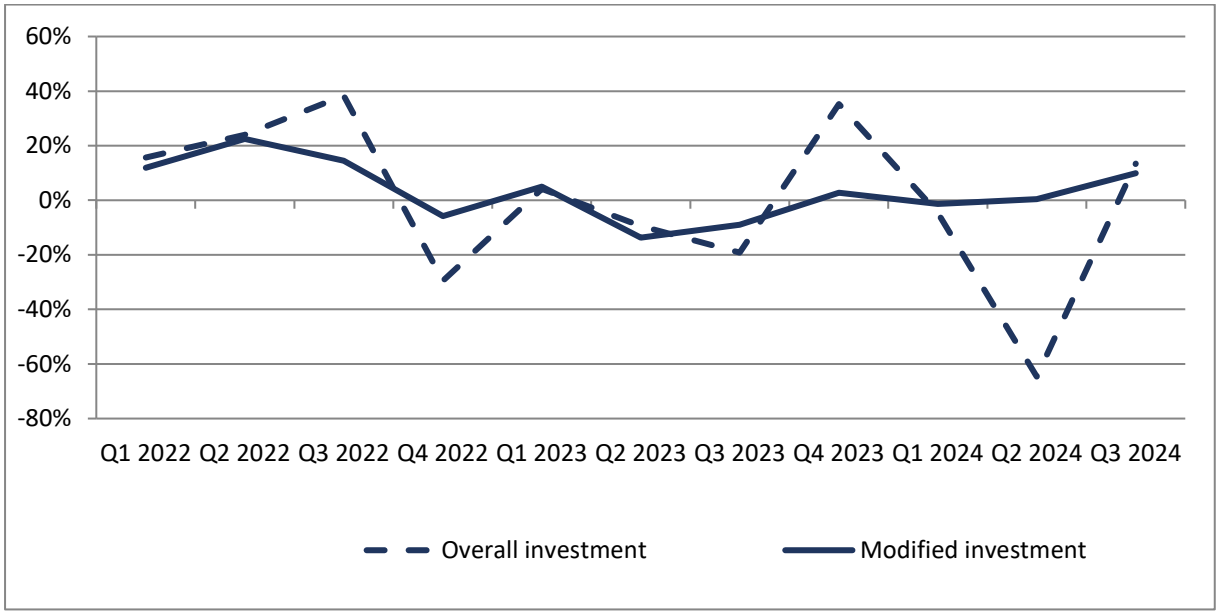
We expect real wages to increase further in 2025, which will drive higher consumption growth of 3.2 per cent in 2025. In terms of headline GDP, we expect a growth rate of -1.1 per cent in 2024 and 4.5 per cent in 2025. The decline in the present year is driven by the overall drop in investment due to intellectual property outflows and a rapid increase in imports, which have outweighted the increase in exports.

Investment volatility continues with construction activity slow in 2024

We distinguish between headline and modified investment in Figure 5. Modified investment had been declining slightly in 2024 up to its third quarter, when it rebounded strongly to reach a growth rate of 10 per cent. This rebound follows a more significant drop during 2023 as the cost of financing and global uncertainties weighed on the business outlook.

Headline investment has been far more volatile. The previous edition of the *Commentary* discussed the sharp decline in Q2 2024, which was attributable to a large fall in intangible assets as a result of multinational intellectual property activity. The headline figure has recovered in the third quarter to a growth rate of 13.4 per cent relative to the third quarter of 2023.

FIGURE 5 OVERALL INVESTMENT AND MODIFIED INVESTMENT – YEAR-ON-YEAR GROWTH – CONSTANT PRICES (SA)



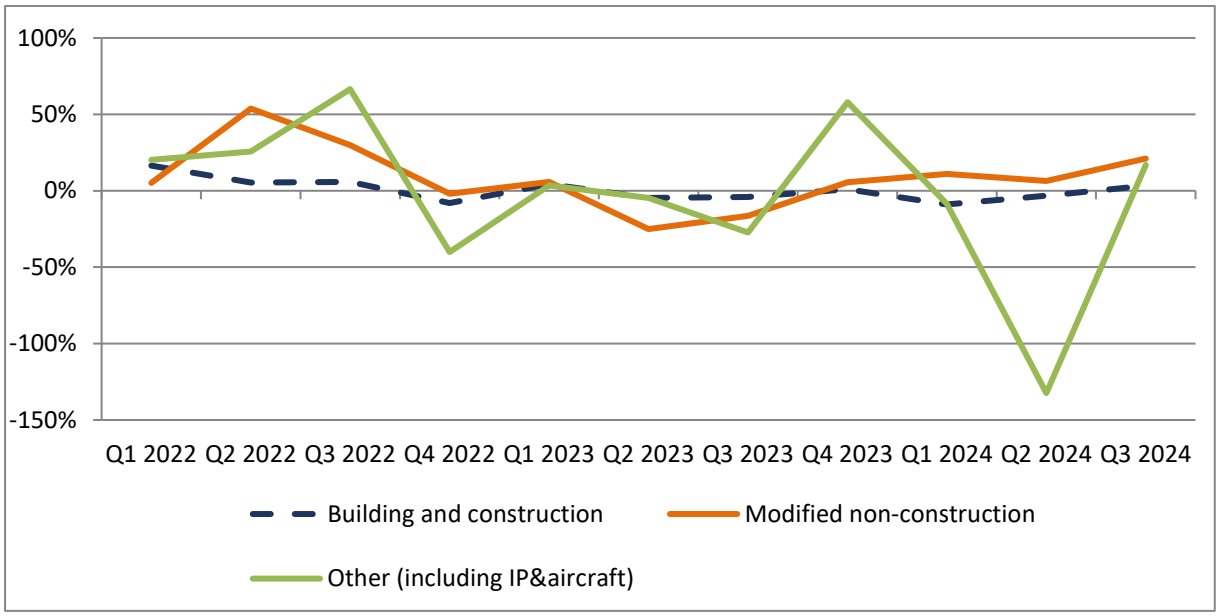
Source: Central Statistics Office.

To unpick the trends in the investment subcomponents, Figure 6 presents the year-on-year growth rate on a quarterly basis for the following sub-series: 'building and construction investment', 'modified investment excluding construction' and 'other investment'. 'Other investment' is a residual calculated as total investment minus modified investment to capture distortionary investments from intellectual property and aircraft leasing.[2]

The volatility in investment is clearly driven by the 'other investment' series. For 'building and construction investment' and 'modified investment excluding construction', growth was subdued during 2023. Investment in both sectors is showing signs of recovery, with growth rates of 3.3 per cent and 17.0 per cent respectively.

2 These calculations are undertaken due to redactions in the underlying data.

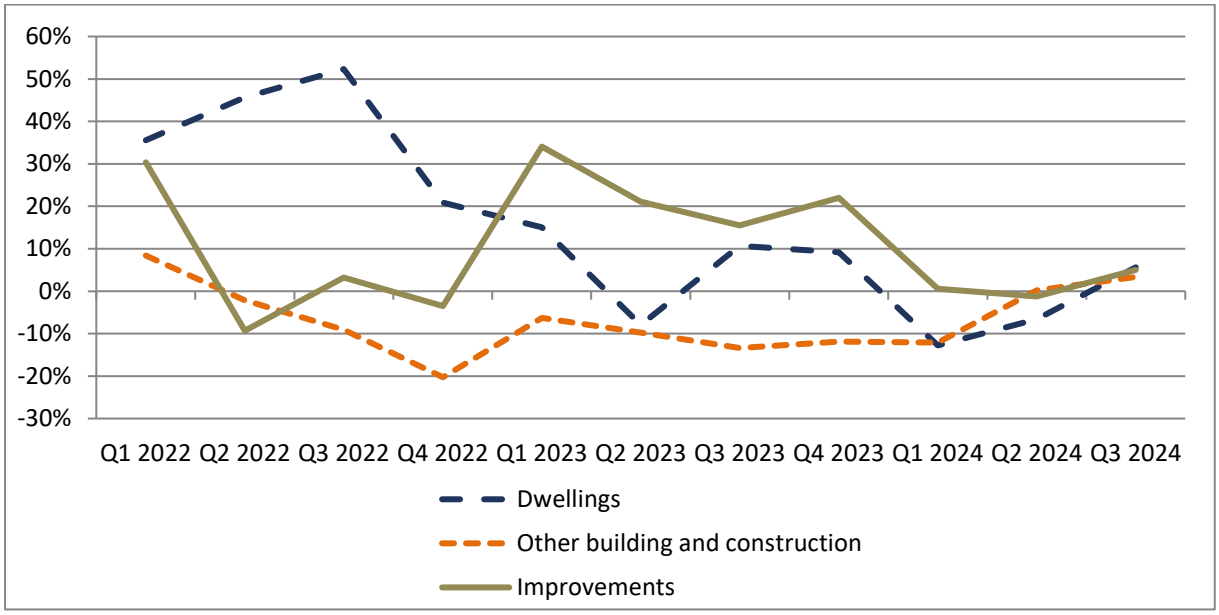
FIGURE 6 COMPONENTS OF INVESTMENT – YEAR-ON-YEAR GROWTH – CONSTANT PRICES (SA)



Source: Central Statistics Office.
Notes: Modified non-construction series is calculated by subtracting building and construction from total modified. Other investment is calculated by removing modified investment from total investment. IP=Intellectual property.

We examine the sub-components of investment in construction in Figure 7. Movements in construction investment have been characterised by countervailing effects across the sub-sectors. However, the difference between the sub-sectors has narrowed in 2024. All three sub-components registered positive growth in Q3 2024. Encouragingly, investment in dwellings has returned to positive growth following two successive quarters of negative growth.

FIGURE 7 COMPONENTS OF BUILDING AND CONSTRUCTION INVESTMENT – YEAR-ON-YEAR GROWTH – CONSTANT PRICES



Source: Central Statistics Office.

Overall, we expect investment to decline by 23.4 per cent in 2024, mainly because of the drop in intellectual property activity outlined above. We expect this sharp decline to reverse in 2025, with a growth rate of 19.9 per cent for the year.[3] For the more stable modified investment, we expect growth of 4.1 per cent in 2024 but a recovery to 6.8 per cent growth in 2025. This reflects the increase in construction investment for dwellings in 2024 and the anticipated lower interest rate environment.

Given the expected changes in both consumption and modified investment, we now believe that modified domestic demand (MDD), the preferred indicator of domestic economic activity, will grow by a robust 3.2 per cent in 2024 and at an enhanced rate of 4.1 per cent in 2025.

Multinational exports recover but major increase in risk due to likely Trump policy direction

Notwithstanding the weakness seen in multinational exports over the past 18 months, there is emerging evidence that a recovery is underway in key sectors, such as pharmaceuticals, which have begun to grow strongly again.

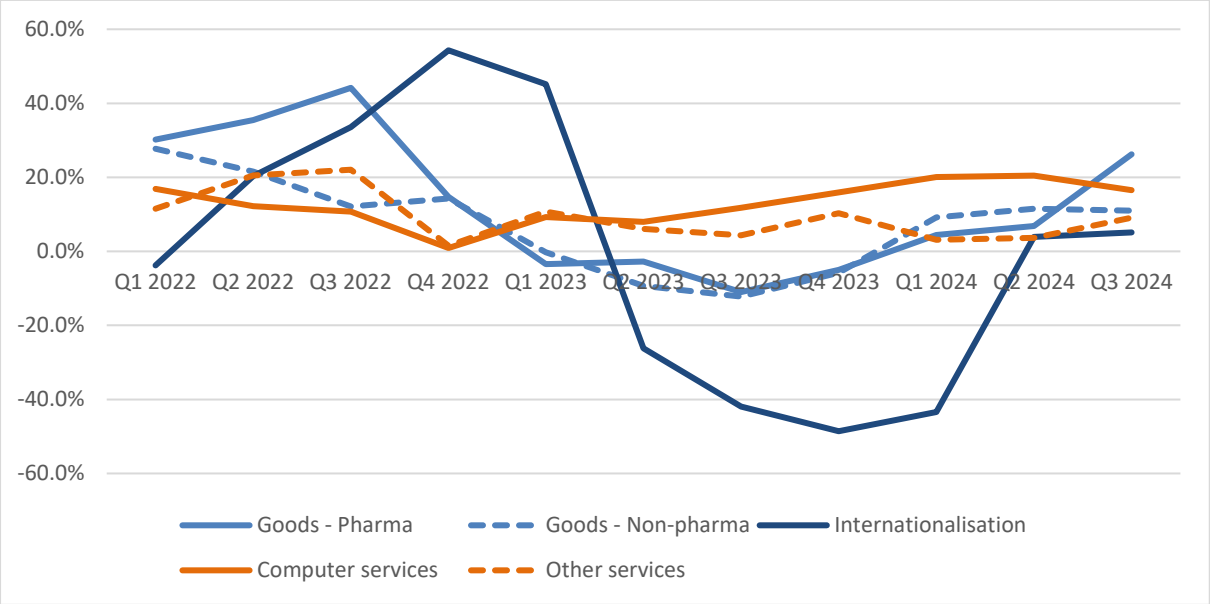
Figure 8 contrasts the key sectors of pharmaceuticals and computer services with the underlying economy. Goods exports in pharmaceuticals grew by 26.3 per cent in Q3 2024. Goods exports declined in both categories in 2023; however, non-pharmaceutical goods exports have recovered more slowly. For services, computer

3 This rebound makes the technical assumption that the level of intellectual property investment in Q2 2025 will return to a more normalised level. This leads to an increase in this category of investment in 2025, with knock on implications for exports and imports.

services exports have been growing faster than underlying services exports since the beginning of 2023.

The final series presented in Figure 8 is labelled 'internationalisation' and consists of contract manufacturing and goods for processing. The volatility of this series has driven the volatility of the headline export figure in recent years.

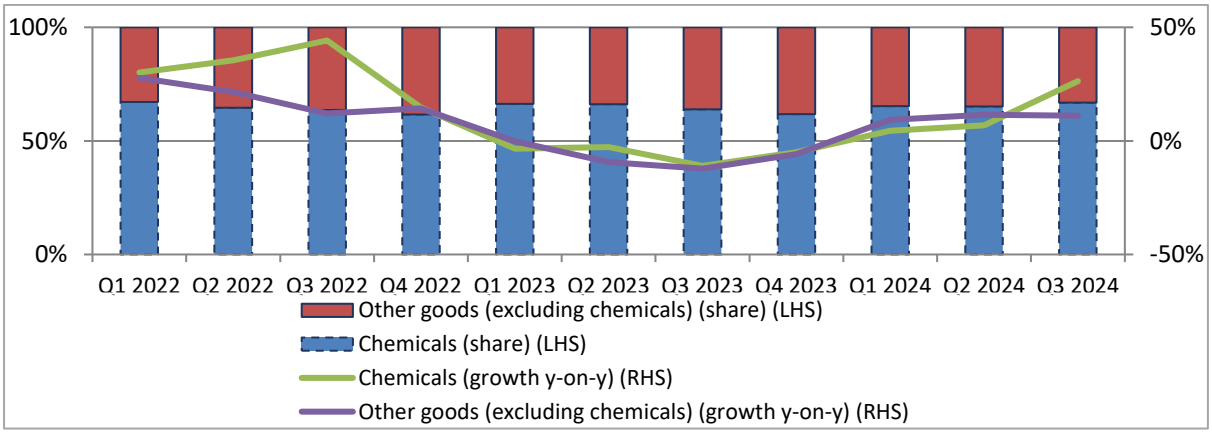
FIGURE 8 COMPONENTS OF EXPORTS – VALUE – YEAR-ON-YEAR GROWTH



Source: Central Statistics Office.

Figure 9 presents goods exports divided into chemicals and other goods. Chemicals consistently account for over 60 per cent of goods exports. Notably, the growth rate of chemicals exports in Q3 2024 (26.3 per cent) far exceeded the growth rate of exports of other goods (11 per cent).

FIGURE 9 GOODS EXPORTS BY COMPONENT – VALUE – SHARE OF TOTAL AND YEAR-ON-YEAR GROWTH



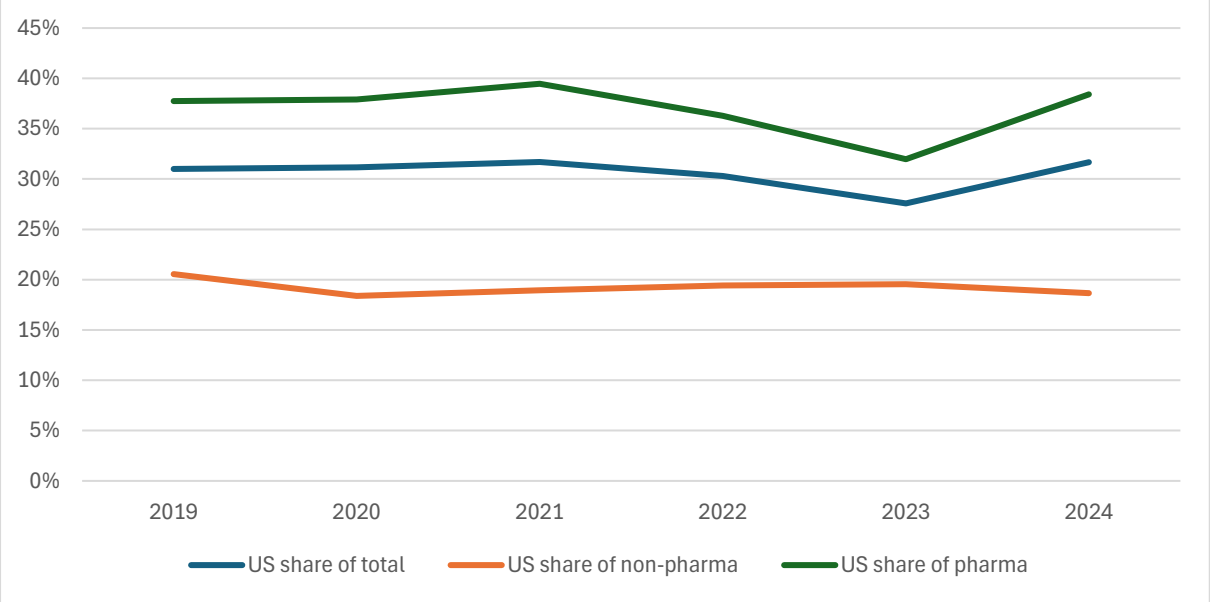
Source: Central Statistics Office.
Note: 'Other goods' is calculated by taking chemicals from the total value of goods exports.

Despite the recent rebound in multinational exports, there has been a major increase in the downside risks for the Irish multinational sector since the US

presidential election. The incoming Trump administration has signalled its intention to make a significant departure in terms of US trade policy, with recent announcements of tariffs on imports from Canada, China and Mexico. There has also been a notable focus on the Irish trade surplus and the role of US multinational profits in the Irish economy. It is likely that the impact of any protectionist trade stance in the US would be multifaceted for Ireland. In general, increased tariffs are likely to lower trade bilaterally, but there are likely to be second round effects more generally if world trade is disrupted. As a small, and extremely open, economy Ireland has historically been a major beneficiary of globalisation. Changes in policy direction that lead to greater trade fragmentation are likely to disproportionately impact the Irish traded sector.

The implications of these potential disruptions for Ireland are evident. A large proportion of our trade is exported directly to the US. Figure 10 presents the direct export shares of Irish merchandise trade to the US. In 2024 (Q1–Q3) approximately 31.2 per cent of our merchandise exports went to the US. For pharmaceutical products, this share was over 38 per cent for the same period. Given this reliance on the US as a destination market, and the importance of pharma to our exports, any disruption in these trade flows would have notable economic consequences, as well as an impact on the public finances through lower corporation taxation receipts. These data do not include service exports or the internationalisation flows such as contract manufacturing that are undertaken by US companies.

FIGURE 10 US SHARE OF IRISH MERCHANDISE EXPORTS

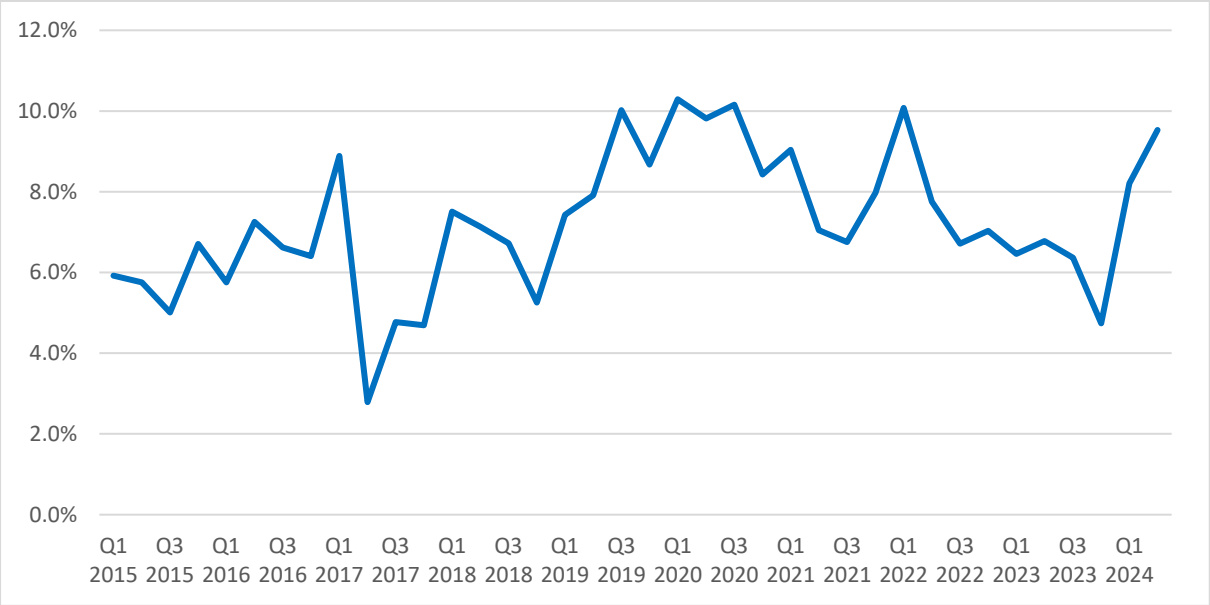


Source: Central Statistics Office and ESRI calculations.

Another indication of the exposure of the Irish economy to significant changes in international trading conditions can be found in the merchandise trade balance for Ireland with the US. It is presented in Figure 11 as a percentage of Irish GDP. It is

clear Ireland runs a very large merchandise trade surplus with the US, which has fluctuated anywhere between 6 and 9 per cent of Irish GDP.

FIGURE 11 MERCHANDISE TRADE BALANCE WITH US, % OF IRISH GDP



Source: Central Statistics Office and ESRI calculations.

In terms of the overall foreign direct investment (FDI) flows, Box A below considers further these impacts, and the reliance of the Irish FDI sector on US-owned companies.

The impact of the new administration on FDI is also highly uncertain but comes with considerable downside risks. In the shorter term, the increased uncertainty, and desire by the Trump administration to return manufacturing activity to the US, could disrupt or slow new multinational investments into Ireland by US-owned companies. In the medium term, many US multinationals, in particular in the pharmaceutical industry, have made large, sunk-cost investments in Ireland in plant and machinery. These investment choices were driven by multiple factors including taxation, access to EU markets and other structural factors. These investments are also likely to have long payback periods beyond the four years of the incoming Trump administration.

BOX A FOREIGN DIRECT INVESTMENT IN IRELAND

1. Introduction

The Irish economy is unusual among EU countries in terms of the very large role played by foreign multinationals in national output and income. This role has continued to grow in recent years, contributing to the overall success of the economy in exiting from the global financial crisis and returning to steady rapid growth.

The contribution to net national product (NNP) from foreign multinationals is accounted for by their wage bill and the corporation tax they pay.[4,5] For domestic firms, the contribution is equal to their wage bill and their profits, before tax. Table 1 shows the share of NNP accounted for by foreign and domestic business for 2013 and 2023.

TABLE 1 SHARE OF NNP BY SECTOR AND OWNERSHIP, %

	2013			2023		
Output (real annual growth %)	Total	Foreign	Domestic	Total	Foreign	Domestic
Agriculture	1	0	1	1	0	1
Manufacturing	12	5	6	12	9	3
Electricity, gas, and water	2	0	2	1	0	1
Construction	3	0	3	5	1	5
Distribution, transport and restaurants	22	5	17	18	5	13
Information and communication	6	3	3	9	7	2
Financial services	10	4	6	8	4	3
Real estate activities	7	0	7	10	0	9
Professional services	10	2	7	14	5	9
Public admin, education and health	24	0	24	19	1	19
Arts, entertainment etc.	3	0	3	2	0	2
Total	100	21	79	100	32	68

Source: Central Statistics Office institutional sector accounts.
Note: Figures may not sum to 100 due to rounding.

In 2013 the foreign sector of the economy accounted for around 21 per cent of NNP, but by 2023 it accounted for 32 per cent, a very large increase in share. This growth in share was accounted for by a major expansion in the value added to the Irish economy from foreign-owned firms operating in the manufacturing, IT and professional services sectors.

2. Comparison with EU27

The CSO data do not allow a breakdown of the contribution to NNP by country of ownership of foreign multinational enterprises (MNEs). However, Eurostat data show FDI across the EU for 2021, including the number of enterprises, value added, numbers employed, the wage bill and the gross operating surplus. The foreign investors are disaggregated by country of origin of the investor, as well as by country where the investment is located.

4 The issue of country of ownership is not always clear. As companies get taken over, the nationality of ownership may change. In addition, a company's shareholders can reside in different countries, which can also be different to the country in which the company's head office is actually registered.

5 The standard measure now used to measure national income in Ireland today is modified gross national income (GNI*). However, this measure includes some depreciation on the capital stock, capital that is used up and has to be replaced to maintain output (and income) at its current level. Thus a better measure of national economic welfare is net national income (NNI) – excluding depreciation. However, this measure is not always available for other economies, especially when measuring output at constant prices, so GDP and GNI are preferred for international comparisons. The difference between NNI and net national product (NNP), used here, is indirect taxes and subsidies.

The data on corporation tax paid by foreign firms are not available for other EU countries, allowing a comparison of the contribution of foreign firms to national income between Ireland and other EU countries, as in Table 1.

Value added data for Ireland are distorted by the relocation of substantial intellectual property assets by US firms. So it is not useful to use value added data when comparing Ireland with the EU. Instead we focus on employment and wages, as the data allow a comparison between Ireland and the EU of the numbers employed and the wage bill paid by foreign multinationals.

2.1 Employment

For 2021, Table 2 shows the share of total employment in Ireland and the EU27 that is accounted for by companies originating from a range of different countries. Data for China and Hong Kong are not available for the EU27.

In 2021, US firms accounted for 7.8 per cent of total employment in Ireland, compared to only 1.8 per cent in the EU as a whole. Other EU27 firms and UK firms each accounted for around 5 per cent of employment in Ireland. However, UK firms accounted for only 1 per cent of employment in the EU as a whole.

The EU shows a very different pattern to that for Ireland, with foreign multinationals accounting for a much smaller share of total employment – 12 per cent for the EU27 compared to 24 per cent for Ireland. For the EU27, investment from other countries within the EU accounts for a higher share of domestic employment than in Ireland, at 7 per cent. This is more than offset by the much smaller share of investment from outside the EU. For Ireland such firms (those outside the EU) account for 19 per cent of total employment compared to only 5 per cent for the EU27.

TABLE 2 SHARE OF TOTAL EMPLOYMENT ACCOUNTED FOR BY FOREIGN FIRMS, 2021, %

Share of employment(%)	Ireland	EU27
Intra-EU27 (from 2020)	4.9	6.8
Norway	0.0	0.1
Switzerland	0.7	0.8
UK	5.4	0.9
Türkiye	0.0	0.0
Extra-EU27 (from 2020)	18.7	5.0
Canada	0.7	0.1
United States	7.8	1.8
China except Hong Kong	0.1	
Hong Kong	0.1	
Japan	0.5	0.4
Australia	0.2	0.0
Domestic country	76.4	88.2
All FDI	23.6	11.8
Economy	100.0	100.0

TABLE 3 SHARE OF EMPLOYMENT IN THE EU27 LOCATED IN IRELAND FOR MULTINATIONALS

Ireland's share of EU27 (%)	Employment	Wages
Intra-EU27 (from 2020)	0.9	1.3
Norway	0.5	0.6
Switzerland	1.1	1.7
UK	7.8	6.8
Extra-EU27 (from 2020)	4.7	5.3
Canada	7.4	6.4
United States	5.5	6.7
Japan	1.7	2.3
Australia	6.9	6.3
All FDI	2.5	3.2
Economy	1.3	1.7

Table 3 shows that, while Ireland accounted for 1.3 per cent of total employment in the EU in 2021, it accounted for 2.5 per cent of employment by foreign multinationals. While Ireland's share of intra-EU employment was lower than average, this was more than offset by the higher shares of employment by UK and US firms.

2.2 Wages

The data in Table 3 show the wage bill of foreign multinationals in each country. With higher living standards in Ireland, and hence higher pay rates, the wage bill in Ireland of MNEs accounted for 1.7 per cent of the EU wage bill, higher than the employment share. The share of the wage bill paid in Ireland by firms from other EU countries was higher than the employment shares, as employment in Ireland, accounted for by such firms, was relatively highly paid. This is especially true for US and Japanese firms operating in Ireland. By contrast, UK firms tend to employ people at lower pay rates in Ireland than elsewhere in the EU.

TABLE 4 AVERAGE EARNINGS IN FOREIGN OWNED ENTERPRISES, €, THOUSANDS

	Ireland	EU27	Ireland/EU27
Intra-EU27 (from 2020)	60.0	42.5	1.41
Norway	61.0	50.4	1.21
Switzerland	79.2	51.5	1.54
UK	46.7	52.9	0.88
Türkiye	75.4	23.8	3.17
Extra-EU27 (from 2020)	62.3	55.2	1.13
Canada	47.5	54.6	0.87
United States	76.5	63.0	1.21
China except Hong Kong	57.9		
Hong Kong	58.1		
Japan	73.7	55.9	1.32
Australia	50.3	55.2	0.91
Domestic	44.1	34.9	1.27
All FDI	61.9	47.8	1.29
Economy	48.3	36.4	1.33

Table 4 shows that average earnings in Ireland were a third higher than for the EU. The table shows average earnings per employee for Ireland and the EU, broken down by firms' country of ownership. Foreign MNEs pay more than domestic firms: in Ireland foreign firms paid €62,000 a year compared to €44,000 for the rest of the economy, while in the EU foreign firms paid €48,000 compared to €35,000 for the rest of the economy.

US firms paid 21 per cent more in Ireland than the EU average for such firms. Because of their high pay rates, and their big share of employment, these firms explain why pay rates in foreign MNEs in Ireland were 29 per cent higher than for the EU. Pay rates for UK-owned firms in Ireland were under 90 per cent of what UK firms pay elsewhere in the EU, reflecting the fact that UK firms in Ireland are concentrated in lower paid sectors, with a smaller share of skilled workers. In the rest of the EU, UK firms employ a greater share of highly educated employees.

3. Sectoral detail

Table 5 shows Ireland's share of foreign multinational employment and wages in the EU for a range of different sectors where there are detailed data. As can be seen from the table, 2.5 per cent of all employees in foreign MNEs in the EU were located in Ireland. For US firms, the share was even higher at 5.5 per cent. The share of the wage bill paid in Ireland by foreign firms was very high: 5.5 per cent of the wages paid by such firms across the EU. Table 5 also shows that a large share of foreign firms' employment in the EU in the IT, financial and professional services sectors occurred in Ireland. The IT sector in Ireland accounted for over 11 per cent of all employment in that sector in the EU by US firms. In addition, 14 per cent of the wage bill of US firms in the EU IT sector was paid in Ireland.

TABLE 5 IRELAND'S SHARE OF EU TOTAL, %

	Employment		Wage bill	
Ireland's share of EU27 (%)	All FDI	US	All FDI	US FDI
Economy	2.5	5.5	5.5	6.7
Manufacturing	1.6	5.5	2.2	
Manufacture of food products etc.	2.8		3.5	
Wholesale and retail trade etc.	2.3	2.5	2.4	2.4
Information and communication	4.5	11.1	6.6	
Computer programming etc.	4.7	11.4	7.1	14.2
Financial and insurance activities	6.5	20.2	6.8	18.0
Professional, scientific etc.	3.1	5.1	3.6	
Administrative and support service	2.5		3.2	

Separate data are not available for the pharmaceutical sector, which is an important sector in the Irish economy. It is also dominated by foreign, especially US, MNEs. They are included in the total for the manufacturing sector.

4. Corporation tax

While the Revenue Commissioners give details of the corporation tax paid by all foreign MNEs, they don't break it down by nationality of investor. However, Eurostat gives details of the profits (gross operating surplus) of multinationals by nationality. Assuming that the tax paid is proportional to their profits, Table 6 shows the distribution of corporation tax payments by nationality.

TABLE 6 ESTIMATED CORPORATION TAX BY NATIONALITY OF INVESTOR, 2021, € MILLIONS

	€, Million
Intra-EU	700
Norway	32
Switzerland	75
UK	603
Canada	109
United States	10,312
China except Hong Kong	97
Hong Kong	26
Japan	86
Australia	12
Other	234
All foreign multinationals	12,300
Irish firms	3,024
Total	15,324

This shows that the vast bulk of corporation tax paid by foreign firms is paid by US MNEs. This contrasts with the fact that US MNEs, despite paying high wages, only accounted for 40 per cent of wages paid by all foreign MNEs in Ireland in 2021.

5. Conclusions

The Eurostat data show that US MNEs play a major role in the Irish economy, much greater than in the EU as a whole. Table 7 summarises the contribution to Irish net national product (NNP) of US firms, through corporation tax and wages. It also shows the contribution of all foreign multinationals.

TABLE 7 CONTRIBUTION TO IRISH NNP 2021, PERCENTAGE POINTS

	US	Total
Corporation tax	6.0	7.1
Wage bill	8.4	21.4
Total	14.3	28.5

Any changes in the coming years due to US or EU legislation, which affected the role of US firms in Ireland, could, as a result, have a big impact on the economy.

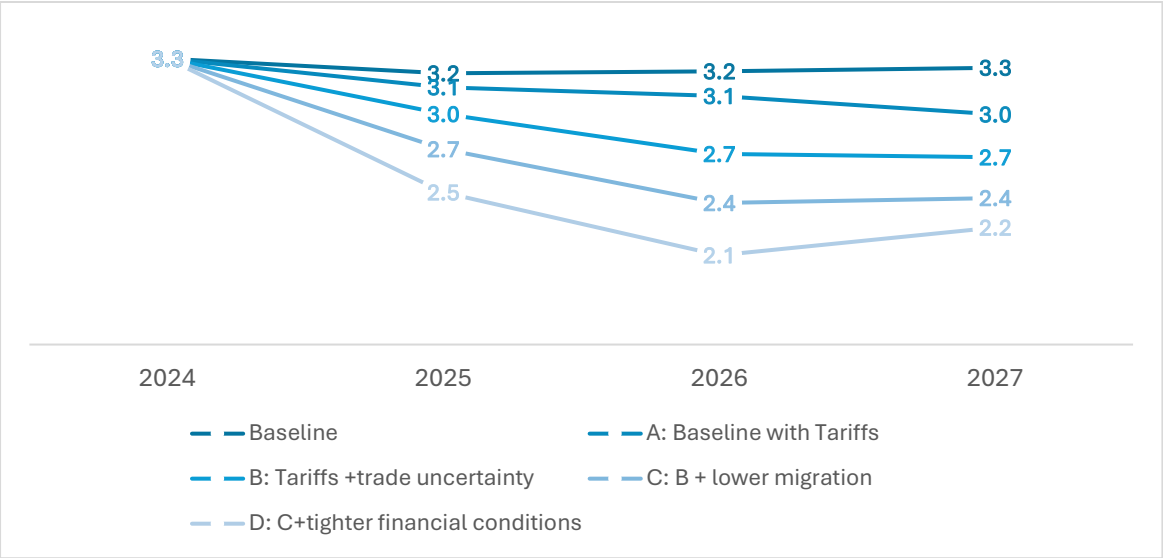
This Box was prepared by John Fitzgerald.

Global headwinds increase with US policy change

While it is noted above that the Irish economy is at risk from a number of channels given a shift in US trade and fiscal policy under the forthcoming Trump administration, these headwinds extend to the global economy as well. As noted above, Ireland's economy is small and highly globalised, which means that any reduction in global growth will naturally have an knock-on impact on Irish exports. In its most recent economic World Economic Outlook, the International Monetary Fund (IMF) attempted to quantify the impact of various policy changes and uncertainties on global growth. While their headline growth rates had pointed towards an upgrade of the outlook relative to April 2024 forecasts on the back of an improved US economy, it provided scenarios to assess the downside risk of a policy pivot towards protectionism. The IMF baseline forecast and scenarios are presented in Figure 12.

Their first scenario (A) tested for the impact of a reduction in trade following a 10 per cent tariff imposed on trade flows among the EU, US and China, and a 10 per cent tariff by the US on trade from the rest of the world. This would lead to a 0.1 per cent reduction in world economic output in 2025 and 2026, and a larger impact in 2027. A second scenario (B) explores the impact on investment of higher trade uncertainty in the US and the eurozone. Thirdly, they apply a further scenario with lower migration flows, which again lowers economic output. Finally, they layer on the tighter financial conditions that are likely to occur if A, B and C materialise. The impacts of these cumulative effects are notable, with growth decreasing from 3.2 per cent in 2025 and 2026 to 2.5 and 2.1 per cent respectively. Given the sensitivity of Irish activity to world growth, it is likely that these impacts would pass fully through to the Irish economy, lowering the growth rate in the traded sectors substantially. Indeed, the scenario that the IMF deploy is a 10 per cent tariff, which may be on the benign side given recent announcements from the Trump administration. However, it must be acknowledged that considerable uncertainty surrounds the extent to which the policies proposed by the Trump campaign during the US presidential election will accord with the actual policy choices of the incoming administration there.

FIGURE 12 IMF GLOBAL GROWTH SCENARIOS UNDER POLICY OUTCOMES



Source: IMF World Economic Outlook.

A much more acute risk can be found in the possibility of US firms choosing to change the location of intangible capital for corporate tax reasons. This capital is much easier to relocate than physical investments. These intellectual property investments are likely to be linked to considerable contributions to corporation tax receipts, which could dissipate quickly if these investments are moved. Indeed, the discussion in Box A above, by FitzGerald, indicates that the vast majority of corporation tax is paid by US multinationals in Ireland, highlighting the risk to the Exchequer from developments in the US. Additional risks and headwinds to the global economic position are also on the horizon in terms of the ongoing conflicts in Ukraine and the Middle East.

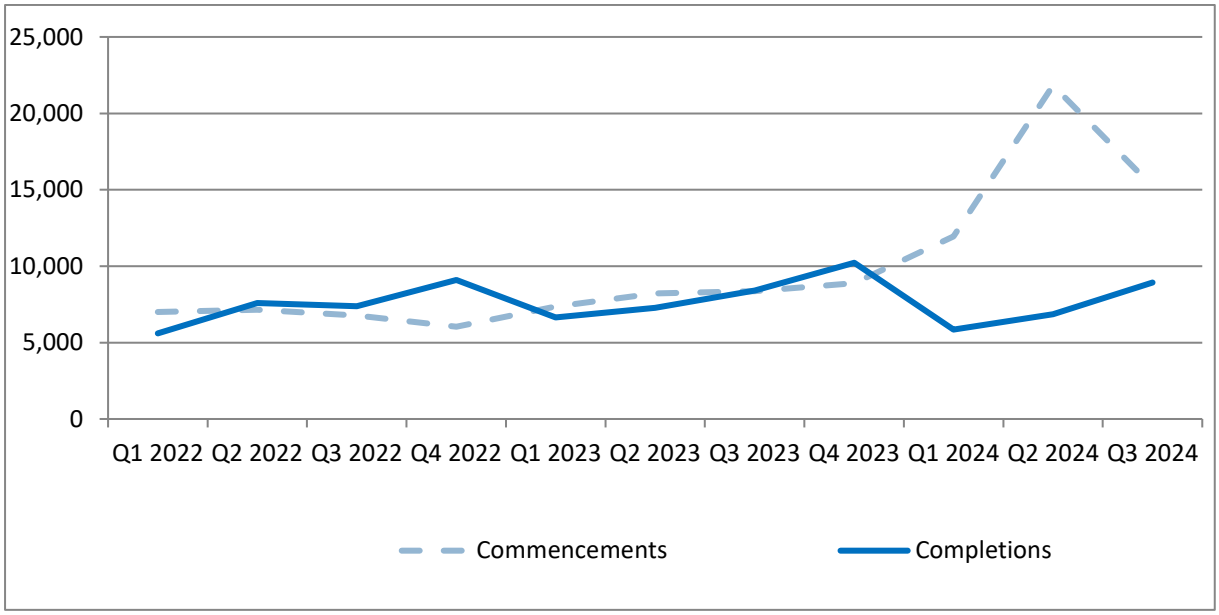
Overall, in terms of our trade performance in 2024, given the pick-up in pharma exports, we expect total Irish exports to increase by 9.8 per cent, with imports rising by 8.3 per cent. In 2025, under a no policy change in terms of international trading conditions, we expect Irish exports to grow by 4.3 per cent and imports to rise by 5.7 per cent.

House price growth continues amid supply constraints

While the international economy faces increased uncertainty, the performance of the domestic economy continues to display notable resilience. However, capacity constraints are evident in areas that require considerable investments, such as housing, infrastructure and climate adaption. In terms of housing output, the first two quarters of 2024 saw lower level of completions relative to 2023. Following a pick up in Q3, quarterly completions in 2024 are broadly similar to the equivalent figures in 2023 (Figure 13). This leaves a total of just over 20,000 units completed for the first three quarters of the year. Seasonal patterns typically show an increase in the fourth quarter of the year, but it is unlikely to bring the annual figure notably

above 33,000. Therefore, we are maintaining our completions forecast of just over 33,000 units for 2024.

FIGURE 13 HOUSING COMMENCEMENTS AND COMPLETIONS



Source: Central Statistics Office and Eurostat.

Of particular note for the present year is the increase in housing commencements. These remained higher in Q3 2024 than the average for the previous two years. Previous editions of the *Commentary* have highlighted the role played by two policy changes in accelerating the commencement of housing development. The development levy waiver and the refunding of water connection charges were still in place during Q3 2024.[6] It is likely that the time to completion on these developments may be longer than the typical 9–18 month period, if the accelerated commencement notice occurred due to the timing of the change in policy. Nevertheless, there have been over 49,000 commencements to date this year, and if these follow a typical investment pattern, the number of completions should be close to if not above 40,000 for 2025. We maintain a forecast of just under 40,000 units for 2025.

While the increase in supply is welcome, the levels remain still well below estimates of the structural demand for housing (Bergin and Egan, 2024),[7] with a growing pent-up demand (Central Bank of Ireland, 2024).[8] Consequently, in a supply constrained environment, property prices have continued to rise in 2024.

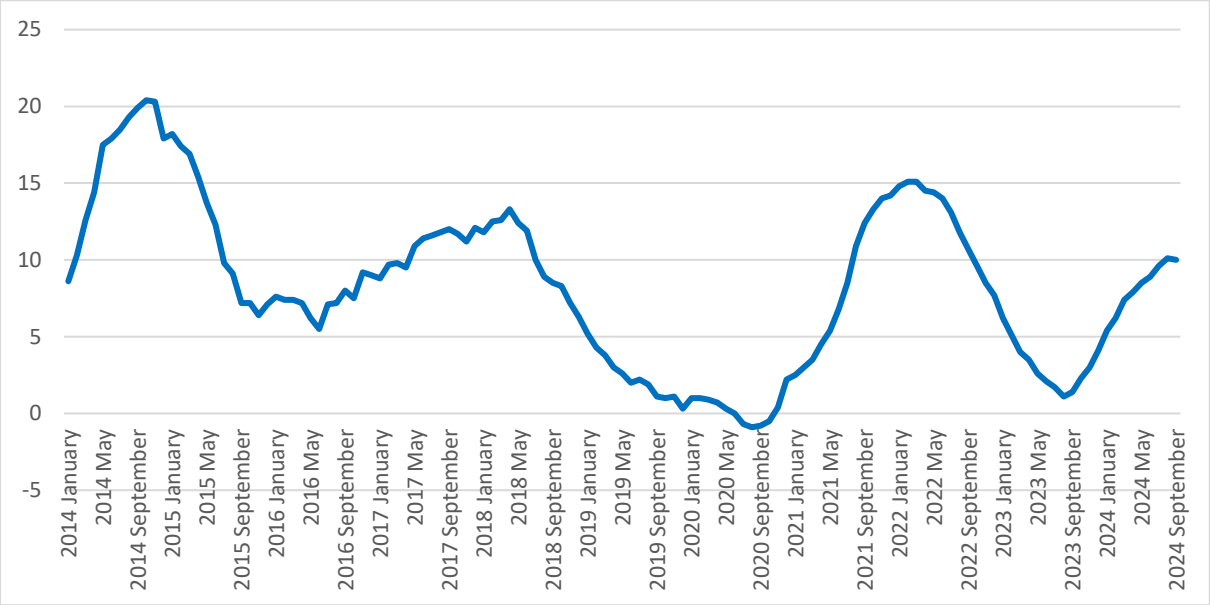
6 The Government introduced a temporary time-limited arrangement for the waiving of local authority 'section 48' development contributions and the refunding of Uisce Éireann water and wastewater connection charges. In April 2024, the changes were extended to the end of the year and to October respectively.

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

8 Central Bank of Ireland (2024). 'Economic policy issues in the Irish housing market', *Quarterly Bulletin Signed Article*, Q3 2024.

The year-on-year growth in property prices has increased over the course of the year to exceed 10 per cent in August and September. Figure 14 shows that this is the fourth period in the last 10 years in which the annual growth rate has exceeded 10 per cent.

FIGURE 14 YEAR-ON-YEAR GROWTH IN RESIDENTIAL PROPERTY PRICE INDEX (%)



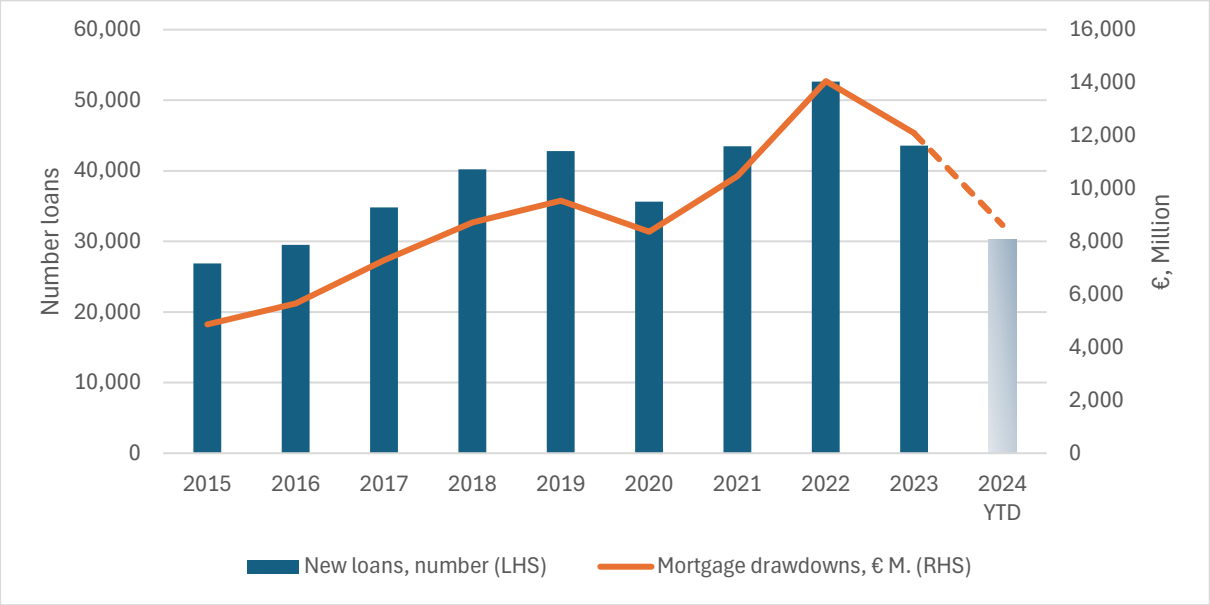
Source: Central Statistics Office.

In Box B below, Paul Egan and Kieran McQuinn assess the sustainability of current Irish house price levels. In addition, a Special Article accompanying the *Commentary* examines the rationality of consumer expectations of house prices. Egan and McQuinn find a degree of overvaluation in the market at present of approximately 10 per cent. They also find that the ratio of mortgage repayment to income has risen quite sharply in recent years.

Given recent research by Egan et al. (2024),[9] it is also important to examine whether activity in the mortgage market is on a sustainable course. Figure 15 presents mortgage drawdowns since 2015, alongside the total value of mortgages outstanding. Mortgage drawdowns are growing slowly in value terms, with the exception of 2023 when higher interest rates appear to have impacted demand for mortgages.

9 Egan P., K. McQuinn and C. O'Toole (2024). 'Credit and house prices in the Irish residential Market', *Intereconomics*, Vol. 59, No. 5, pp. 293–300.

FIGURE 15 VALUE OF MORTGAGE DRAWDOWNS (€ MILLIONS) AND NUMBER NEW LOANS



Source: Banking and Payments Federation of Ireland.
Note: 2024 includes data for the first three quarters of the year.

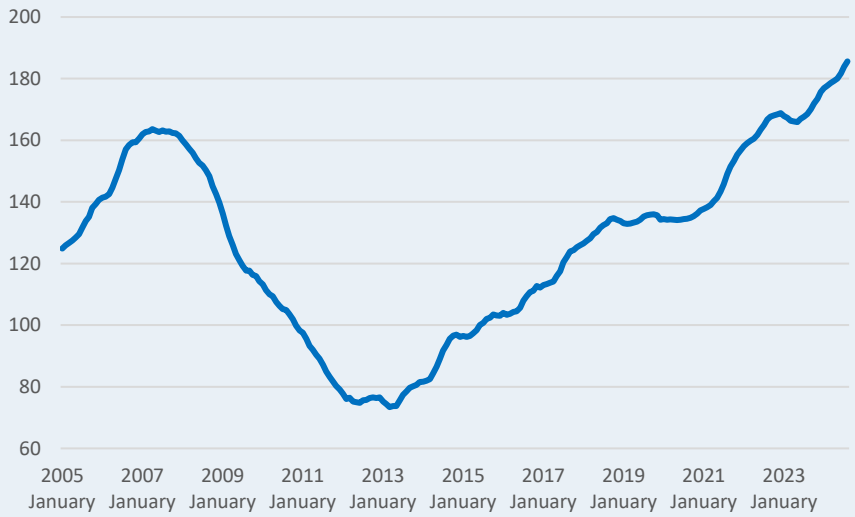
BOX B ASSESSING THE SUSTAINABILITY OF CURRENT IRISH HOUSE PRICE LEVELS

Introduction

The continuous increase in Irish house prices since mid-2013 means that Irish house prices are, as of August 2024, now 13.4 per cent higher than the pre-global financial crisis peak back in April 2007.[10] In this box we assess the sustainability of current house price levels using a number of different indicators. We initially use the results of an econometric model that seeks to explain the level of house prices in terms of key demographic and economic 'fundamental' variables. Any significant difference between actual prices and the fitted price from the model can be taken as over/undervaluation in the market. We also complement this approach by assessing a variety of indicators such as price-to-income and price-to-rent indicators, and concepts such as the debt service ratio (DSR) of Irish house prices. This provides us with an overview of the stability of the residential property market.

Figure 16 below plots nominal Irish house price levels, while Figure 17 plots year-on-year growth rates from 2005 to 2024.

FIGURE 16 NOMINAL IRISH HOUSE PRICES (INDEX 2015 = 100): 2005M1–2024M8



Source: Central Statistics Office and Quarterly Economic Commentary.

10 This is in nominal terms. In real terms, current house prices are actually 13 per cent below the peak value, which occurred in January 2007.

FIGURE 17 YEAR-ON-YEAR GROWTH IN NOMINAL IRISH HOUSE PRICES (%): 2006M1–2024M8

Source: Central Statistics Office and Quarterly Economic Commentary.

The pick-up in growth rates since early 2024 has provoked some concern about the sustainability or otherwise of current price levels, and whether a sharp correction as was experienced from 2008 to 2012 is likely to occur again.[11]

Model based assessment of current price levels

One way of assessing the sustainability or otherwise of these price developments is to use an econometric model of house prices, similar to that used by McQuinn (2017) and Egan et al. (2024). This approach involves specifying and estimating a long-run economic model of house prices, where the fitted value from the regression is then compared with the actual price. This is a standard approach used in the asset-pricing literature (see Blanchard and Watson, 1982, for example) to test for the presence of equilibrium in the market. House prices are assumed to be a function of a certain set of fundamental economic and demographic variables; therefore, if the actual price deviates significantly from what the model suggests then disequilibrium prevails. In the housing market case, the presence of disequilibrium means that house prices are either under- or over-valued.

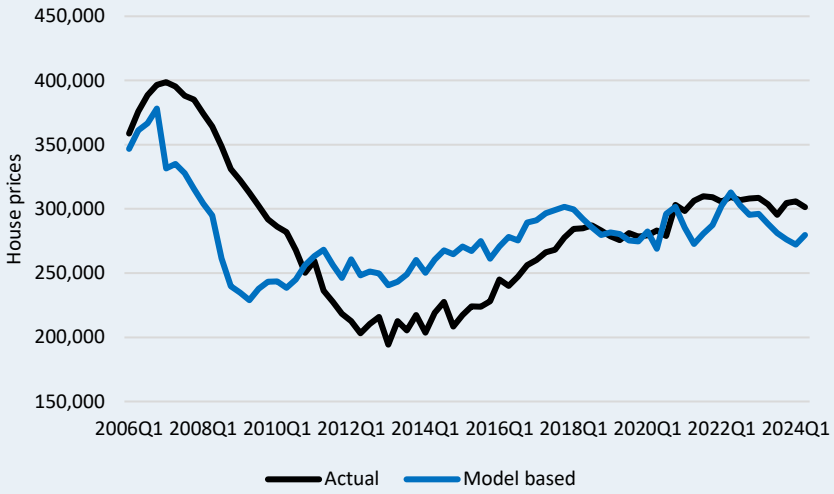
Based on the model of house prices in Egan et al. (2024a), the following model is estimated:

$$\ln P_t = \alpha + \beta_1 lnA_t + \beta_2 CC_t + \beta_3 PRAT_t + \beta_4 CAP_t \quad (1)$$

where P_t is house price levels, A_t is an affordability indicator, which combines household disposable income and mortgage interest rates, CC_t is a credit conditions indicator, CAP_t is a housing stock variable and $PRAT_t$ is the ratio of the population in the key house purchasing cohort (25–44 years of age). The

model is estimated over the period 1981–2024 and the actual prices and model-based estimates are compared in Figure 18 below.[12]

FIGURE 18 ACTUAL AND FITTED VALUES FROM THE HOUSE PRICE EQUATION: 2006–2024



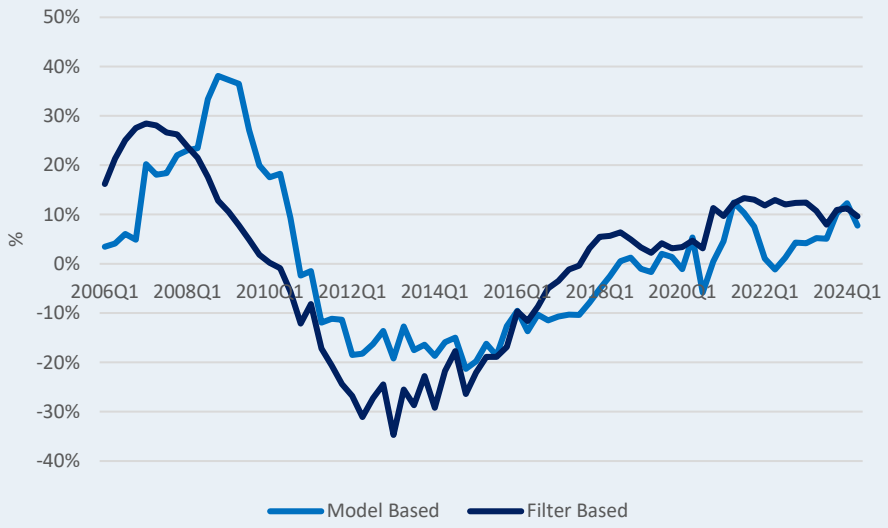
Source: Quarterly Economic Commentary estimates.

From the above figure, it is clear that there appeared to be significant under-valuation in the Irish market in the period up to 2018. This was a fall-out from the significant reduction in prices that occurred after the global financial crisis. House prices increased sharply and persistently during this period. From 2018 through 2022, the housing market was in equilibrium, with actual prices and those suggested by the model being practically the same. However, a divergence has emerged over the past 18 months, with actual house prices now somewhat larger than those suggested by the model.

In addition to the model-based estimate, we also examine Irish house prices relative to trend by applying a Hodrick–Prescott (HP) filter. While not without its limitations,[13] the HP filter is a commonly used tool to establish the trend of a variable over time, and is used extensively as part of central banks' countercyclical capital buffer. The choice of smoothing parameter, λ, is set at 400,000 in line with work such as Drehmann et al. (2010). Both the model and filter-based estimates of house price overvaluation are plotted in Figure 19. Based on the most recent data from Q2 2024, the figure Irish house prices are over-valued by somewhere in the region of 8 to 10 per cent.

11 See https://www.rte.ie/news/business/2024/1016/1475774-house-prices-analysis/ for example.
12 Note all monetary variables are deflated by the CPI.
13 As pointed out by Alessi and Detken (2014), the HP filter is sensitive to the choice of the smoothing parameter and also suffers from endpoint bias.

FIGURE 19 ESTIMATES OF DISEQUILIBRIUM IN THE IRISH RESIDENTIAL MARKET, 2006–2024



Source: Quarterly Economic Commentary estimates.

As the above analysis clearly shows some sign of house price overvaluation, it is prudent to monitor other vulnerabilities related to the Irish residential real estate market. To do so, we follow an approach by Bengtsson et al. (2017), who analyse a set of indicators related to three dimensions of real estate sector vulnerabilities – valuation, household indebtedness and the credit cycle. Table 8 provides an overview of these indicators in the Irish context.

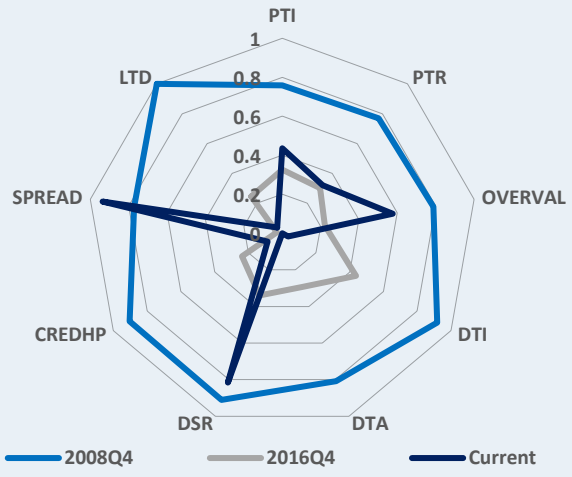
TABLE 8 INDICATORS RELATED TO RESIDENTIAL REAL ESTATE VULNERABILITY

INDICATORS	DESCRIPTION	SOURCE
	VALUATION	
Price-to-income (PTI)	Nominal house price/disposable income	OECD – Analytical house price indicators
Price-to-rent (PTR)	Nominal house price/nominal rent	OECD – Analytical house price indicators
Overvaluation (OVERVAL)	% Deviation of actual house prices from model based equilibrium	CSO, Central Bank of Ireland and authors' calculations
	HOUSEHOLD INDEBTEDNESS	
Household debt-to-disposable income (DTI)	Ratio of household debt to disposable income	Central Bank of Ireland and authors' calculations
Debt Service Ratio of Households (DSR)	Disposable income to mortgage repayments	Central Bank of Ireland and authors' calculations
Households debt to total assets (DTA)	Ratio of household debt to household total financial assets	Central Bank of Ireland and authors' calculations
	CREDIT CYCLE	
Credit for house purchases (CREDHP)	Credit to domestic households for house purchases to GNI*	Central Bank of Ireland, CSO and authors' calculations
Lending spreads (SPREAD)	Difference between lending rates for house purchases and money market rates	Central Bank of Ireland, Refinitiv and authors' calculations
Loan-to-deposit ratio (LTD)	Ratio of banks total loans to total deposits	Central Bank of Ireland and authors' calculations

Figures 20 and 21 present the set of indicators related to Irish real estate vulnerability in two separate ways. Figure 20 examines the vulnerabilities at three selected points in time – Q4 2008, Q4 2016 and the most recent data available for 2024 – in the form of a radar chart. Figure 21 looks at the evolution over the entire 2003 to 2024 period in the form of a heat map.[14] The data have been normalised, so that a value of 1 represents the highest level of vulnerability and a value of 0 the lowest. Figure 20 highlights the significant level of vulnerability in Q4 2008 across all six indicators related to valuation, household indebtedness and the credit cycle.

Figure 20 also shows that by Q4 2016, the vulnerabilities had reduced significantly, with banks reducing their lending exposures, overvaluation in the housing sector dissipating across the three different indicators, and risks related to indebtedness receding. In the most recent period, a number of indicators appear to be showing signs of vulnerability. This includes the overvaluation of property prices relative to fundamentals, as described above. The other two indicators in this category, price-to-income (PTI) and price-to-rent (PTR), are also above the levels seen in Q4 2016, but still well below those of Q4 2008. In addition, there would also appear to be a significant increase in vulnerabilities across single indicators in the household indebtedness and credit cycle categories, namely in the DSR and the indicator related to lending spreads (SPREAD). The elevated level of vulnerability is likely driven solely by the higher interest rate environment, however. This is visible in Figure 21, which shows elevated vulnerability beginning in mid-2022. It is important to note that all other indicators across these categories remain low and the vulnerabilities are likely to dissipate as interest rates fall.

FIGURE 20 VULNERABILITY IN IRELAND'S RESIDENTIAL REAL ESTATE MARKET – Q4 2008, Q4 2016 AND CURRENT



14 In the heat map, red indicates the highest level of vulnerability while green represents the lowest.

FIGURE 21 VULNERABILITY IN IRELAND'S RESIDENTIAL REAL ESTATE MARKET – Q1 2003 – PRESENT

Source: Quarterly Economic Commentary estimates.

Conclusion

The accelerated increase in house prices experienced so far in 2024 has led to concerns in the domestic market about the sustainability of such increases and the prospect of a painful correction such as that witnessed between 2007 and 2012. It is evident that an increasing number of Irish households are facing elevated leveraged positions in terms of the mortgaged debts they are carrying. This renders these households quite vulnerable, particularly to any labour market shock, both in terms of a sudden rise in unemployment and/or a decline in real wages. It also raises question marks around the capability of certain cohorts of the population to engage in homeownership, as both the DSR and house price-to-income ratio are increasing significantly. While credit growth is not as significant a factor as it was in the pre-Celtic Tiger era, there is recent evidence (Egan et al., 2024b) to suggest the growing contribution to recent house prices of changes in the loan-to-income ratio. Consequently, the Central Bank of Ireland must be particularly vigilant and prudent in any review of the mortgage measures in its macroprudential policy framework.

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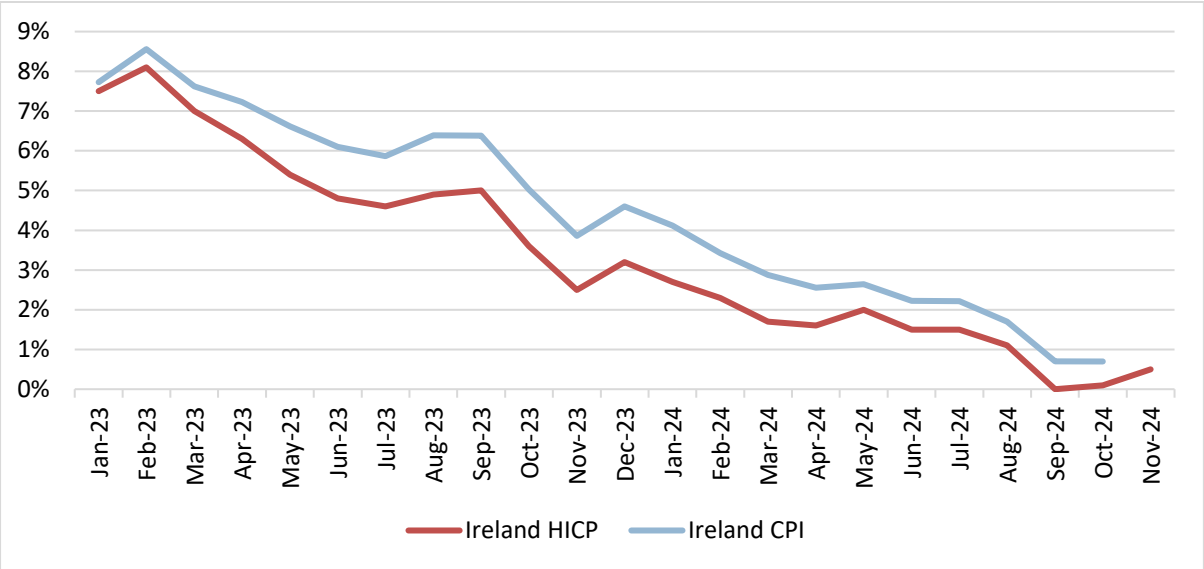
This box was prepared by Paul Egan and Kieran McQuinn.

INFLATION

The rate of inflation in Ireland has continued to fall, with the most recent Consumer Price Index (CPI) inflation figure for October detailing an annual rate of inflation of 0.7 per cent. The rate of growth of the Harmonised Index of Consumer Prices (HICP) index has fallen even further, to 0.5 per cent in November. HICP is lower because it excludes owner-occupied housing costs, in particular mortgage interest rates. Figure 22 shows the downward trend in both measures of inflation.

FIGURE 22 IRISH CPI AND HICP

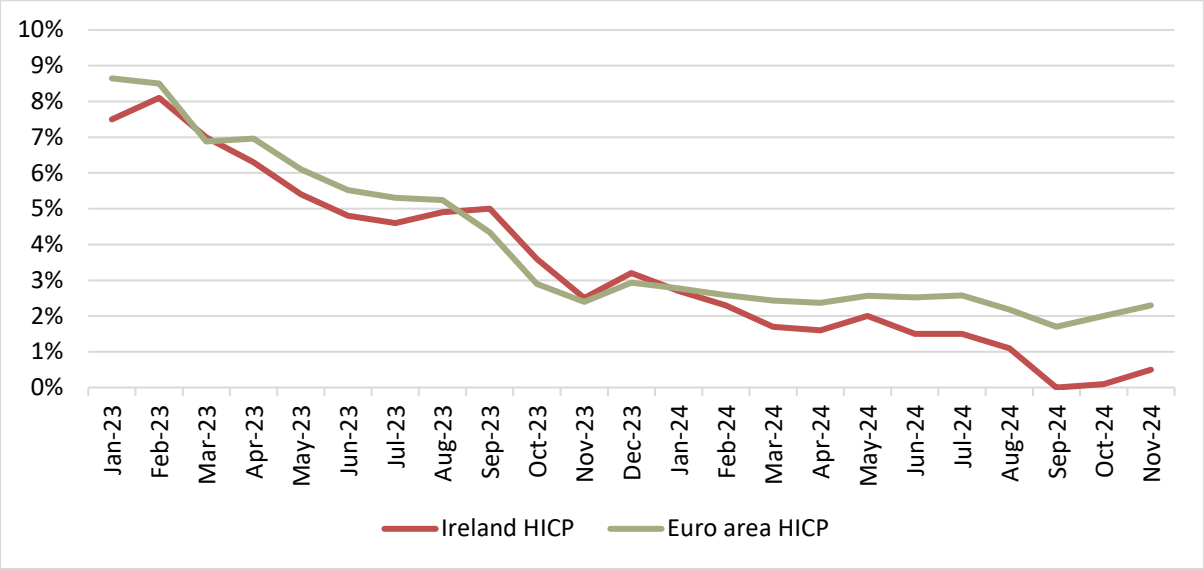


Source: Central Statistics Office and Eurostat.

The rate of inflation in Ireland is lower than the EU average. Figure 23 outlines the gap between the two, which has opened over the course of 2024. Monetary policy in the eurozone will be set based on the average rate, which may result in interest rates being set at a level that is different to the rate of inflation in the Irish economy.

However, with recent growth in house prices as outlined in Box B above by McQuinn and Egan (2024), a more expansionary eurozone monetary policy would not necessarily benefit the Irish housing market. It would lower the cost of finance and increase, ceteris paribus, the demand for housing.

FIGURE 23 IRISH HICP COMPARED WITH EURO AVERAGE

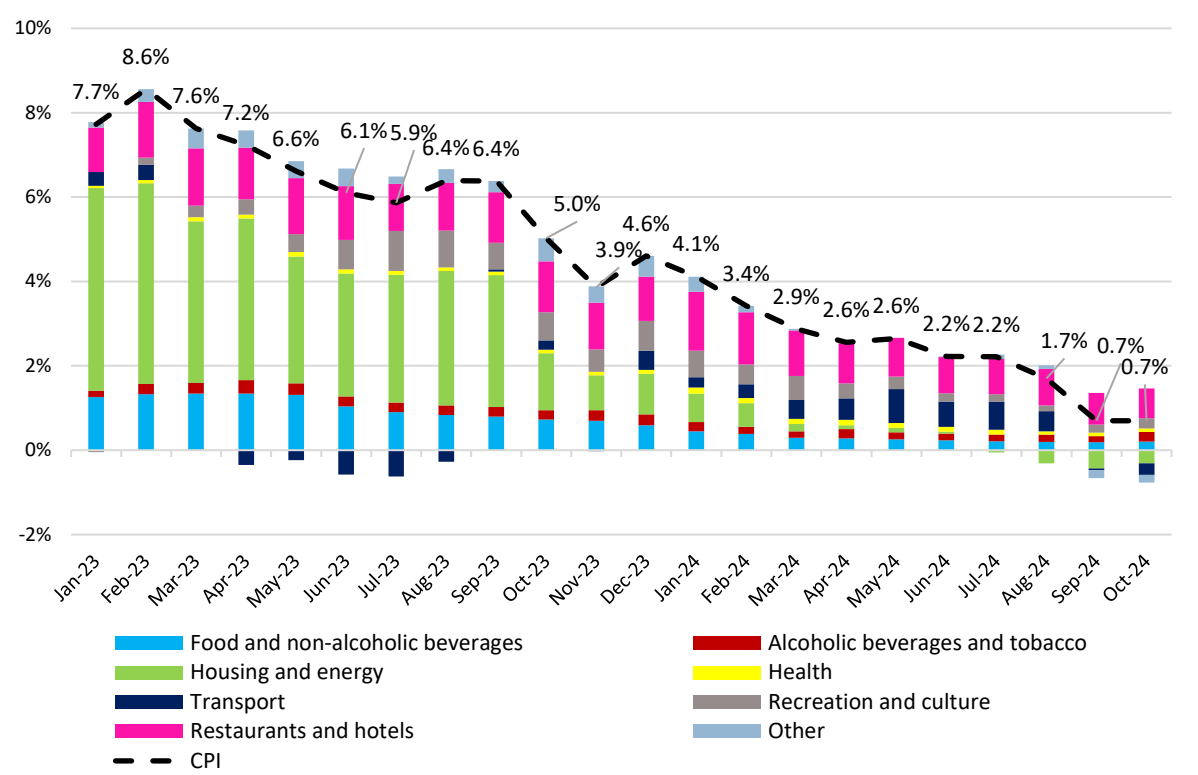


Source: Central Statistics Office and Eurostat.

Drivers of CPI inflation in Ireland

Inflation has continued to trend downwards through the third quarter of 2024. Figure 24 presents developments in the contributions to CPI inflation by key sectors in 2023 and 2024. We can observe three issues by comparing the first half of 2023, when inflation was high, with the recent low inflation period of 2024.

FIGURE 24 WEIGHTED CPI DEVELOPMENT



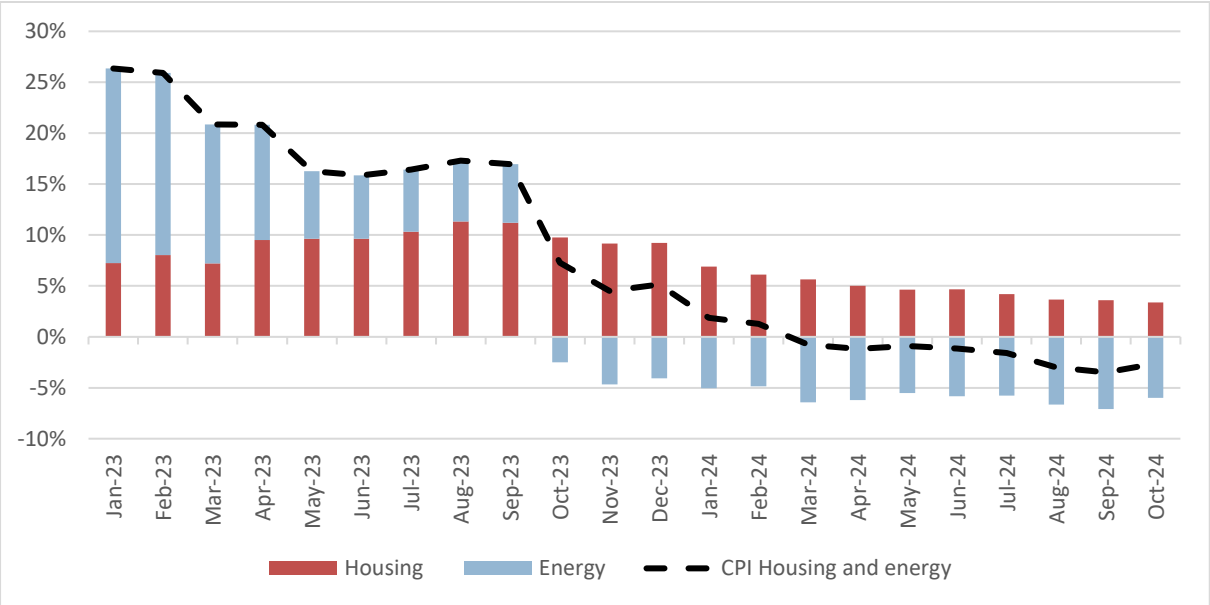
Source: Central Statistics Office and authors' calculation.

First, inflation in the 'restaurants and hotels' sector has fallen at a much slower rate than other sectors. Note that the chart above presents the contribution of the different sectors to the overall rate. Each sector has a rate of inflation that is weighted and combined into the headline rate plotted by the dashed black line. The actual rate of inflation in the 'restaurants and hotels' sector averaged 8 per cent in 2023. While it has fallen to an average of 5 per cent in 2024 to date, it remains the largest contributor to inflation in each month of the year.

Second, in early 2023 the 'housing and energy' sector of the CPI was responsible for over half of overall inflation. This element is now experiencing negative price growth. The reversal has been central to developments in overall inflation in Ireland, particularly through second round effects. Figure 25 demonstrates that the CPI has been driven by lower energy prices, while housing costs have continued to increase.[15]

15 'Housing' consists of rents, mortgage interest, maintenance and repair, and water supply. 'Energy' consists of liquid fuels, electricity, solid fuels and gas.

FIGURE 25 HOUSING AND ENERGY

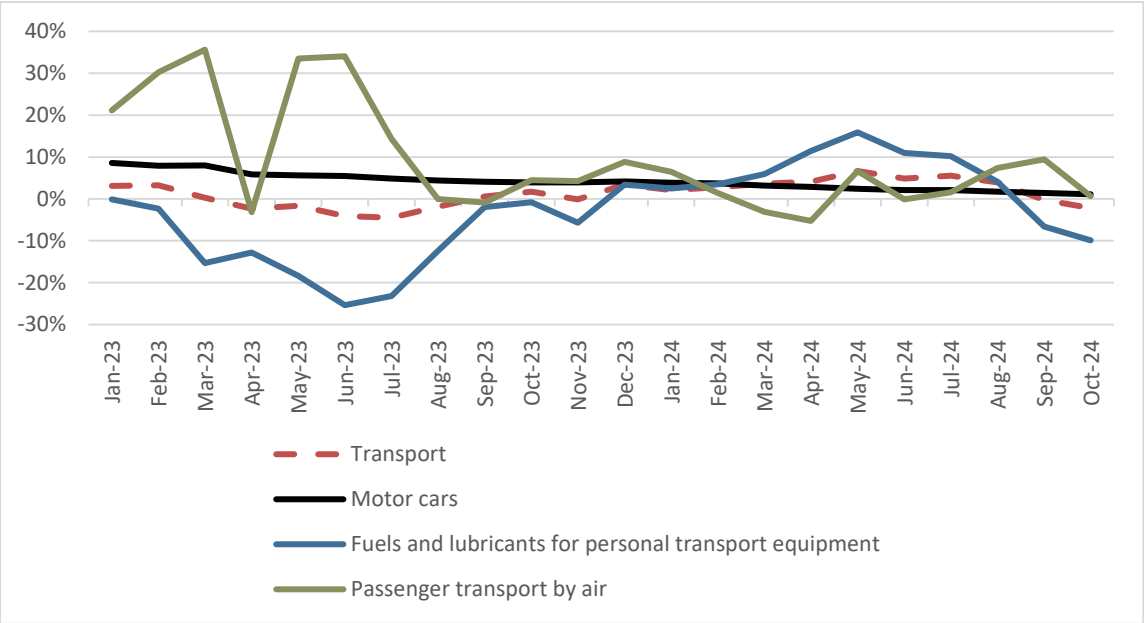


Source: Central Statistics Office and authors' calculation.

Third, trends in price developments by sector have tended to be quite consistent on a month to month basis, with the exception of the 'transport' sector, which appears to be more volatile than the others. For example, the 'recreation and culture', 'health' and 'alcoholic beverages and tobacco' sectors have been quite consistent in contributing small positive amounts to overall inflation. 'Housing and energy' and 'food and non-alcoholic beverages' have declined over time but the decline has been gradual.

Figure 26 highlights developments in the rate of inflation in the 'transport' sector. The three most heavily weighted sub-components in this sector are purchases of motor cars, air fares and 'fuels and lubricants for personal transport equipment', which consists primarily of petrol and diesel. Purchases of motor cars have seen a gradual decline in the rate of price increases but air fares and prices for motor fuels have been quite volatile.

FIGURE 26 CPI INFLATION IN THE TRANSPORT SECTOR AND LARGEST SUB-COMPONENTS



Source: Central Statistics Office and authors' calculation.

Summary

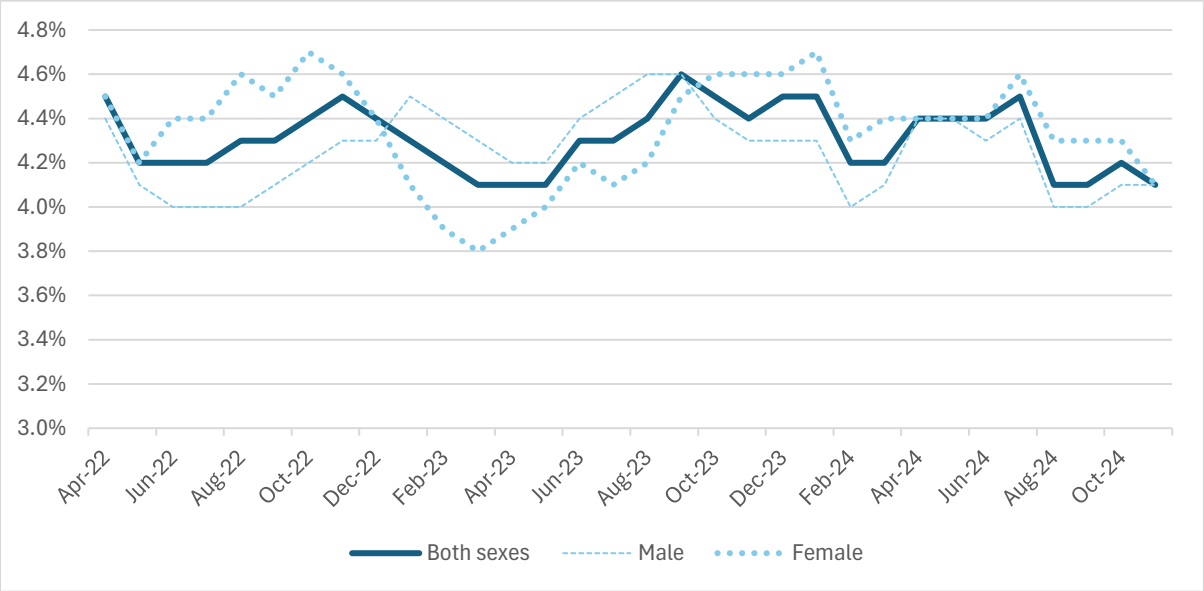
Inflation is trending downwards at a faster pace than previously expected. When combined with expected growth in nominal wages, this means real wages will grow to a greater degree. Falling energy prices are exerting downward pressure on the rate of inflation, while the 'restaurants and hotels' sector remains the largest contributor to Irish inflation. Ireland's inflation is lower than the prevailing European rate of inflation.

Overall, we expect CPI inflation in 2024 to average at 2.1 per cent and at 1 per cent in 2025.

LABOUR MARKET

The year 2024 was a strong one for the Irish labour market. Unemployment remains low, with the rate for November standing at 4.1 per cent. Continued economic growth should see ongoing growth in employment numbers and real wages.

FIGURE 27 MONTHLY UNEMPLOYMENT RATE BY SEX



Source: Central Statistics Office and authors' calculation.

Figure 27 highlights two features of the recent period of low unemployment. First, male and female unemployment rates behaved differently during 2022 and early 2023. However, they have since converged to a more stable pattern with the female rate slightly above the male rate. This is a reversal of the long-run pattern where male unemployment typically averaged 1 per cent higher than female unemployment.

Second, the stability of the headline monthly rate is striking. For 30 consecutive months, the unemployment rate has fluctuated in a narrow range between 4.1 per cent and 4.6 per cent. The recent performance of the labour market would suggest that movements in unemployment are caused by timing issues. In the context of immigration, when people first enter the country they may appear as unemployed in the labour force statistics, before then entering employment, which would cause the unemployment rate to fall.

Continued growth in employment

The strength of the Irish economy has resulted in continued employment growth, with almost 2.8 million people in employment in the last quarter. The growth rate in the labour force has averaged 2.9 per cent in the last two years. Recent work by the ESRI suggests that more than 90 per cent of economic growth since 2020 has

been driven by increased labour input, rather than increases in productivity or in capital inputs.[16]

Historically, Irish growth has been associated with significant employment growth. Periods of low economic growth in the 1950s and 1980s were characterised by high unemployment and low labour force participation rates. Strong Irish growth during the 1990s was accompanied by an 'employment miracle', as demographics, external factors and industrial relations policy combined to reduce unemployment and increase participation rates.[17] The percentage growth in employment in Ireland during the 1990s was over two and a half times larger than the next fastest growing European country.

During this period of rapid growth, there was a shift in factor income allocation, away from labour and towards capital.[18] In a Research Note published with the *Commentary*, we show, using a novel method for estimating the labour share, that the share has not declined since the late 1990s (O'Shea, 2024).

Rapid growth in employment numbers cannot continue indefinitely. The demographic outlook is positive in the short run, with the working-age population set to increase through natural growth and continued positive net migration. However, in the long run, an ageing population will restrict the growth of the labour force.

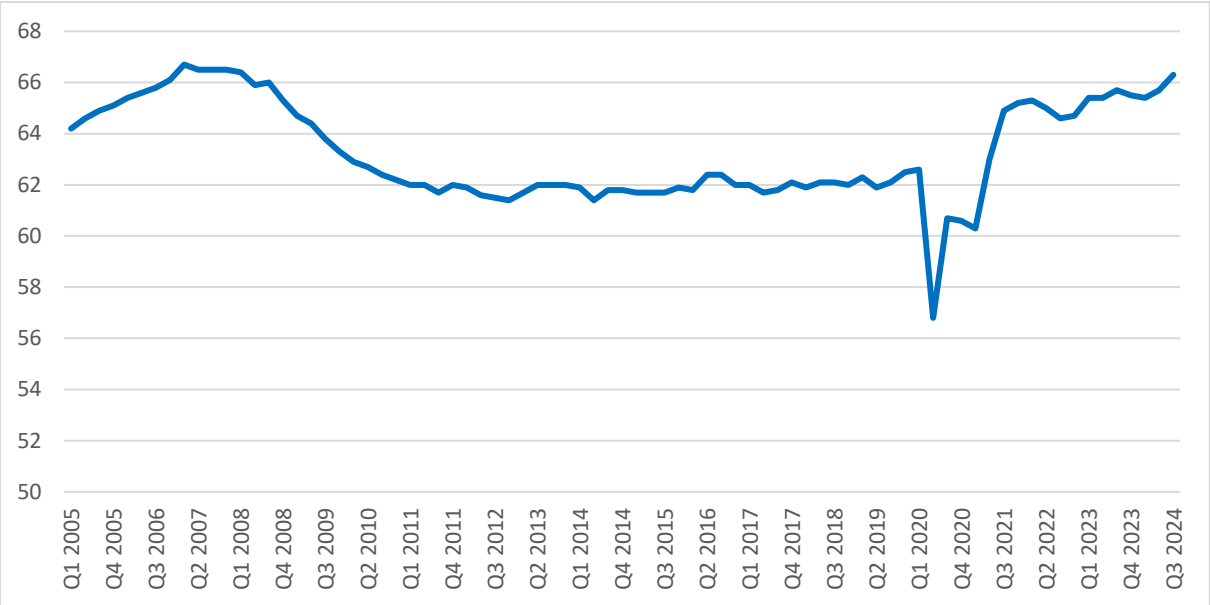
Two other levers that have been used to increase employment are also limited in the extent to which they can be used in the long run. First, the unemployment rate appears to have a lower bound in the region of 4 per cent. Second, the labour force participation rate is currently close to its record high and it is notably higher than it was in the pre-COVID-19 period. Figure 28 contrasts the period of stable labour force participation rates (in the region of 62 per cent) during the 2010s with the recent higher rates.

16 Egan, P. and K. McQuinn (2024). 'Demographics, higher investment and the future potential growth rate of the Irish economy', ESRI Working Paper Series No. 795, Dublin: ESRI.

17 Honohan, P. and B. Walsh (2002). 'Catching up with the leaders: The Irish hare', *Brookings Papers on Economic Activity,* Vol 1.

18 Lane, P. (1998). 'Profits and wages in Ireland 1987–1996', *Journal of the Statistical and Social Inquiry Society of Ireland*, Vol XXVII, part V.

FIGURE 28 LABOUR FORCE PARTICIPATION RATE (%)



Source: Central Statistics Office.
Notes: The labour force participation rate measures the proportion of those in the age group of 15–74 years who are available for work (either in employment or unemployed).

Sectoral employment trends

Overall employment increased by 3.6 per cent in Q3 2024 compared with Q3 2023. Most sectors have experienced growth in employment, with the strongest growth in the 'professional, scientific and technical activities' and 'public administration' sectors, which both increased by 12 per cent. Notably, construction rebounded to grow by 4 per cent, following a decline of -6.9 per cent in the second quarter of 2024.

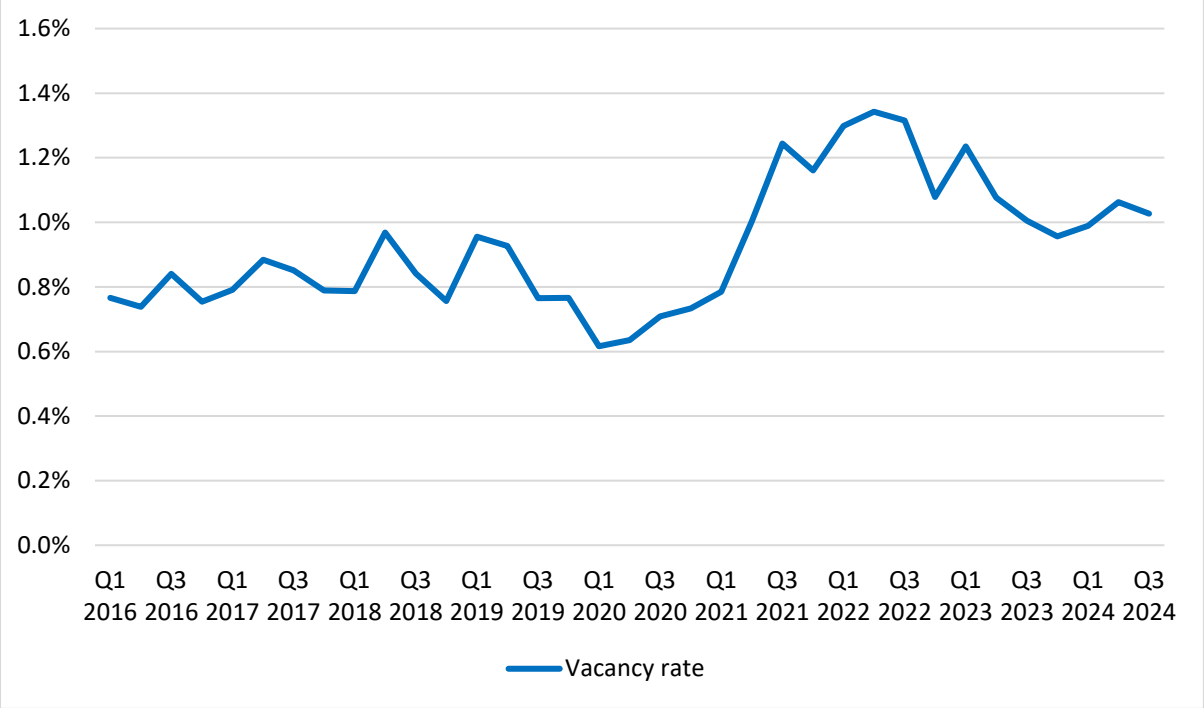
Vacancies

The job vacancy rate (JVR) measures the proportion of total posts that are vacant.

$$JVR = \frac{Vacant\ Posts}{(Vacant\ Posts + Filled\ Posts)} * 100$$

The post-COVID-19 period was characterised by a vacancy rate in excess of 1 per cent. In the past year, the vacancy rate has shown signs of returning to its pre-COVID-19 average of ~0.8 per cent. This vacancy rate is one of the lowest in Europe.

FIGURE 29 VACANCY RATE

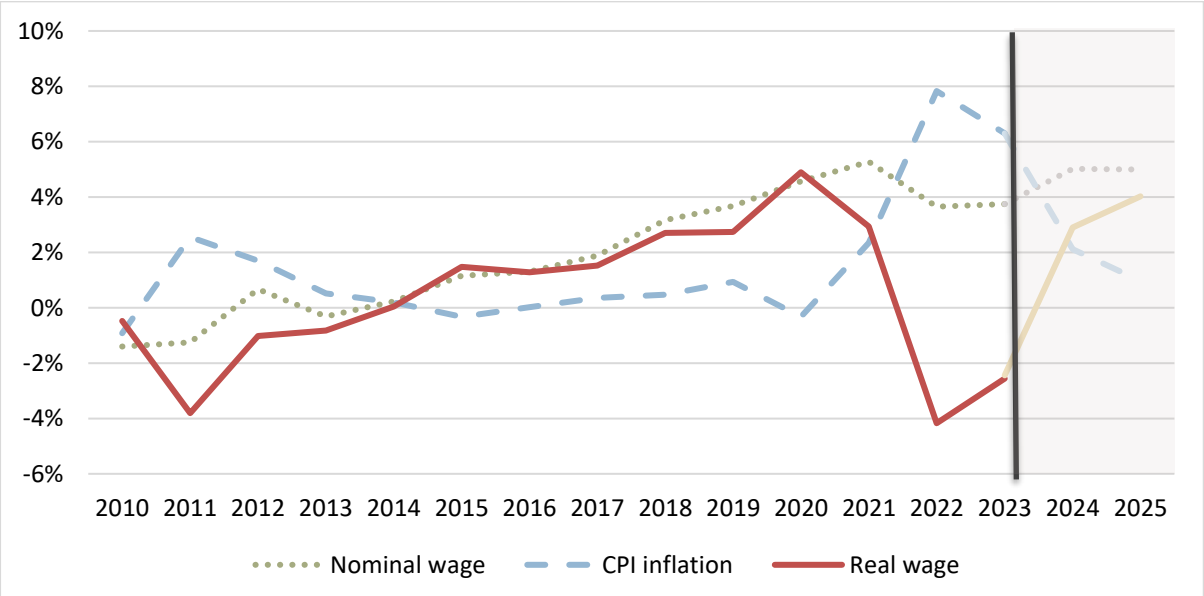


Source: Central Statistics Office and authors' calculation.

Real wages to grow into 2025

Figure 30 presents nominal wages, inflation and real wages. We forecast continued growth in real wages into 2025. This growth is attributable to nominal wage growth and low inflation. The latter effect is the stronger of the two, as inflation has fallen faster and to a lower rate than expected.

FIGURE 30 NOMINAL AND REAL WAGE GROWTH FORECAST



Source: Central Statistics Office and authors' calculations.

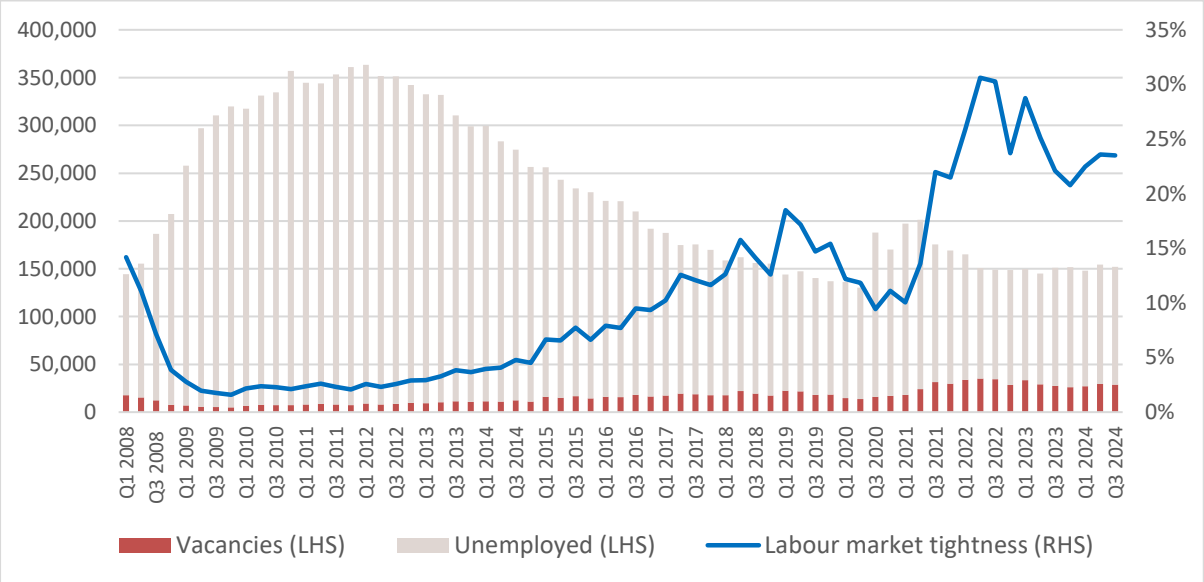
This increase in real wages signifies a recovery in household purchasing power. It remains to be seen whether this increase in real wages is used to fund consumption or whether it results in increased saving.

Labour market tightness

Labour market tightness captures the extent to which demand for labour exceeds the supply of labour. This tightness is characterised by low unemployment rates, high vacancy rates and rising wages. Figure 31 presents an indicator of labour market tightness, namely the ratio of job vacancies to unemployed individuals. A higher ratio signifies a tighter labour market. This indicator is very informative in some economies. In the Irish case, its interpretation should be qualified by noting that the labour market may not be as tight as it seems because of the potential for inward migration.

This indicator supports the analysis of the vacancy rate presented above. Although the labour market has loosened somewhat in 2024, it is still considerably tighter than the average throughout the 2010s.

FIGURE 31 LABOUR MARKET TIGHTNESS IN IRELAND



Source: Central Statistics Office and authors' calculations.

Summary

The labour market in the post-COVID-19 period has been consistently strong. We expect this to continue in 2025, with an unemployment rate of 4.3 per cent on average in 2024 set to decrease slightly to 4.2 per cent in 2025. We expect real wages to grow by 2.9 per cent in 2024 and by 4 per cent in 2025.

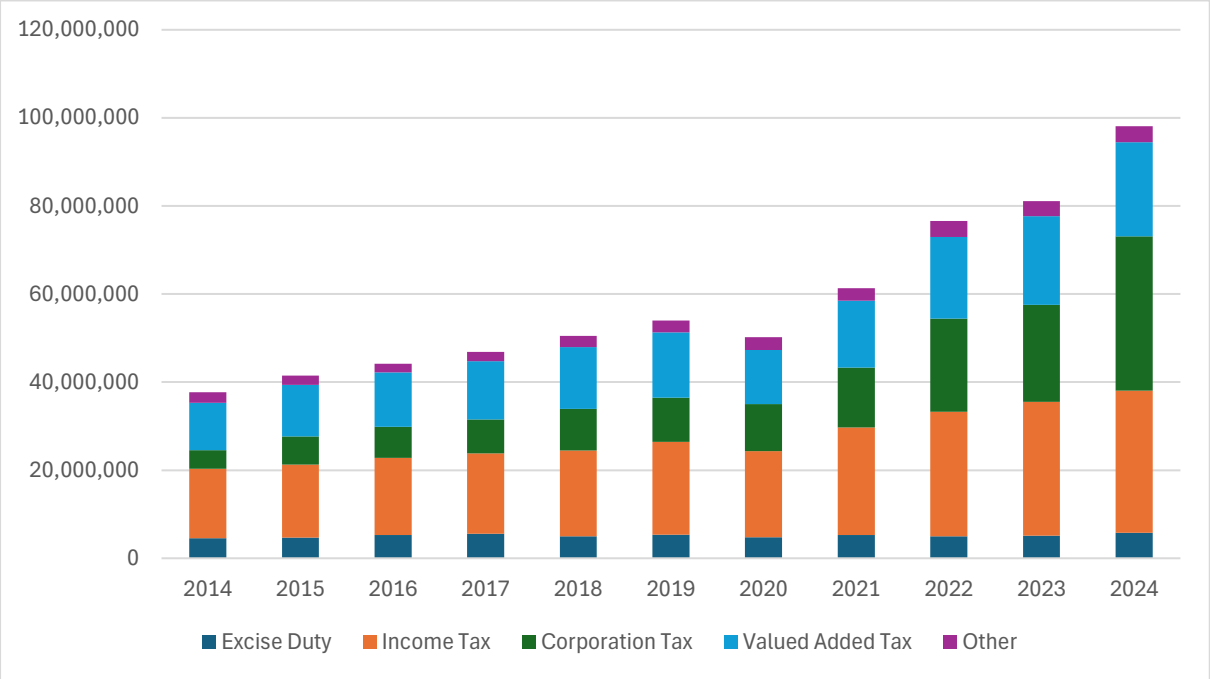
PUBLIC FINANCES

Overview and forecast of tax revenue

Tax receipts to November 2024 have grown compared with the equivalent period in 2023 in all of the major tax headings. Figure 32 highlights that income tax, VAT and corporation tax have all grown strongly in the past ten years. Each block in the figure represents tax receipts from January to October and so can be directly compared on a year-to-date basis.

The corporation tax receipts should be interpreted with caution. Around one-quarter of the total amount accruing as a result of the judgement made by the Court of Justice of the European Union (CJEU) was received in October. This is responsible for some of the year-on-year growth in revenue.

FIGURE 32 GROWTH RATE OF MAIN TAXATION HEADINGS, JANUARY–NOVEMBER (€, THOUSANDS)



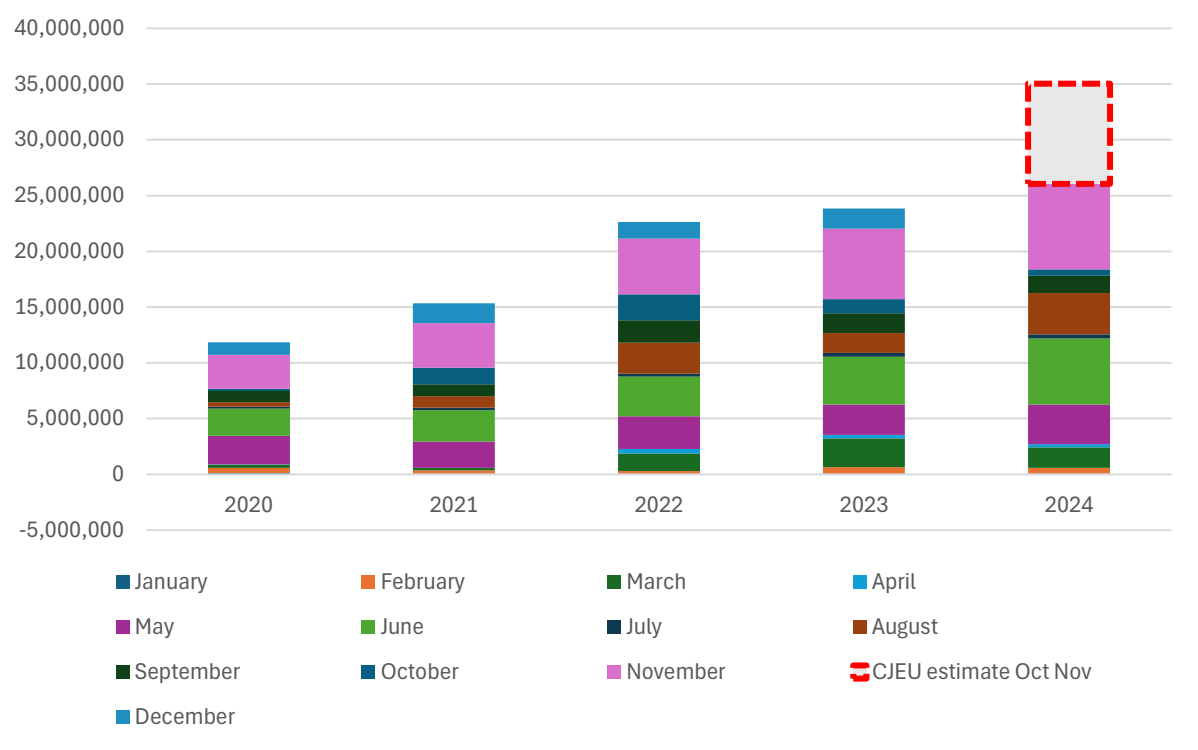
Source: Department of Finance and authors' calculations.
Note: 'Other' includes customs, Capital Gains Tax, Capital Acquisitions Tax and stamps.

Corporation tax receipts

Recent large increases in corporation taxes have been well discussed in previous editions of the *Commentary*. Figure 33 presents corporation tax receipts by month for the past five years. May, June and November have typically been the largest months for corporation tax receipts.

Figure 33 also presents an estimate of the first tranche of the funds resulting from the CJEU judgement in October and November. Even excluding this figure, corporation tax receipts to date have increased on a year-on-year basis.

FIGURE 33 CORPORATION TAX RECEIPTS BY MONTH (€, THOUSANDS)

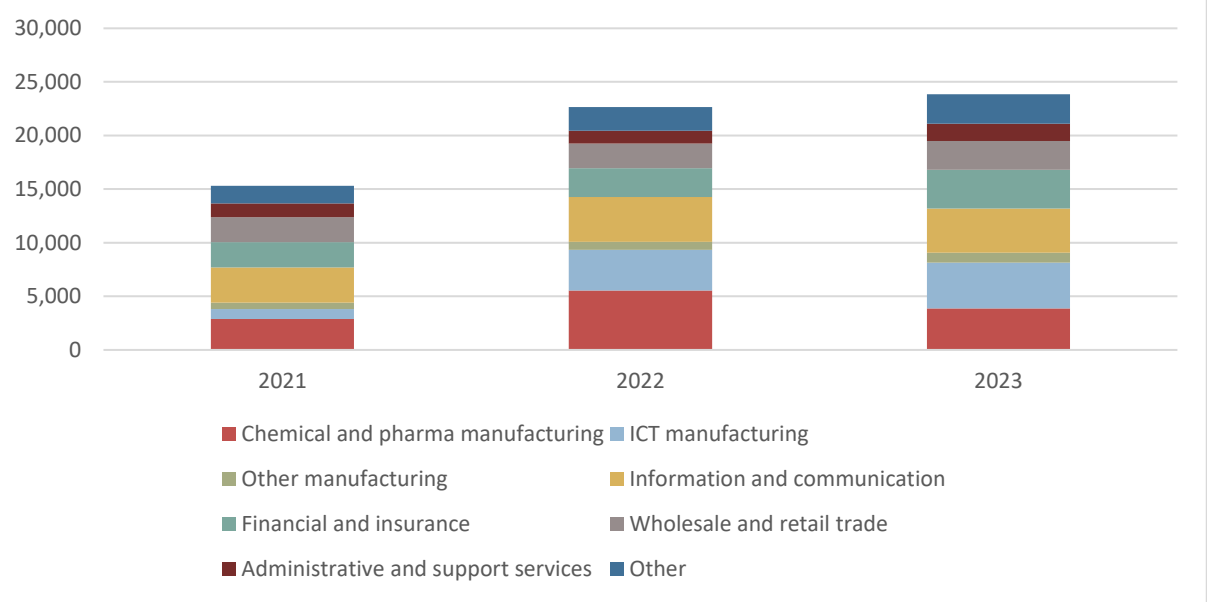


Source: Department of Finance and authors' calculations.
Note: 'CJEU Oct Nov' refers to an estimate of the funds received in October and November resulting from the CJEU judgement. 2024 does not include figures for December.

However, the outlook for future corporation tax receipts is particularly uncertain given the likely stance of the incoming US administration. Two policy dimensions could affect the Irish public finances. First, the Trump campaign signalled its intention to reshore to the US profits arising from intellectual property that is located in Ireland. If this were done, it could have a significant impact on future corporation tax receipts.

Second, aggressive US trade policy could affect decision making in large multinationals. Ireland's corporation tax receipts are heavily dependent on a small number of firms. Figure 34 presents corporation tax receipts by sector and highlights the exposure to ICT manufacturing and pharma manufacturing. In these sectors, there may be a higher risk of relocation because firms with complex, globalised manufacturing processes could be liable for transatlantic tariffs more than once for a given product.

FIGURE 34 CORPORATION TAX BY SECTOR (€, MILLIONS)



Source: Revenue Commissioner Corporate Tax Analysis, 2022–2024.

Headline and adjusted surpluses

The funds resulting from the CJEU judgement also impact on the general government balance (GGB). Table 9 presents our forecast for 2024 and 2025 for the headline figures, and an adjusted balance for 2024 excluding the one-off receipt of these funds.[19] In the case of the adjusted balance we subtract the €14bn from government revenues. This means that the adjusted GGB balance in 2024 would have been €9,418m or 1.9 per cent of GDP, whereas the actual, headline figure is €23,418m or 4.6 per cent of GDP.

19 Note: This adjusted surplus makes no comment on the windfall nature of recent corporation tax receipts. It simply adjusts for the funds received resulting from the CJEU judgement.

TABLE 9 HEADLINE AND ADJUSTED GENERAL GOVERNMENT BALANCE (€, MILLIONS)

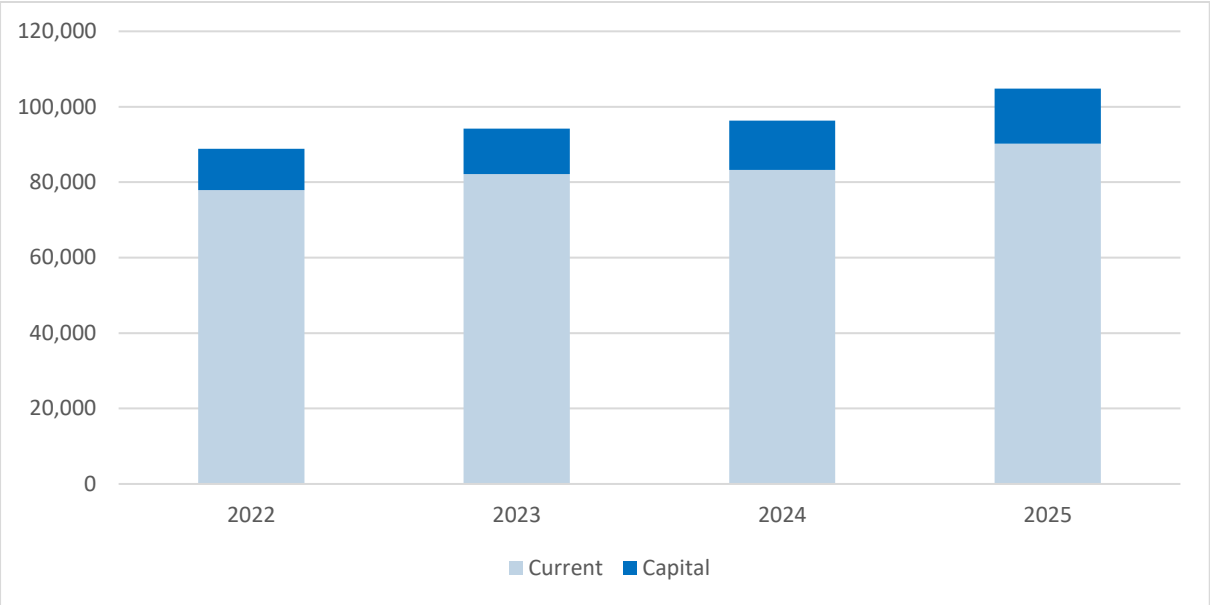
	2024	2024 adjusted	2025
Revenue	**148,753**	**134,753**	**140,653**
Taxes	116,793	113,150	106,083
Social contributions	22,745	22,745	25,475
Investment income	2,005	2,005	1,965
Other	7,210	7,210	7,130
Expenditure	**125,335**	**125,335**	**131,290**
General government balance			
€, million	23,418	9,418	9,363
% of GDP	4.6%	1.9%	1.8%
Contributions to investment funds	4,050	4,050	6,080

Source: Authors' calculations.
Note: We assume that all of the CJEU funds will be received in 2024. We assume in line with Department of Finance projections that there will be contributions to investment funds of €4.05bn in 2024 and €6.08bn in 2025, consisting of €4.08bn to the Future Ireland Fund and €2bn to the Infrastructure, Climate and Nature Fund.

Expenditure

Budget 2025 outlines increases in current and capital spending in the year ahead. A Special Article published with the *Commentary* discusses the distributional effect of the tax, welfare and expenditure decisions taken in the Budget (Doorley et al., 2024). Capital expenditure is currently growing faster than current expenditure, likely reflecting a catch-up period following low investment in the years following the global financial crisis. As a result, capital expenditure is increasing as a share of overall expenditure (Figure 35).

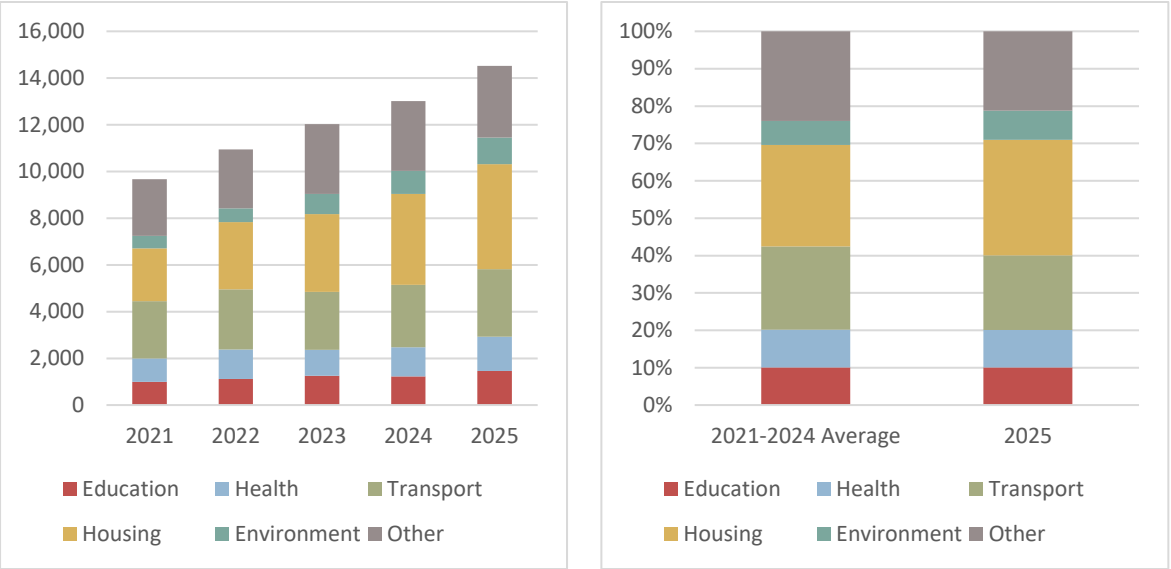
FIGURE 35 GROSS VOTED CURRENT AND CAPITAL EXPENDITURE (€, MILLIONS)



Source: Department of Public Expenditure, NDP Delivery and Reform Databank.

Increased capital expenditure raises the question of where the expenditure will be directed. Figure 36 compares the areas into which budgeted capital expenditure for 2025 will be directed with the equivalent figures for recent years. The lefthand panel highlights the increase in capital spending on housing. The righthand panel shows the percentage of capital spending allocated to each area. The share of total capital spending that is spent on housing and the environment will increase in 2025 relative to the average over the last four years.

FIGURE 36 GROSS VOTED CAPITAL EXPENDITURE BY DEPARTMENT (€, MILLIONS)

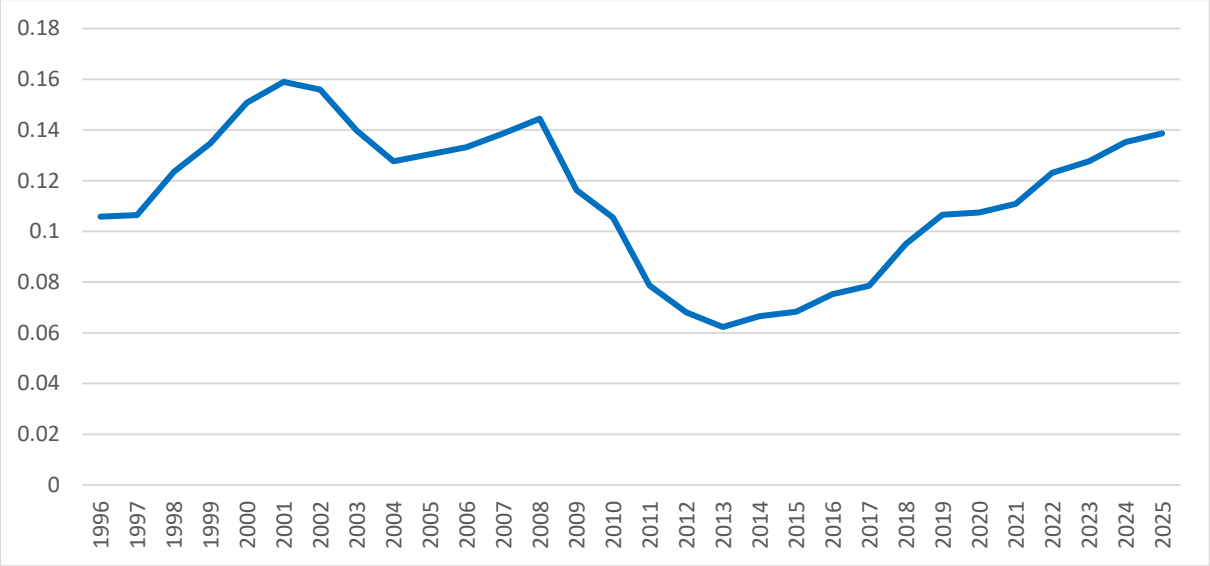


Source: Department of Public Expenditure, NDP Delivery and Reform Databank.

Investment funds and pro-cyclical capital expenditure

Figure 37 presents a long-term perspective on the ratio of capital expenditure to total expenditure. The relative prioritisation of capital expenditure has largely depended on the strength of the economy.

FIGURE 37 RATIO OF CAPITAL EXPENDITURE TO TOTAL GROSS VOTED EXPENDITURE



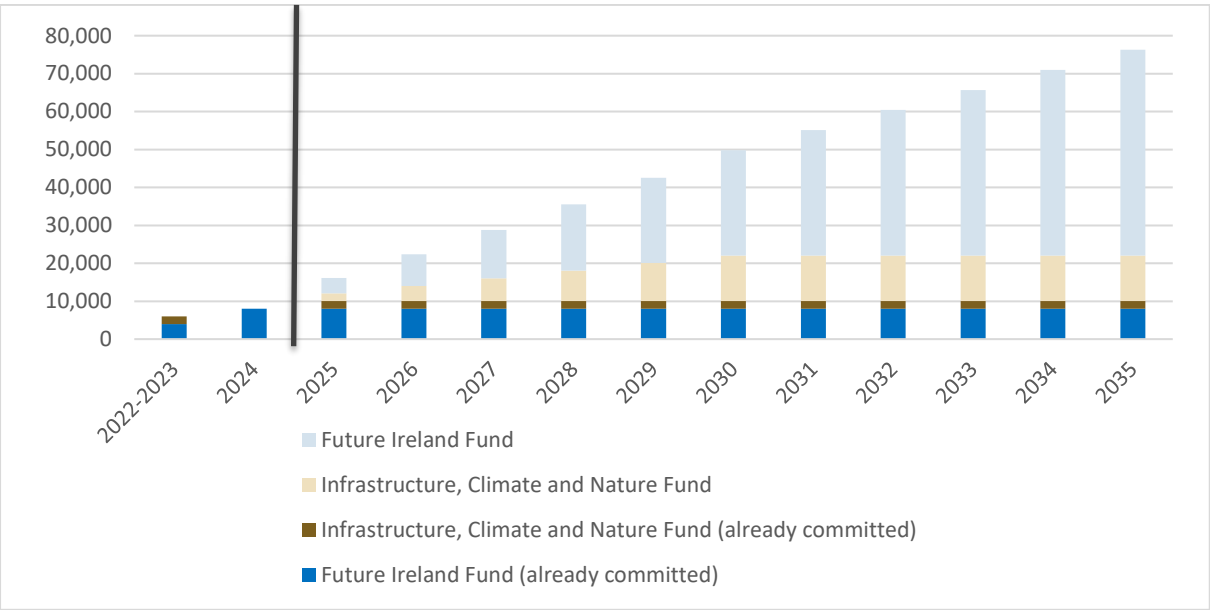
Source: Department of Public Expenditure, NDP Delivery and Reform Databank and authors' calculations.

Previous editions of the *Commentary* have welcomed the establishment of two new state investment funds in the hope that the existence of such funds during future downturns will lead to public spending, in particular capital spending, being less pro-cyclical in future. In addition, the funds should mitigate against excessive public spending in light of the windfall nature of recent corporation tax receipts.

However, the extent to which the investment funds can meet their stated goals will largely be determined by the eventual size of the contributions to the funds. Figure 38 presents the intended contributions to the funds.[20]

Figure 38 highlights the gap between the initial contributions made in 2023 and 2024, and the total contributions envisioned over the lifetime of the funds. The amount currently in the funds is less than the budgeted capital expenditure for 2025 alone. The long-term success of the funds will be determined by the commitment of future governments to persist with the initial commitment and the ability of the economy to continue to generate government surpluses.

FIGURE 38 EVOLUTION OF INVESTMENT FUNDS (€, MILLIONS)



Source: Authors' calculations.
Note: Department of Finance projections used for contributions to the Future Ireland Fund out to 2030. Conservative assumption applied of no further increases to the annual contribution after 2030.

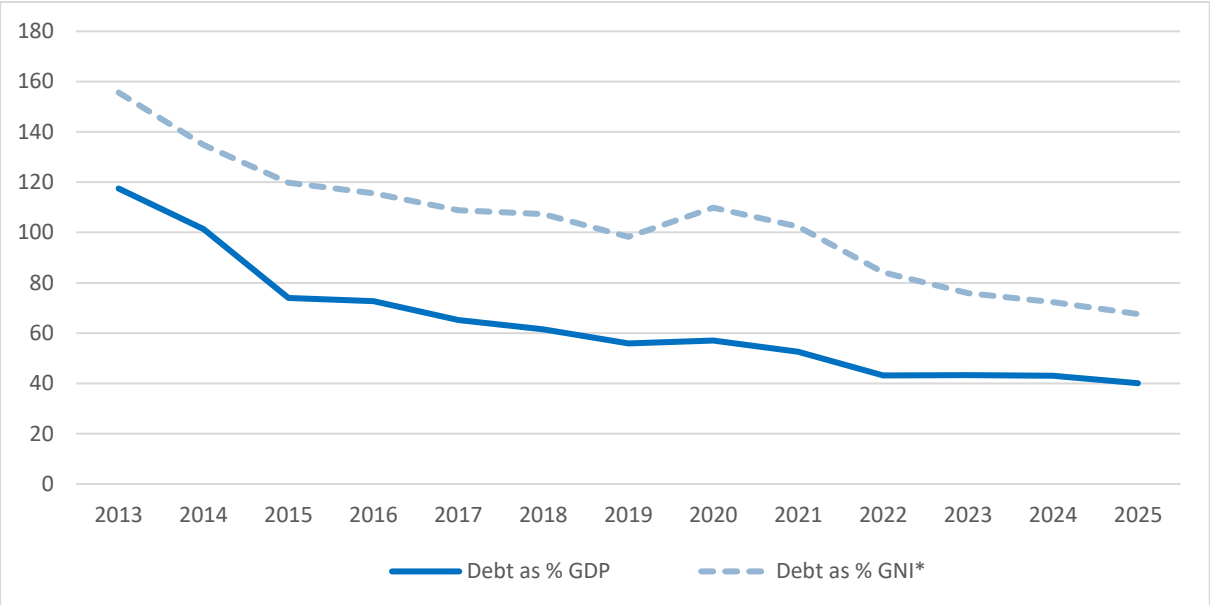
Debt to output ratios declining

As illustrated in Figure 39, the debt-to-output ratio has decreased when measured against both GDP and GNI*. Both measures of output have been increasing, while gross general government debt is forecast to continue to decrease into 2025.

In addition, the GGB has been in surplus in 2024 and will continue to be so in 2025. While the existence of this surplus is attributable to windfall corporation tax receipts, the effect on the debt-to-output ratio is evident.

20 This analysis is focused on contributions to the funds. It excludes return on investments made by the funds, or potential drawdowns of the Infrastructure, Climate and Nature Fund between 2026 and 2030.

FIGURE 39 DEBT-TO-OUTPUT RATIO TREND AND FORECAST



Source: Central Statistics Office and authors' calculations.

The National Treasury Management Agency (NTMA) has stated that Irish debt has one of the longest weighted average maturities of all European countries, with only modest redemptions expected in the short term.[21] They also point out that Irish borrowing was higher during the low interest rate period of 2014–2021 than it has been in the higher interest rate period of 2022–2024.

Summary

In summary, while the funds received following the CJEU judgement will distort the overall picture for 2024, the underlying public finances appear to be robust. We expect the robust health of the public finances to continue into 2025. The GBB is forecasted to be 6.5 and 1.1 per cent of GNI* during these years. We expect this to contribute to a reduction in the debt-to-GNI* ratio to 67.5 per cent by the end of 2025.

21 NTMA (2024). 'Institutional investor presentation: Annual report and financial statements', October.

General assessment

Current expected outlook – Real income set to increase

As we approach the end of the year, the domestic Irish economy looks set to register another strong performance in 2024. While the underlying economy continued to perform robustly throughout the year, as denoted by modified domestic demand (MDD), headline indicators such as GDP indicated negative growth for most of 2024. Overall we expect GDP to decline in 2024 as investment outflows of R&D capital and higher imports outweigh a recovery in exports. In 2024, we expect MDD to grow by 3.2 per cent with GDP decreasing by 1.1 per cent. The latest Nowcast estimate in the *Commentary* (see Egan and Kren, 2024, for details)[22] shows that MDD is currently growing at 3 per cent.

In 2025, mainly because of the anticipated decline in inflation, real incomes are set to grow significantly in the domestic economy. Furthermore, we expect a rebound in residential construction activity. Accordingly, we believe MDD will grow at a slightly elevated rate of 4.1 per cent next year, with GDP increasing by 4.5 per cent. This however is framed against the backdrop of a 'business as usual' set of trading relationships in the global economy. Below we discuss the possible implications if the incoming US administration were to adopt some of the policies proposed during the presidential election campaign there.

Given the strong pace of growth in the domestic economy, there are now likely to be 55,000 additional workers employed in 2024 compared with 2023. In 2025 we expect employment in the economy to exceed 2.8 million for the first time in the country's history. We expect the unemployment rate to fall to 4.2 per cent next year.

Forthcoming change of administration in the United States

As speculated in the previous *Commentary*, the re-election of Donald Trump as president of the United States brings with it considerable uncertainty, particularly in terms of the macroeconomic implications of some of the trade policies that have been proposed. For example, the possible introduction of trade tariffs by the new administration would likely provoke retaliatory measures from China and other countries, which would have direct consequences for global trade and, consequently, a small open economy such as that of Ireland.

A related but separate possible impact of a second Trump presidency on our domestic economy could be vis-à-vis inward FDI in Ireland by US companies. In a box accompanying the *Commentary*, Fitzgerald highlights the significant role in the Irish economy played by US multinationals in terms of their contributions via

22 See https://www.esri.ie/news/esri-nowcast.

corporation tax and wages. Indeed, over the past number of years, the *Commentary* has stressed the significant contribution to Irish economic growth made by the ICT and pharmaceutical sectors in particular.

Any changes to US tax legislation that sees a major reshoring to the US of profits arising from intellectual property that is located in Ireland could have a serious impact on Irish corporation tax revenue. Because of the importance of this revenue for the Irish economy, such a shock could have a very major and lasting impact on the economy and particularly on the public finances. Previous Commentaries have highlighted the vulnerability of corporation tax receipts to a sudden fall in the 'windfall' component of this taxation source.

The substantial employment in the domestic pharmaceutical sector could be adversely affected if production were shifted to the US as a result of increased tariffs. This is highlighted by the high value of exports of pharmaceuticals to the US. However, if similar tariffs were imposed in the EU on US exports, there could be some increase in production in Ireland by the same firms to supply a non-US market. This could partially, or even fully, offset the effects of reshoring or pharmaceutical production to the US. Indeed, given the long-term nature of many of the investments made by US pharmaceutical firms in Ireland, and multitude of factors that would have informed those investment decisions (such as EU single market access), it is unclear as to how impactful the change in policy direction could be in this sector, in the short and medium term.

It is arguable that employment and wages in the IT and professional services sector would be less vulnerable to increased trade tensions between the US and the EU because most of the services of US multinationals in these sectors are provided to countries outside the US. However, they could be exposed to policies that target US-owned companies, for example in Asia, even though the services being provided globally are sourced from US firms headquartered in Ireland.

Budget 2025

The paper published with the *Commentary* by Doorley et al. (2024) outlines the customary analysis of Budget 2025 by the tax, welfare and pensions team in the Institute.

Budget 2025 saw a substantial overall total expenditure package of €10.5 billion. The income tax measures implemented include increases in the standard rate band and tax credits, along with a reduction in universal social charge (USC) liabilities. Some of the welfare measures introduced include increases in personal rates of payments for social welfare schemes, with proportionate increases to qualified adult increases. Weekly payments for child dependants rose and a new 'Newborn Baby Grant' of €280 was introduced, along with increase in payments received by carers. As well as Budget 2024, Budget 2025 witnessed further temporary

measures aimed at assisting with ongoing cost-of-living pressures. Energy credits, for example, were implemented, although at a lower rate than in 2024.

Doorley et al. (2024) conclude that the permanent measures in Budget 2025 are broadly progressive, with households in the bottom quintile of income expected to see a minor increase in equivalised disposable income. When temporary measures are included, the broadly progressive effect of the permanent measures becomes less clear. While households in the bottom decile of income see the largest relative rise in income of 0.5 per cent, the remainder of the bottom half of the income distribution see either no significant change in income or, in the case of the third decile, a reduction in real income of -0.4 per cent.

Finally, Doorley et al. (2024) note that, as with the measures in Budget 2024, it is evident that were it not for the temporary measures in place, the at risk of poverty rate of these groups would have risen more substantially in 2024 and 2025. Therefore, careful consideration must be given to how the permanent welfare system can be developed to ensure that when these temporary measures are withdrawn, lower income groups are not particularly affected.

Overall, in the Budget the commitment to increased investment and the further deployment of resources to the investment funds established is welcome. However, the Budget did contain measures that were not particularly well targeted and appear to have been overly generous in nature. Given the likely emergence of significant global trade uncertainty in 2025, there is an even greater requirement for the State's finances to be prudently managed by any new government put in place. It is imperative that the increased expenditure enabled by the relatively buoyant state of the government coffers must be accompanied by a policy of achieving value for money, and the efficient and effective delivery of large infrastructural projects.

Also, given the scale of potentially adverse economic implications that may occur due to the incoming US administration, it would be prudent to put some contingency plan in operation. For example, if it becomes apparent that there is going to be a significant impact on both multinational activity and corporation tax receipts in the domestic economy over the coming years, it may be necessary to re-appraise the spending commitments for future years, which have been agreed to in Budget 2025.

House price developments

The *Commentary* contains a number of items on house price developments. This is particularly appropriate given the acceleration in house price inflation through 2024.

In a paper on house price expectations, Kumar Verma and McQuinn (2024) use data from the new European Central Bank's Consumer Expectations Survey (CES) for 11 European countries. The CES is an online panel survey of consumers that has been carried out on a monthly basis since January 2020. They use the data to examine the relationship between price expectations and those forecasts of key fundamental determinants of house prices, such as interest rates and income levels. Kumar Verma and McQuinn (2024) find that expectations of the general economy, along with consumers' expectations of movements in real interest rates, have a significant impact on house price expectations. This may help to explain the recent pick-up in Irish house prices as consumers believe that mortgage interest rates are set to decline over the coming quarters.

In a box to the *Commentary*, Egan and McQuinn specifically address the sustainability or otherwise of recent Irish house price movements. Using a variety of indicators and models, Egan and McQuinn conclude that there is a certain amount of overvaluation in the market of approximately 10 per cent. Overall, most indicators suggest the Irish housing market has fewer vulnerabilities than was the case at the peak of the Celtic Tiger; however, recent trends in the debt service ratio would suggest that, increasingly, certain cohorts of Irish mortgage holders are carrying greater levels of mortgage debt relative to their income levels. This argues for a cautious approach from the Central Bank of Ireland when it reviews its mortgage market measures as part of its macroprudential framework.

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ESRI Research Note

ESTIMATING IRELAND'S LABOUR SHARE

Dónal O'Shea

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Estimating Ireland's Labour Share

Dónal O'Shea

ABSTRACT

The labour share of income is a crucial economic indicator that captures income distribution between the factors of production. Its importance as a parameter in macroeconomic models motivates this detailed study of methods for estimating the Irish labour share. International comparisons of the labour share that rely on distorted measures of Irish national income are misleading. Modified gross national income (GNI*) should be used as the denominator for the Irish labour share when conducting international comparisons. The numerator of the labour share is a measure of total compensation for labour, including the labour income of the self-employed. This note evaluates existing methods for imputing the labour income of the self-employed and proposes a new method, which applies a sectoral approach to the common assumption of equal total earnings between employees and the self-employed. Using the proposed method, there is no evidence of a decline in the labour share since 1998.

1. INTRODUCTION

The concept of the labour share of income can be informative about developments in productivity and income distribution in a particular economy. The labour share, or the portion of national income allocated to workers through wages and benefits, is a crucial economic indicator reflecting the balance between labour and capital in income distribution. A higher labour share suggests that workers are receiving a fair portion of the economic gains, which can foster economic stability and reduce inequality. It is essential because it impacts the overall well-being of the workforce, affecting their ability to consume and invest, and to improve their quality of life. A decline in the labour share often signals an economy where corporate profits and returns to capital outpace wage growth, potentially leading to wealth concentration and economic imbalances.

The labour share of income is an important parameter in macroeconomic models. Lawless and Rehill (2021) point out that '[t]he stability of the labour share of income is a fundamental feature of macroeconomic models, with broad implications for the shape of the production function, inequality, and macroeconomic dynamics'. In addition, Hur (2021) demonstrates how changes in the labour income share can affect business cycle fluctuations. The analysis presented in this Research Note will have implications for both long-term growth accounting models of the Irish economy and for short-term macroeconomic models.

The *Commentary* has continued to highlight challenges posed by distortions in the Irish national accounts. These distortions affect the accuracy of estimation of the Irish labour share. Section 2 addresses the effect of the choice of measure of national income on the estimation of the labour share. Section 3 then discusses the appropriateness of various methods that are commonly used to ensure that measurement of the labour share correctly accounts for income earned by those who are self-employed, as well as that earned by employees. Section 4 will present the assumptions on average earnings in each sector, with a focus on agriculture.

2. CHOOSING AN APPROPRIATE MEASURE OF NATIONAL INCOME

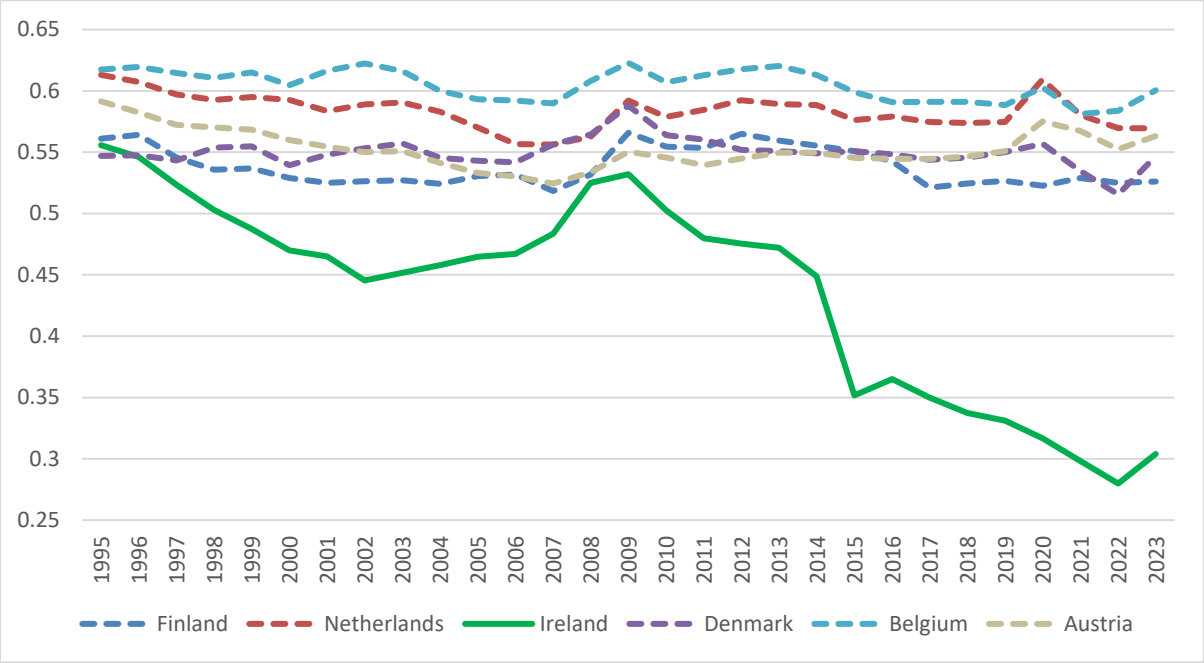
The contemporary literature on the labour share has focused on issues around measurement (Feenstra et al., 2015; Caswell, 2024) and on investigating the causes of a decline in the share in recent years (Cho et al., 2017).

While studies differ in the precise measurement of the numerator of the labour share, most international comparisons use gross domestic product (GDP) as the denominator (for example, OECD, 2024; Gollin, 2002; and Karabarbounis, 2024). Figure 1 shows the Irish labour share compared with a peer group of European

countries of similar size and openness. It shows that using GDP as the denominator in an Irish context is not particularly informative because of large increases in GDP since 2015.

These large increases have arisen as a result of depreciation on foreign assets of foreign-owned multi-national enterprises resident in Ireland and the undistributed profits of redomiciled public limited companies (Fitzgerald, 2016). These elements should not be included in the measurement of the labour share of income, as this recorded income is not available for distribution to either capital or labour in Ireland.

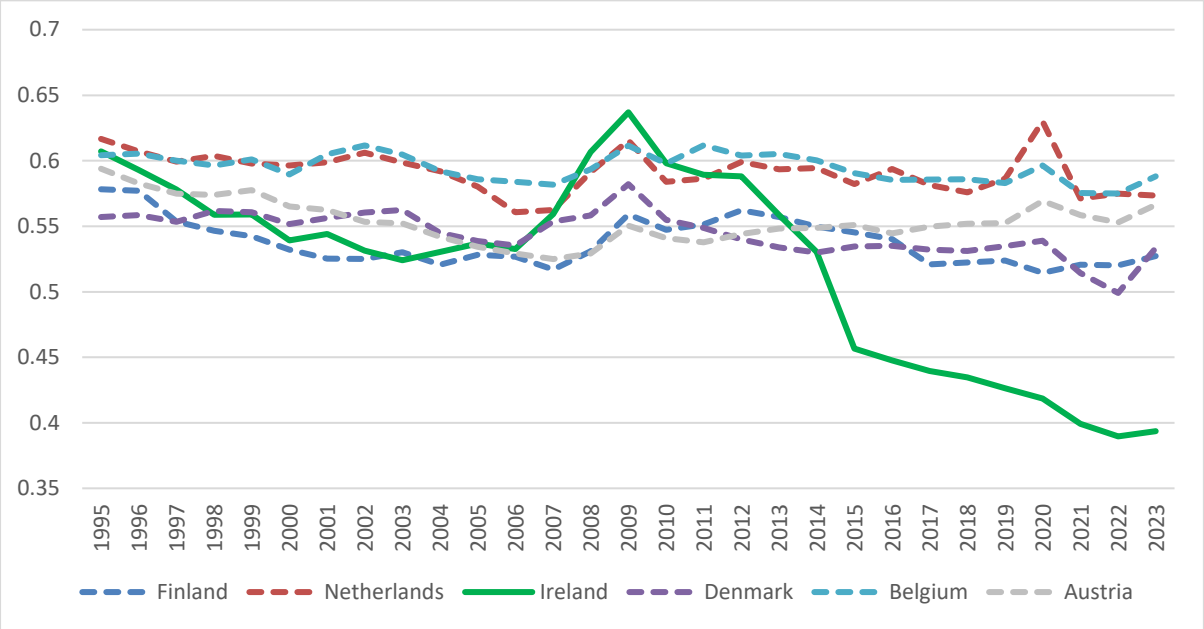
FIGURE 1 LABOUR SHARE USING GDP



Sources: AMECO database and author's calculations.

Flaherty and Ó Riain (2019) identify this problem and use gross national income (GNI) to compare the labour share in Ireland and Denmark. Using GNI causes the value of the labour share to be in line with the peer group of European countries up to the late 2000s. Fitzgerald (2020) points out that while GNI was a satisfactory measure until the 2000s, developments in the years since attributable to increased globalisation have affected the interpretability of GNI. This criticism also applies to the labour share when measured using GNI. Figure 2 presents a sharp decline in the labour share in recent years, which is likely attributable to measurement issues with GNI rather than structural changes in underlying income distribution.

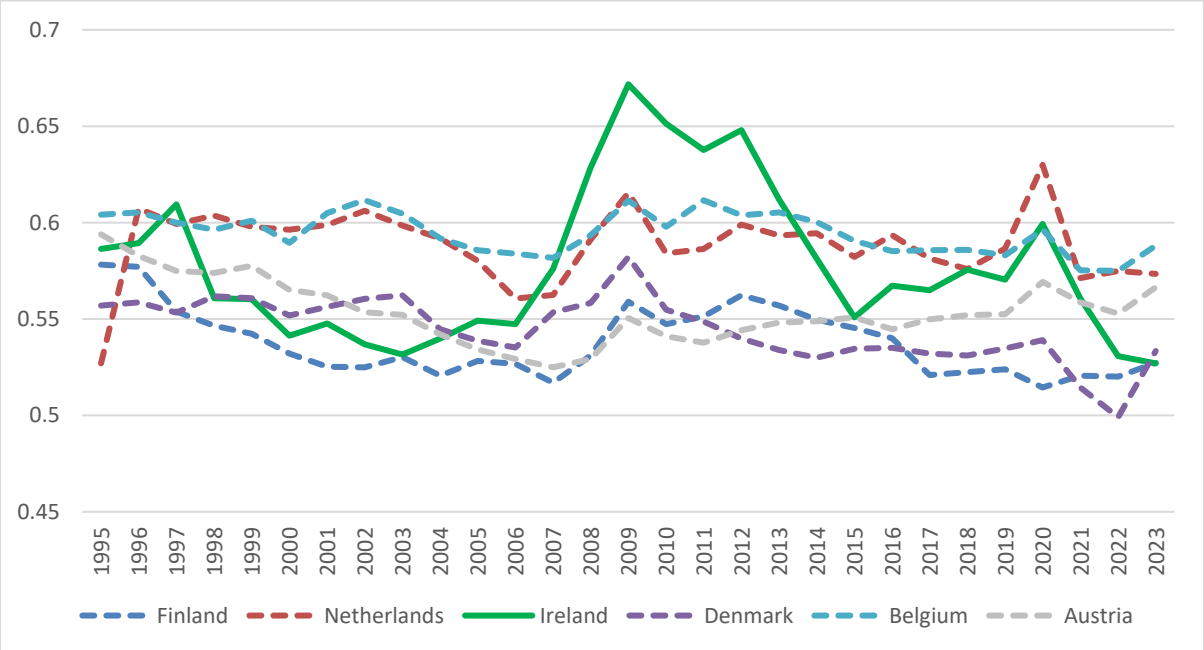
FIGURE 2 LABOUR SHARE USING GNI



Sources: AMECO database and author's calculations.

Various well-documented attempts have been made to generate satisfactory measures of Irish national income. Modified GNI or GNI* removes depreciation on intellectual property and leased aircraft, as well as net factor income of redomiciled PLCs. These corrections generate a measure that more accurately captures the total income available to fund consumption or investment in Ireland.

FIGURE 3 LABOUR SHARE USING GNI* FOR IRELAND AND GNI FOR PEER GROUP



Sources: AMECO database, CSO national accounts database and author's calculations.

Figure 3 shows that the Irish labour share is far more stable when GNI* is used as

the denominator. There is some limited evidence of a decline over time. On average, the Irish labour share is broadly similar to the labour share in the peer group of European countries when GNI* is used for Ireland and GNI for the peer group, although it is more volatile. Honohan (2021) describes any such comparison between GNI* and GNI as 'a crude procedure', but in this case it is far more informative than the GNI comparison presented in Figure 2.

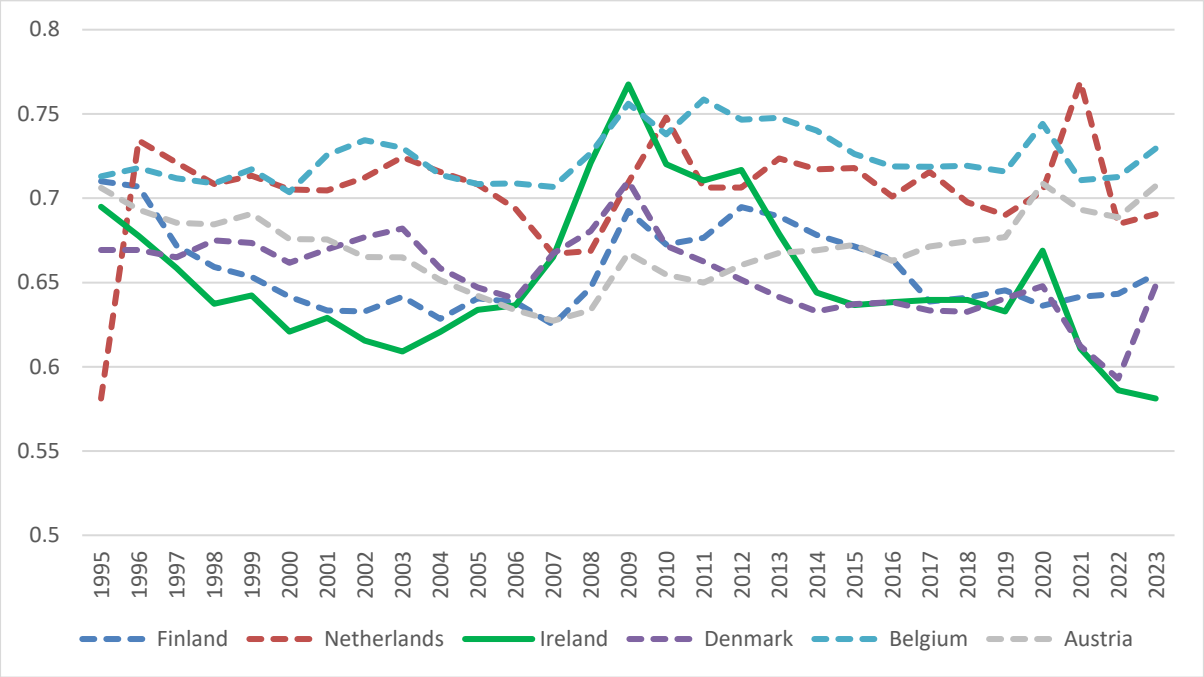
The volatility of the Irish labour share compared with the peer group is noteworthy. This comparison also highlights the scale of the effect of the 2008–2012 period on Irish national income and underlines the importance of considering developments in the labour share over a longer period of time to get a more accurate estimate of the concept.

Fitzgerald (2020) argues in favour of using a measure of output that is net of depreciation because of the distortionary effects of depreciation on the Irish national accounts. By excluding all depreciation, Ireland is directly comparable with other countries. Figure 4 presents the labour share using net national income.[1] There is an immediately apparent level effect of approximately 10 per cent for most countries, but the dynamics over time are similar to the labour share using GNI*. In particular, there is no sharp decline in the post-2015 period.

Schwellnus et al. (2017) argue that using a measure of national income net of depreciation to calculate the labour share may be more appropriate for considering income distribution. This is because it is only income net of capital consumption that is available to compensate workers and capital owners. However, he argues that gross measures of national income should be used to consider structural trends because capital consumption displays counter-cyclical behaviour. So while the labour share presented in Figure 4 is informative when considering income distribution, the comparison above of GNI* with GNI is preferable for considering structural trends.

1 Specifically, Fitzgerald (2020) argues in favour of using net national product at factor prices as a measure of output. The analysis in this Research Note uses net national income at market prices. The two differ because net national income includes indirect taxes and subsidies.

FIGURE 4 LABOUR SHARE USING NET NATIONAL INCOME



Source: AMECO database and author's calculations.

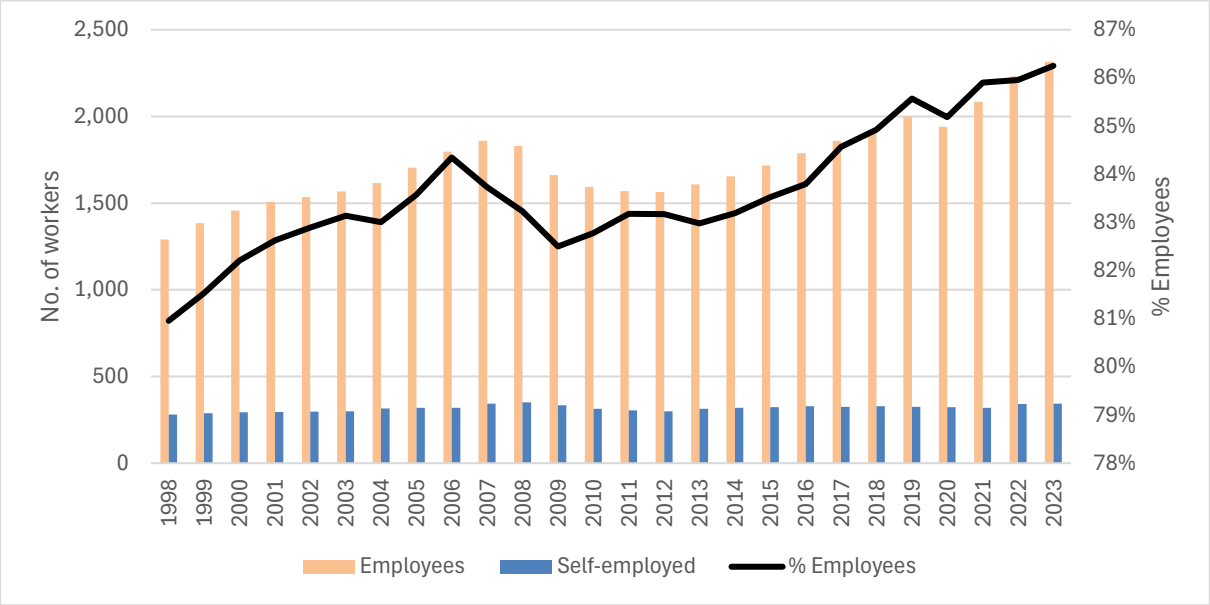
3. IMPUTING THE LABOUR INCOME OF THE SELF-EMPLOYED

The numerator of the labour share is a measure of total compensation paid for labour. National accounts provide an aggregate figure for compensation paid to employees. Total compensation paid for labour as a factor of production consists of this figure and a measure of labour compensation paid to the self-employed.

$$labour\_income = COMPEMP'EE + LabourCOMPSelfEMP \quad (1)$$

Figure 5 shows that self-employed workers in Ireland have consistently numbered over 300,000, accounting for between 14 and 20 per cent of the workforce. Although the share of total workers who are self-employed is decreasing, the size of the group underlines the importance of accurately imputing their labour income.

FIGURE 5 PROPORTION OF WORKERS WHO ARE EMPLOYEES



Source: CSO Labour Force Survey.

Self-employed income is recorded as mixed income in the national accounts. Some of this income is attributable to the labour of the self-employed and some to capital they provide. Their labour income should therefore take the following form, where $\vartheta \in (0, 1)$:

$$LabourCOMPSelfEMP = \vartheta * Mixed\_Income \tag{2}$$

In the figures presented in Section 2, we apply a method suggested by Gollin (2002) to impute the labour income of self-employed workers. This method has the advantage that it can be easily applied to all European countries and that it is sensitive to the number of self-employed workers. This correction assumes that total compensation per worker (earnings) is the same for employees and the self-employed.

$$labour\_income\_A = COMP\_EMP'EE + L_{SelfEMP} * \frac{COMP\_EMP'EE}{L_{EMP'EE}} \tag{3}$$

Schwellnus et al. (2017) show that while there is no significant effect at the average level, labour shares in individual countries can be sensitive to the method used to impute the wages of the self-employed. Therefore, if we focus on trends in the Irish labour share rather than comparing the level with other countries, it is important to evaluate the appropriateness of the different methods proposed. How should the labour income of the self-employed in Ireland be imputed?

3.1 Equal hourly wage or equal total earnings?

Karabarbounis (2024) proposes a number of different methods for imputing the income of the self-employed that can be applied to US data, one of which is easily transferable to European data. This method uses an assumption of equal compensation per hour (hourly wage) between employees and the self-employed.

$$labour\_income\_B = COMP\_EMP'EE + \quad HW_{SelfEMP} * \frac{COMP\_EMP'EE}{HW_{EMP'EE}} \tag{4}$$

Cho et al. (2017) recommend imputing the income of the self-employed at a sectoral level. This is a sensible recommendation in an Irish context because of the wide sectoral variation in the proportion of workers who are self-employed, as presented in Figure 6.

FIGURE 6 SECTORAL COMPOSITION OF EMPLOYMENT (2023)

P – Education
Q – Human health and social work activities
K,L – Financial, insurance and real estate
B–E – Industry
I – Accommodation and food service activities
G – Wholesale and retail trade
H – Transport and storage
M – Professional, scientific and technical activities
R–U – Other NACE activities
F – Construction
A – Agriculture, forestry and fishing
O – Public administration and defence

Source: CSO Labour Force Survey.

The Organisation for Economic Co-operation and Development (OECD, 2024) applies a sectoral approach, which builds on Method B (4). They assume that compensation per hour (wages) is the same for employees and the self-employed in each sector. This gives rise to the following correction to labour income, where

the average compensation per hour worked for employees in sector i is multiplied by the amount of hours worked by the self-employed in that sector:

$$labour\_income\_B_{sectoral} = COMP\_EMP'EE + \sum_i \frac{COMP\_EMP'EE_i}{HWEMPEE_i} * HWSelfEMP_i \quad (5)$$

However, the underlying assumption is still one of equal hourly wages.

The National Economic and Social Council (NESC, 2020), in an analysis of data from EU Survey on Income and Living Conditions (EU-SILC) and the Household Budget Survey conducted by the Central Statistics Office (CSO), conclude that income for self-employed individuals is 10 per cent lower than income for employees. However, hours worked by the self-employed average 20–30 per cent higher than hours worked for employees. Taken together, this would suggest a substantial gap in hourly wages between employees and the self-employed. Therefore, an assumption of equal earnings rather than equal hourly wages seems more reasonable, albeit it is unlikely to be exactly correct.

Caswell (2024) applies the OECD sectoral version of Method B (5) to UK data and concludes that an assumption of equal hourly wages 'should be avoided unless compelling empirical evidence states otherwise'. He invokes identity (2) above to show that imputed self-employed income should not exceed the value recorded for mixed income in the national accounts, i.e. that ϑ should not exceed 1. We will apply this method as a check on applications of Methods A, B and C to Irish data.

We propose an alternative method for imputing the labour income of the self-employed. This method assumes equal earnings in each sector between employees and the self-employed. Therefore, Method C is equivalent to Method A but applied on a sector-by-sector basis.

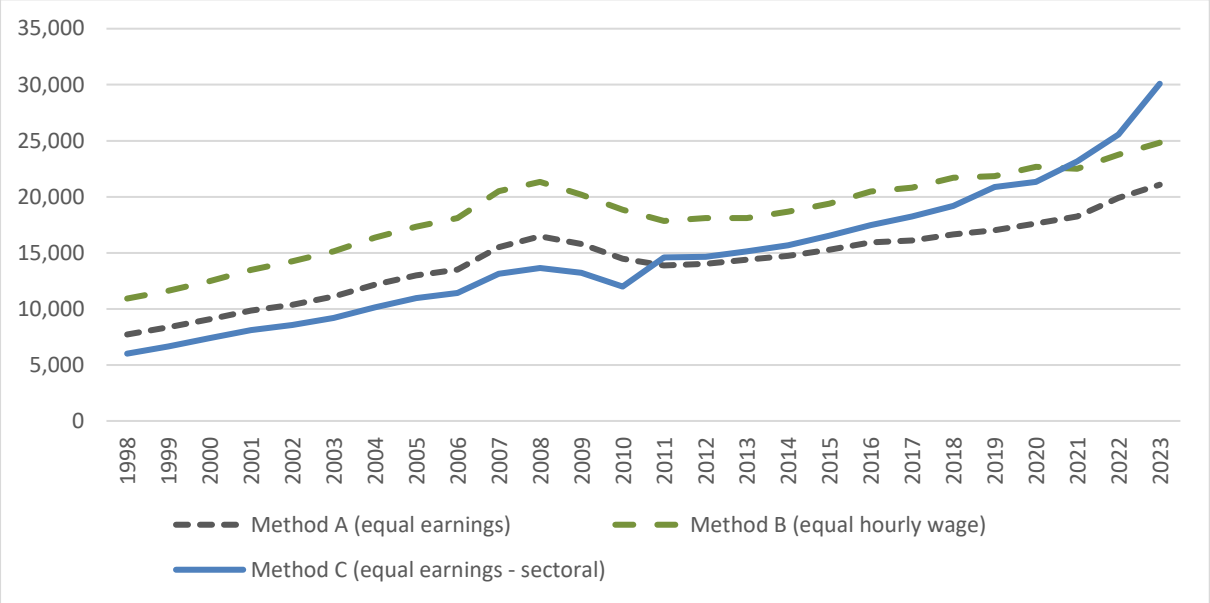
$$labour\_income\_C = COMP + \sum_i \frac{COMP_i}{EMPEE_i} * SelfEMP_i \quad (6)$$

Figure 7 presents estimated imputed labour income for the self-employed based on Methods A, B and C. Method A (3) and Method C (6) both assume equal total earnings, with Method C applying the assumption at a sectoral level. In the period before the global financial crisis (GFC), there is a significant difference between Method A and Method C. The two measures converged for a period, before Method C grew quicker in the post-COVID-19 period.

Method B (5), which assumes equal hourly wages between the self-employed and employees, is consistently higher than Method A. This reflects the issues outlined

above, with an assumption of equal hourly wages between employees and the self-employed.

FIGURE 7 IMPUTED TOTAL LABOUR INCOME FOR THE SELF-EMPLOYED BY METHOD (€, MILLION)



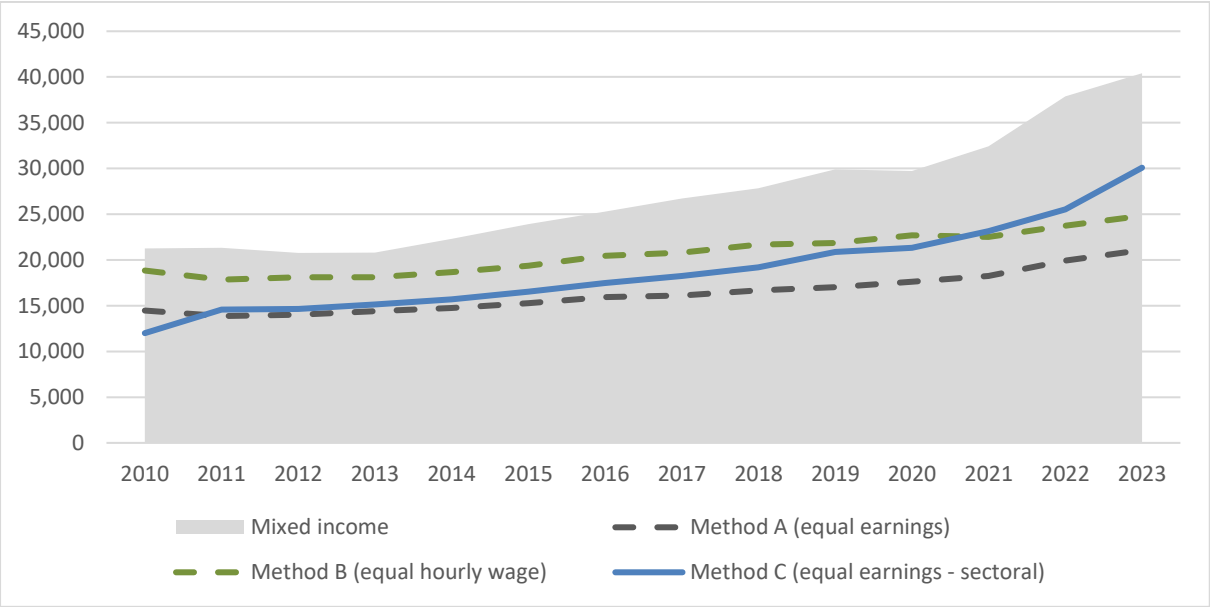
Sources: CSO national accounts database, Labour Force Survey and author's calculations.

Figure 8 presents the imputed labour incomes for the self-employed compared with the figure for gross mixed income recorded in the national accounts.[2] In the earlier part of the sample, Method 2 imputes a value for the labour income of the self-employed that is a large share of the total gross mixed income recorded in the national accounts, implying a level of ϑ close to 1. On the other hand, Methods A and C impute values for the labour income of the self-employed that imply that around two-thirds of gross mixed income is attributed to labour.

Method B implies a value of ϑ that is close to 1 and an overall labour share in the range of 0.55 to 0.65. This would suggest that the production technologies used by employees and the self-employed are structurally different. Karabarbounis (2024) argues against such an assumption, and in favour of assuming equal factor shares between the two groups. Method C achieves a result that is broadly in line with this assumption. Using Method C, a relatively constant proportion of gross mixed income is allocated to labour (ϑ = 0.70 on average).

2 The mixed income series is available from 2010 onwards from the CSO's website: in 'CSO Institutional Sector Accounts', under 'Gross Operating Surplus / Mixed Income for the Household sector'.

FIGURE 8 IMPUTED LABOUR INCOME FOR THE SELF-EMPLOYED BY METHOD WITH MIXED INCOME (€, MILLION)

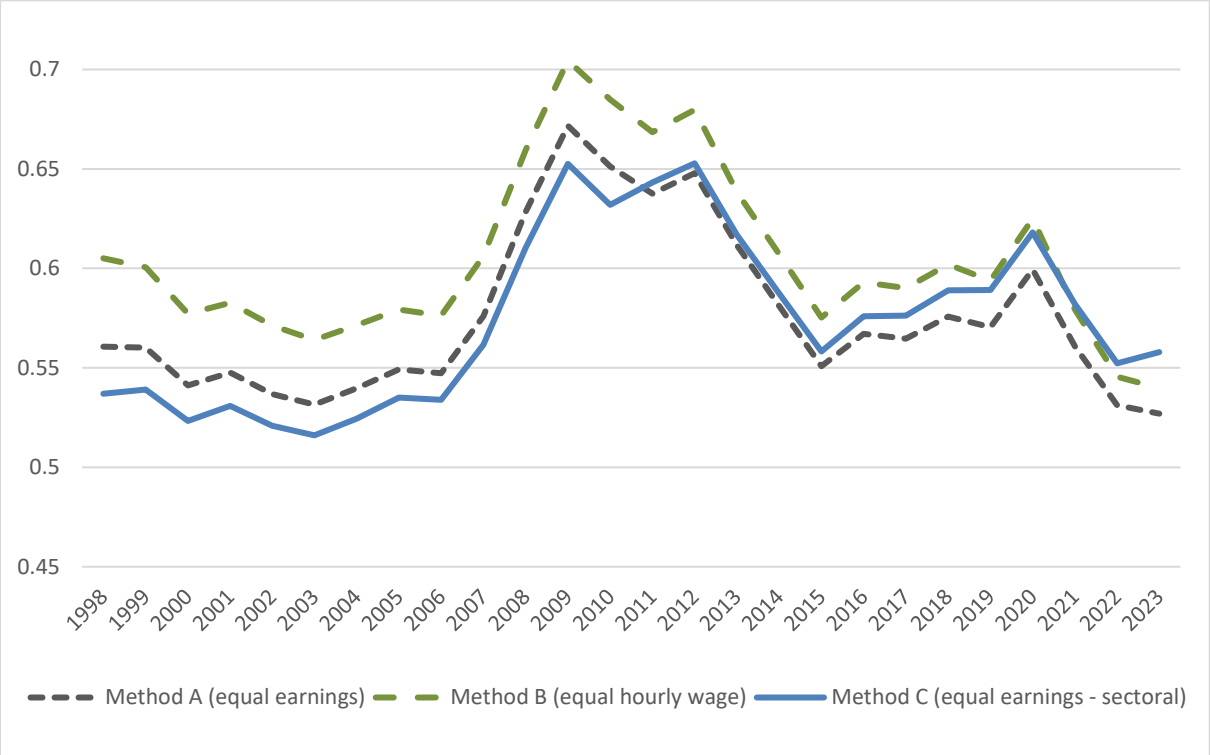


Sources: CSO national accounts database, Labour Force Survey and author's calculations.

Method C achieves this result without directly imposing an assumption for ϑ. Directly imposing an assumption for ϑ would generate an imputed value for labour compensation of the self-employed that does not take account of the number of self-employed workers. Caswell (2024) describes such an assumption as 'somewhat naïve'. This further supports the use of Method C, which assumes equal earnings between the two groups at the sectoral level.

Figure 9 presents the labour share estimated using the three different methods. Following the discussion in Section 2, we use GNI* as the denominator. The three methods have converged to a certain degree in recent years. As shown in Figure 5, the share of workers who are self-employed has fallen over time, so different methods to impute their labour income will affect the overall labour share less in recent years.

FIGURE 9 LABOUR SHARE BY METHOD USING GNI*



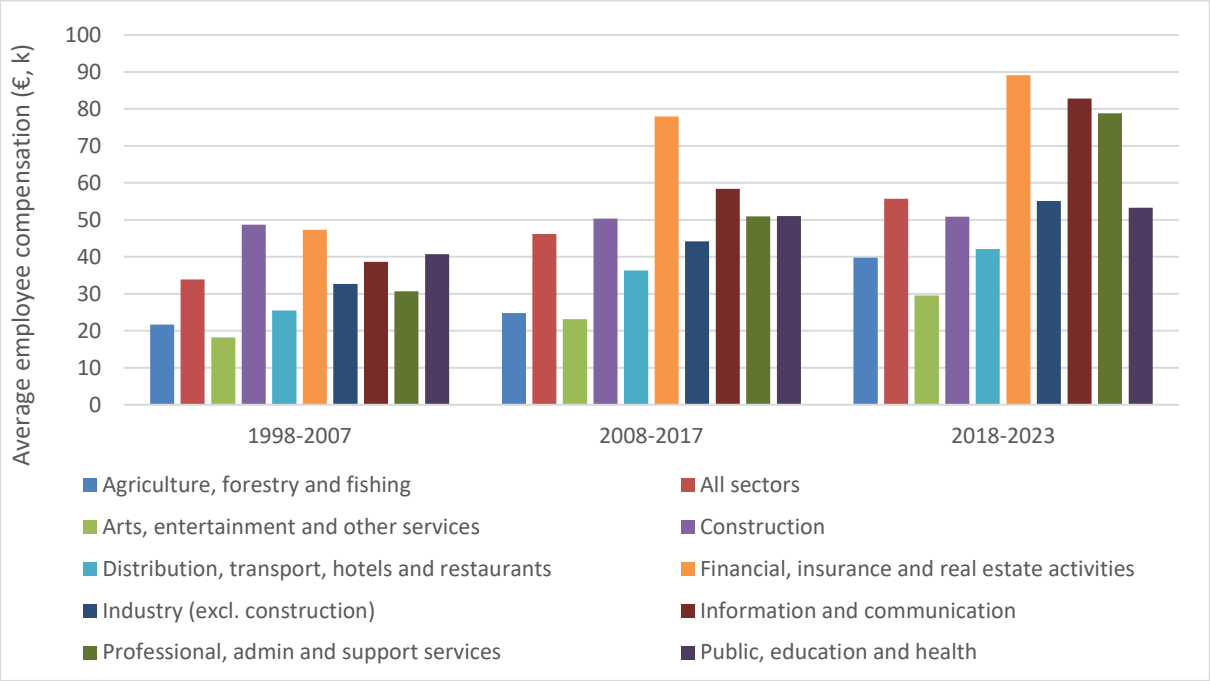
Sources: CSO national accounts database, the National Farm Survey, the Labour Force Survey and author's calculations.

The GFC period represents a clear deviation from the trend regardless of the choice of method. This may be indicative of nominal rigidities in the economy. During the recessionary period, output and income fell quite quickly but wages did not adjust at the same speed. This contributed to a higher than usual labour share during this period. This episode underlines the importance of taking a long-term perspective on the labour share.

4. SECTORAL ASSUMPTIONS

The new method proposed addresses the differences across sectors in the share of total workers who are self-employed. There is also a substantial difference in average employee earnings across sectors. Figure 10 highlights these differences, which translate into different assumptions in Method C for the earnings of the self-employed by sector.

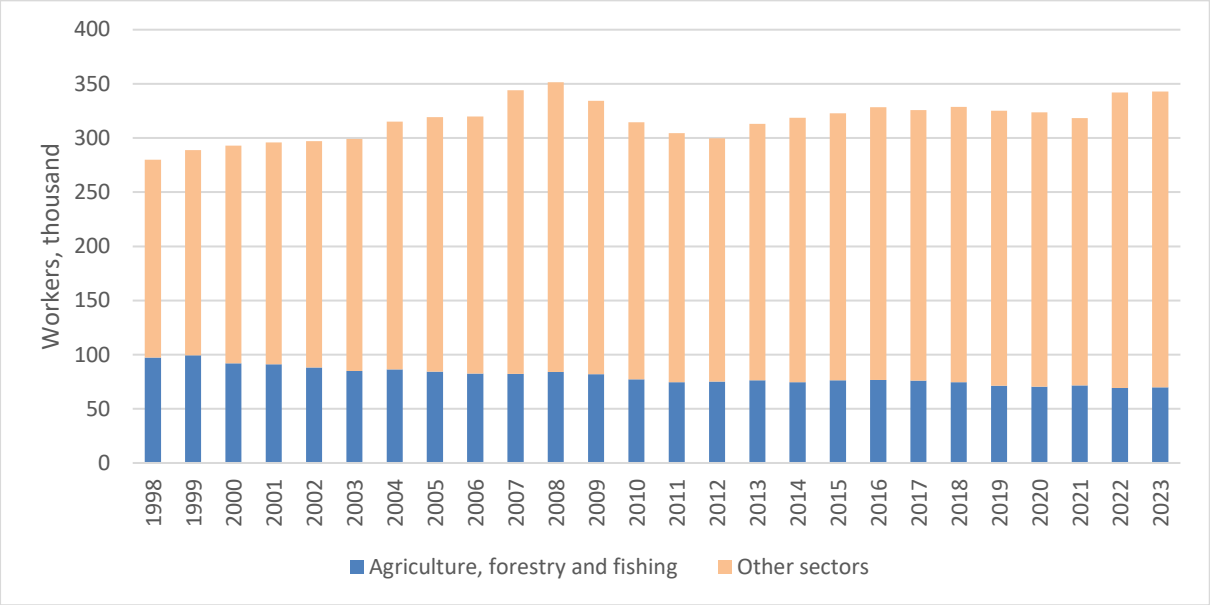
FIGURE 10 AVERAGE EMPLOYEE COMPENSATION BY SECTOR



Source: CSO Labour Force Survey.

'Agriculture, forestry and fishing' is an outlier with respect to the proportion of workers who are self-employed. Figure 6 above shows that it is the only sector where self-employed workers make up the majority of total workers. In addition, it is the largest single NACE sector for self-employment. This suggests that it warrants specific attention. Figure 11 shows that while the share of those in self-employment who work in 'agriculture, forestry and fishing' is declining, the absolute number remains sizeable (70,000 self-employed).

FIGURE 11 SELF-EMPLOYED WORKERS BY SECTOR



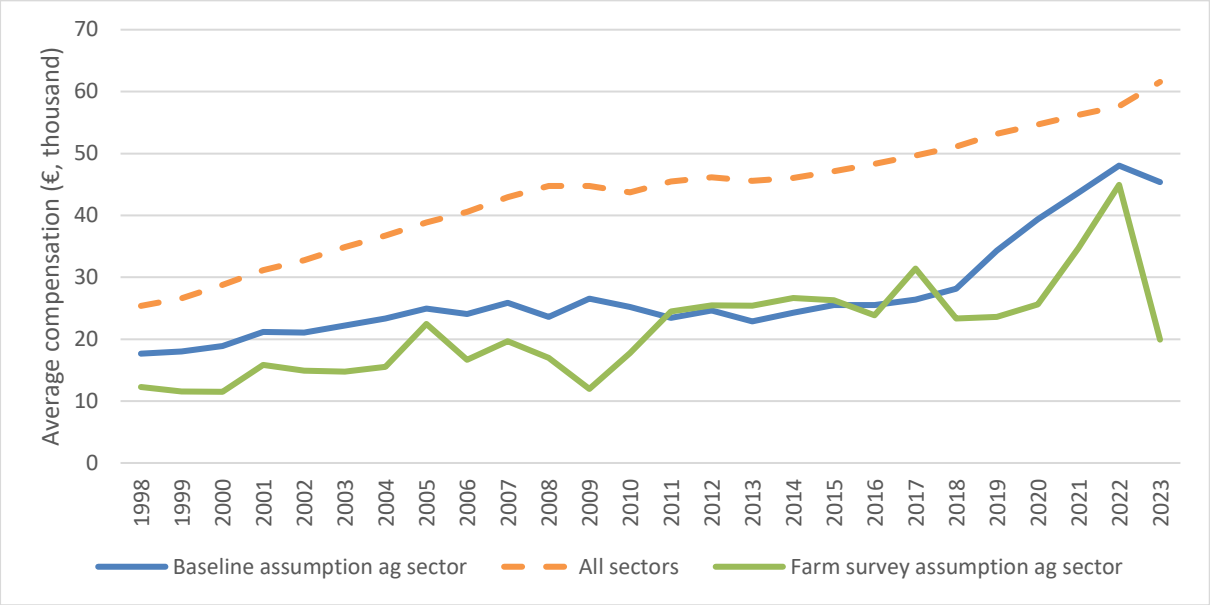
Source: CSO Labour Force Survey.
Note: The employment series in the Labour Force Survey captures the primary employment of respondents. There is a substantial number of farmers whose primary employment is in another sector. They are not included in the analysis here to avoid double counting.

We cross-check the appropriateness of the earnings assumption for agriculture with an alternative source. A historical series of the average income for a family farm is available based on the National Farm Survey dating back to 1998. Figure 12 presents this series, alongside the baseline assumption for earnings of the self-employed based on the average employee compensation in the agriculture sector. Both series are trending upwards at a comparable rate,[3] suggesting that the assumption underpinning Method C is appropriate.

It is also clear from Figure 12 that earnings in the 'agriculture, forestry and fishing' sector are lower than the average across all sectors. The volatility in the series from the National Farm Survey in recent years is attributable to the fact that dairy farms account for a disproportionate share of overall farm income. As a result, this series is sensitive to movements in dairy prices.

3 For the purposes of this analysis, the income listed as average farm income is treated as accruing entirely to labour rather than to land or capital.

FIGURE 12 AGRICULTURE ASSUMPTION COMPARED WITH FARM SURVEY



Sources: CSO national accounts database, National Farm Survey and Labour Force Survey.

5. CONCLUSION

Imputing the labour income of the self-employed in Ireland can be improved by assuming equivalence between employees and the self-employed at a sectoral level rather than at the aggregate level. Assuming equality of earnings between the two groups is more realistic than assuming equal hourly wages. For international comparisons, where sectoral data may not be easily available, assuming equal earnings on the aggregate level can give an overview of trends and of the level of the labour share.

Further, the analysis presented above suggests that the labour share in Ireland is sensitive to the method chosen for imputing the labour income of the self-employed. However, this sensitivity has reduced over time and it is far less significant than the sensitivity of the labour share to the choice of the denominator. International comparisons of Ireland's labour share should use an appropriate measure of national income, namely GNI*, to ensure that such comparisons are relevant. The analysis suggests that, in an Irish context, a value for the labour share between 0.5 and 0.6 should be considered for macroeconomic modelling purposes.

Finally, there is no evidence of a decline in the labour share measured using GNI* since 1998. This is true for all three methods employed to impute the labour income of the self-employed. The relative stability of the labour share is quite notable given the scale of economic changes over the period in question.

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ESRI SPECIAL ARTICLE

DISTRIBUTIONAL IMPACT OF TAX AND WELFARE POLICIES: BUDGET 2025

Karina Doorley, Shane Dunne, Claire Keane, Simona Sándorová, Agathe Simon

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ABSTRACT

In this Special Article we analyse the distributional impact of Budget 2025. Similar to last year, many reforms in this Budget were temporary measures specifically aimed at combatting cost of living pressures. Compared to a baseline pegged to wage growth, the permanent measures, such as increases in the tax band, tax credits and social welfare rates, are broadly progressive, with households in the bottom quintile of income expected to see an increase of around 0.9% of equivalised disposable income, and those in the top quintile to see increases of 0.5%. When accounting for temporary measures, the average household is estimated to see an increase of just 0.2% in their equivalised disposable income, and the broadly progressive effect of the permanent measures becomes less clear. These results are driven by the fact that many temporary measures have either been frozen (and therefore reduced in real terms) or have been explicitly reduced, such as the reduction in energy credits. We show that from 2020 to 2025 permanent changes to the tax and welfare system have resulted in small average income losses (-0.3% of disposable income) compared to policy changes pegged to wage growth. While temporary measures have been successful in helping households deal with rising prices, their inevitable phasing out will cause issues if headline welfare payments fail to keep pace with income growth. We also find that households with children tended to benefit more from the Budget 2025 measures, such as the double Child Benefit payment, but that the measures have little anticipated downward effect on child poverty rates, suggesting a targeting issue.

1. INTRODUCTION

Budget 2025 sets out an expenditure package of €10.5 billion. This additional expenditure is comprised of a package of once-off measures worth €2.2 billion, a net tax package of €1.4 billion and an expenditure package of €6.9 billion.

In the context of declining inflation, rising wages, and record levels of employment in Ireland (McQuinn et al, 2024), fiscal restraint was urged by the Irish Fiscal Advisory Council, among others, amid concerns that further breaches of the National Spending Rule could contribute to growing underlying deficits, increased consumer prices, and fragility in the case of future recessions (Irish Fiscal Advisory Council, 2024). Nevertheless, the Government has exceeded its own 5% spending rule with Budget 2025, citing the need to compensate households for the rising cost of living.

In this Special Article, we examine the tax and welfare measures announced in Budget 2025. We begin by outlining and assessing the taxation measures in Section 2, which is followed by an examination of the social welfare measures in Section 3. Section 4 presents our analysis of the distributional impact of the combined measures using SWITCH – the Economic and Social Research Institute (ESRI) tax and benefit microsimulation model – and ITSim, the indirect tax model jointly developed by the ESRI and the Department of Finance. We also estimate the cumulative impact of tax and welfare reforms announced to date by the coalition government over the period 2021 to 2025. Section 5 concludes.

2. TAXATION MEASURES

Table A1 in the appendix lists the main taxation measures announced in Budget 2025, alongside the full year cost estimated by the Department of Finance.

2.1 Income tax

The income tax standard rate cut-off, the point at which the higher income tax rate of 40% begins to apply, rose by €2,000 for a single adult, from €42,000 to €44,000, and by a proportionate amount for married couples and civil partners. This represents a rise of 4.8%, substantially ahead of forecast price inflation of 1.2% and just over forecast wage growth of 4.2%.[1] This amounts to an effective tax cut, as these credits are worth more to taxpayers in real terms and a lower share of earnings will be exposed to the top 40% rate of tax.

1 See McQuinn et al. (2024) for price inflation forecasts and Department of Finance (2024) for wage inflation forecasts.

Most income tax credits rose in nominal terms, and the proportional increase of around 7% was substantially above both inflation and wage forecasts for 2025. This again amounts to an effective tax cut as these credits are worth more to taxpayers in real terms.

The Universal Social Charge (USC) threshold for moving from the second to the third band rate increased by 6.3% (from €25,760 to €27,382). In addition, the rate for the third income band decreased from 4% to 3%. As a result of these changes, most USC payers will benefit from a reduction in their liability.

2.2 Taxation and housing

The Government also announced a range of tax measures aimed at addressing issues relating to housing. The income tax credit for private renters, introduced in Budget 2023, was increased from a maximum of €750 to a maximum of €1,000 per person per year for those eligible and living in unsupported private rental accommodation. The credit will benefit middle income households most as households need to earn enough to incur a tax liability to benefit from the credit.

The Mortgage Interest Tax Credit, introduced on a temporary basis in Budget 2024, is being extended by one further year. This tax credit is available for homeowners with an outstanding mortgage balance of between €80,000 and €500,000 at the end of 2022. The relief is available only to holders of tracker and variable rate mortgages, and amounts to 20% of the increased interest paid in 2024 compared to 2022. This relief is capped at €1,250. Like the rental tax credit, this relief will mainly benefit middle- and higher-income households, as there are very few households in the lowest two-fifths of the income distribution with tracker or variable rate mortgages (Byrne et al., 2023).

The Minister for Finance also announced an increase in the rate of the Vacant Homes Tax, which will increase from five to seven times the basic rate of Local Property Tax for the property. This tax is a welcome supply side measure and among the recommendations of the Commission on Taxation and Welfare (2022).

2.3 Indirect tax

There was a well-flagged increase to the carbon tax, which went from €56 per tonne of carbon to €63.50 per tonne. Excise duties on tobacco products also increased, amounting to an extra €1 on a packet of 20 cigarettes. Other indirect tax measures announced include the introduction of excise on e-cigarette products and the restoration of the 13.5% VAT rate on gas and electricity from May 2025. The 20% reduction to public transport fares first introduced on a temporary basis in 2022 was once again extended for the whole of 2025, thus maintaining fares at the current level.

3. SOCIAL WELFARE MEASURES

The Budget also included many changes to social welfare parameters alongside several temporary measures aimed at cushioning household incomes from supply-side driven inflation (Table A1 in the appendix).

As part of the permanent package, personal rates of payment for social welfare schemes were increased by €12 per week, with proportionate increases to qualified adult increases. Maternity, Paternity and Parent's Benefit rates were increased by €15 per week. Weekly payments of Child Support Payment (previously known as Increase for a Qualified Child) increased by €4 for under 12s and by €8 for those aged 12 and over, and the Working Family Payment income limits increased by €60 per week. A new Newborn Baby Grant of €280 in addition to the first month of Child Benefit was introduced for parents with children born on or after 1 December 2024. Further measures were introduced to support carers. The income disregard for Carer's Allowance was increased to €625 for a single person and €1,250 for couples, alongside a €150 increase in the Carer's Support Grant. Carer's Allowance has also been added to the list of qualifying payments for the Fuel Allowance. The higher income threshold for the Fuel Allowance has been extended to those aged 66 and over, and has been increased to €524 for a single person and €1,048 for couples, which means more people will qualify. For most social welfare recipients, these increases are relatively larger than the forecast wage growth of 4.2% in 2025 (Department of Finance, 2024). However, since retirement age payments tend to be higher than working age payments in nominal terms, the undifferentiated €12 rise results in a lower percentage increase for this group.

The welfare package in the Budget also included temporary welfare and universal payments to mitigate an inflation-induced strain on household finances. The universal energy credits were renewed this year, as part of the cost-of-living measures, payable in November 2024 and January 2025. However, the amount decreased from €150 to €125 and the number of payments decreased from three to two compared to 2024. This is a significant fiscal outlay, making up around one-quarter of the temporary cost of living expenditure. Two double Child Benefit payments will also be made in November and December 2024. Additionally, one-off lump sum payments for recipients of certain social welfare benefits were announced, with payment occurring during December 2024. Those in receipt of the Working Family Payment, the Disability Allowance, the Carer's Support Grant, the Blind Pension and the Invalidity Pension will receive a €400 lump sum, while those in receipt of the Living Alone and Fuel Allowance will receive €200 and €300 respectively. A lump sum of €100 was also made to recipients of the Child Support Payment in November 2024. The usual 'Christmas Bonus' to recipients of long-term social welfare payments was announced. The temporary reduction in the student

contribution fee for third level students, announced in Budgets 2023 and 2024, was repeated in Budget 2025.

4. DISTRIBUTIONAL IMPACT 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 household income.[2] The range of policy reforms modelled is detailed in the appendix. SWITCH is linked to data from the 2022 Survey on Income and Living Conditions (SILC), the primary source of information on household incomes collected annually by the Central Statistics Office (CSO). The data is reweighted to be representative of the 2022 population (in terms of demographics, employment, income and social welfare) and uprated to reflect price and income growth between 2022 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.[3]

Given the range of temporary and permanent measures announced as part of Budget 2025, we separate base and reform scenarios to estimate the distributional effect of Budget 2025. These are summarised in Panel A of Table 1. Scenario 1 captures permanent policy changes between 2024 and 2025, while Scenario 2 outlines the effect of changes to both permanent and temporary measures between 2024 and 2025.

We also set up a baseline and reform scenario (Panel B of Table 1), which presents a more medium-term picture. In Scenario 3 we estimate the effect of permanent policy changes only, between 2020 and 2025, on the distribution of income compared to a scenario in which 2020 policies were pegged to wage growth.

In each case, we compare to a scenario in which policy parameters of the direct tax and welfare system are indexed in line with actual and/or forecast wage growth (Table 1). As argued by Bargain and Callan (2010) and Callan et al. (2019), this provides a distributionally neutral benchmark against which to assess policy

2 See Keane et al (2023) for a description and validation of the SWITCH model.

3 Income rates are uprated to 2025 levels using earnings indices. Expenditures are uprated to 2025 levels using price growth indices.

reforms. For the indirect tax system, we index our baseline scenario in line with price growth, which is a more appropriate indexation factor for expenditure.

A new feature of this year's analysis is the inclusion of temporary measures in the baseline for the scenario that evaluates the distributional impact of both permanent and temporary measures. Government has now extended or repeated certain temporary measures for several consecutive years, and households have begun to depend on measures labelled as temporary. Therefore, the analysis accounts for the distributional impacts of the withdrawal or reduction of temporary measures in Budget 2025.

We use SWITCH to calculate households' social welfare entitlements, tax liabilities and net incomes under each system. ITSim calculates households' VAT and excise liabilities.

TABLE 1 SUMMARY OF BASELINE AND REFORM SCENARIOS

	A: 2024–2025				B: 2020–2025	
	Scenario 1		Scenario 2		Scenario 3	
	Base	Reform	Base	Reform	Base	Reform
Policy	2024	2025	2024	2025	2020	2025
Indexed to	2025	-	2025	-	2025	-
Indexation factor direct tax and welfare*	4.2%	-	4.2%	-	22.9%	-
Indexation factor indirect tax*	1.2%	-	1.2%	-	21.4%	-
Temporary policies included?**	No		Yes		No	
Figures	1, 3-6		2, 3-6		7	

Notes: * We use CSO data on annualised quarterly average weekly earnings and the Department of Finance 2025 forecast for increase in compensation per employee to index the direct tax and welfare system. We use CSO data on CPI growth until 2024 and forecasts from the ESRI's Quarterly Economic Commentary for CPI growth in 2025 to index the indirect tax system.

** Temporary policy measures introduced in Budget 2024 (2025) to be paid at the end of 2023 (2024) and beginning of 2025, e.g. energy credit, double social welfare payments, additional Fuel Allowance payments.

4.1 The distributional effect of Budget 2025[4]

Figure 1 shows the distributional effect of permanent changes to indirect taxes, direct taxes and welfare announced as part of Budget 2025, compared to a wage-indexed 2024 policy system. This corresponds to Scenario 1 in Table 1.

4 As mentioned, reference to 'Budget 2025' measures includes the planned increase in PRSI and introduction of the Pay-Related Benefit scheme.

While not part of Budget 2025, it was announced in 2023 that pay-related social insurance (PRSI) rates will rise from October 2024 onwards to help fund the introduction of the Pay-Related Benefit scheme and tackle State Pension funding pressures.[5] Our analysis therefore includes the planned 0.1% PRSI rise for 2025 as well as the move in 2025 to pay-related benefits.[6]

As shown in Figure 1, we estimate that households will experience a rise in real income of 0.5% on average in 2025 due to the permanent measures announced in Budget 2025. The permanent measures are broadly progressive, with households in the bottom quintile of income expected to see an increase of around 0.9% of equivalised disposable income, and those in the top quintile to see increases of 0.5%.

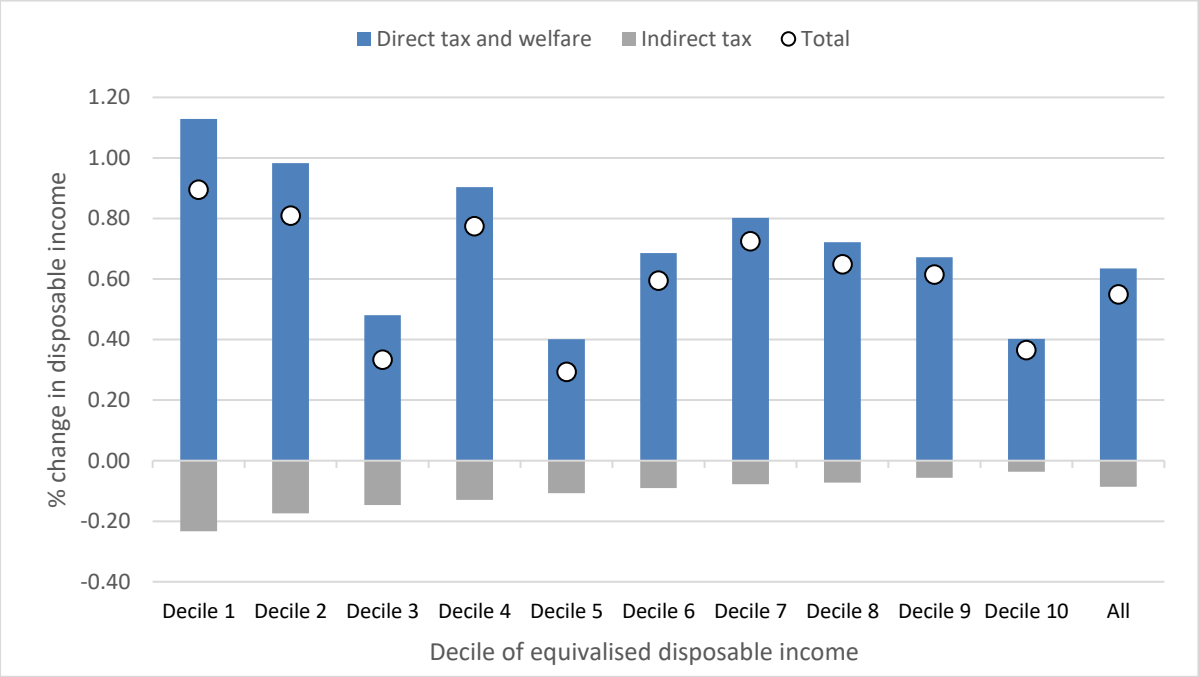
We also show the effect of combined changes to the permanent and temporary tax and welfare systems in Figure 2, corresponding to Scenario 2 in Table 1. When accounting for temporary measures, the average household is estimated to see an increase of just 0.2% in their equivalised disposable income. Furthermore, the broadly progressive effect of the permanent measures seen in Figure 1 becomes less clear. While households in the bottom decile of income see the largest relative rise in income, of 0.5%, the remainder of the bottom half of the income distribution see either no significant change in income, or, in the case of the third decile, a reduction in real income of 0.4%. This negative effect is driven by the concentration of retirement aged households and households with disabilities in the third decile; these groups are most significantly impacted by the partial withdrawal or nominal freezing of temporary measures.

By this measure, Budget 2025 is neither strongly progressive nor regressive: the effect of permanent measures is reasonably progressive, although real income gains are modest across the board. When factoring in temporary measures, the impacts of the budgetary package on real incomes are modest and don't appear to be progressive. This effect is driven by the partial withdrawal of the energy credits and the nominal freeze to most other temporary measures.

5 All PRSI rates are set to increase by 0.1 percentage point in 2024 and 2025, 0.15 percentage point in 2026 and 2027 and 0.2 percentage point in 2028 (Department of Social Protection, 2023 (press release), https://www.gov.ie/en/press-release/022d7-minister-humphreys-secures-cabinet-approval-for-major-social-welfare-reforms/.

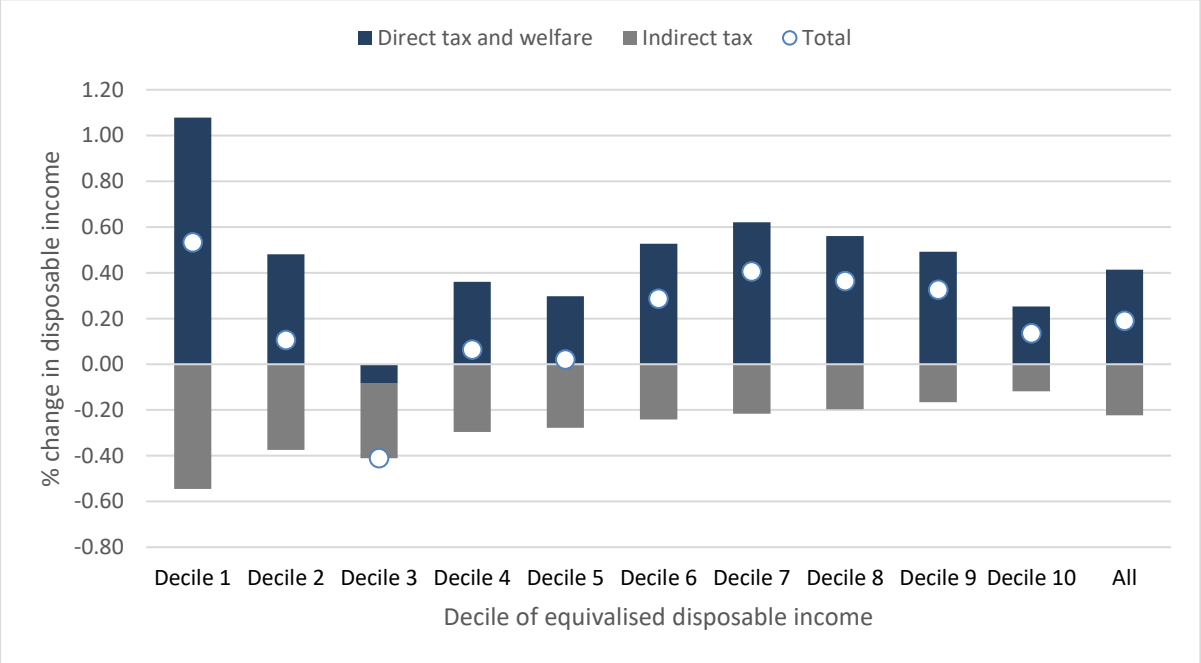
6 The Pay-Related Benefit Scheme is set to be introduced in March 2025. Those who qualify will receive 60% of their previous earnings for the first three months of unemployment, dropping to 55% for the next three months and 50% for the three months following that (sixth to ninth month of unemployment). These rates are subject to maximum levels.

FIGURE 1 DISTRIBUTIONAL IMPACT OF PERMANENT BUDGET 2025 COMPARED TO INDEXED 2024 POLICIES



Source: Authors' calculations using ITSim linked to the 2015–2016 Household Budget Survey uprated to 2025 prices, and SWITCH run on 2022 Survey on Income and Living Conditions data, uprated to 2025 income levels.
Notes: Deciles are based on equivalised household income, using CSO national equivalence scales.

FIGURE 2 DISTRIBUTIONAL IMPACT OF PERMANENT AND TEMPORARY BUDGET 2025 COMPARED TO INDEXED 2024 POLICIES



Source: Authors' calculations using ITSim linked to the 2015–2016 Household Budget Survey uprated to 2025 prices, and SWITCH run on 2022 Survey on Income and Living Conditions data, uprated to 2025 income levels.
Notes: Deciles are based on equivalised household income, using CSO national equivalence scales.

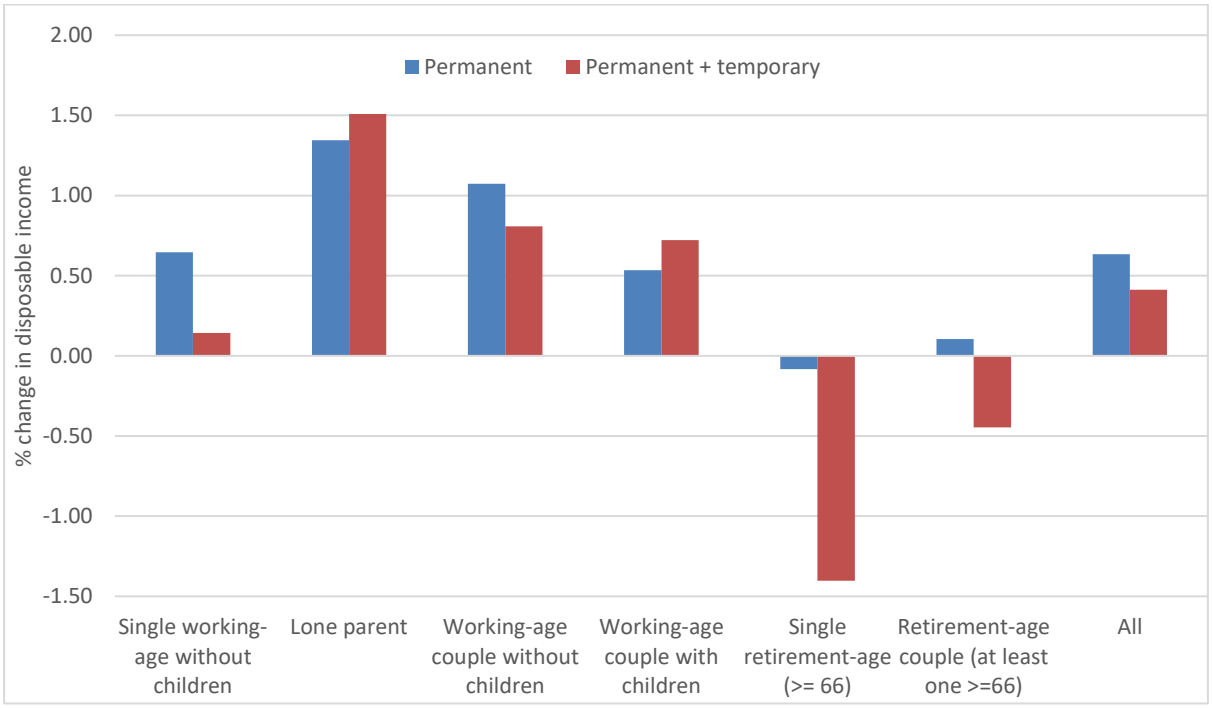
4.2 The effect of Budget 2025 by household type, gender and disability status

We further examine the distributional impact of Budget 2025 by household type, gender and disability status. Figure 3 displays the impact of direct tax and welfare measures and indirect tax policies of Budget 2025 by household type.

On average, most household types benefit from the permanent measures in Budget 2025, especially working age couples without children and lone parent households as they are gaining from the income tax/USC measures and welfare increases that are above wage inflation. Retirement aged households were least likely to benefit from the permanent measures in Budget 2025, with single retirement aged households experiencing a marginal decline in real disposable income and retirement aged couples seeing an increase of 0.1%. This is due to two factors. The €12 increase in State Pension rates for this group represents a smaller percentage gain than increases to working age welfare payments. Secondly, additional benefits often received by this group – such as the Living Alone Allowance and the Fuel Allowance – were frozen in nominal terms, representing a real decline in value.

When considering both the permanent and temporary changes to the tax and welfare system announced in Budget 2025, the distribution of gains and losses is more uneven across household types. On average, retirement aged households experience losses, while working aged households see gains, particularly households with children. The results for households with children are driven by the two double Child Benefit payment, increases in the Child Support Payments and the introduction of the Newborn Baby Bonus. The pattern for retired households reflects the withdrawal of temporary measures, such as the reduction in energy credit – highlighting the importance of these measures for such groups.

FIGURE 3 DISTRIBUTIONAL IMPACT OF BUDGET 2025 BY HOUSEHOLD TYPE COMPARED TO INDEXED 2024 POLICIES

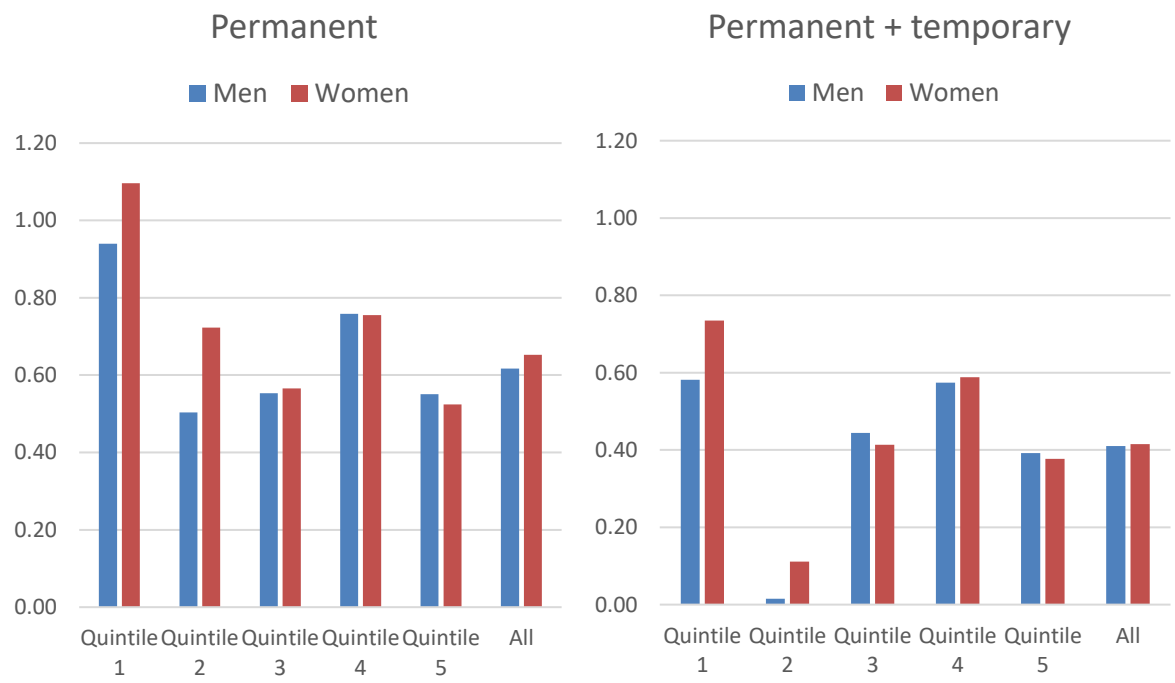


Source: Authors' calculations using ITSim linked to the 2015–2016 Household Budget Survey uprated to 2025 prices, and SWITCH run on 2022 Survey on Income and Living Conditions data, uprated to 2025 income levels.

Figure 4 shows the estimated effects of direct tax and welfare policy changes from Budget 2025 by gender.[7] For this analysis, we assume that income is split evenly between individuals in a couple. Compared to a wage-adjusted budget, our analysis suggests that Budget 2025 measures affected men and women in a broadly similar manner, with women in the bottom quintiles of income seeing larger gains because of both permanent and temporary policies, likely a reflection of benefit receipt patterns and the higher Child Support Payments, and double Child Benefit payment implemented in Budget 2025.

7 It is not possible to estimate the gender impact of indirect tax changes using ITSim as expenditure data are collected at the household level.

FIGURE 4 DISTRIBUTIONAL IMPACT OF BUDGET 2025 BY GENDER COMPARED TO A WAGE INDEXED 2024 POLICY



Source: Authors' calculations using SWITCH run on 2022 Survey on Income and Living Conditions data, uprated to 2025 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.

Figure 5 shows the estimated effects of the Budget 2025 direct tax and welfare measures by disability status.[8,9] We identify households with disabilities as those in which there is at least one member who self-declares to have a medical condition that limits them in their daily activities. Overall, permanent measures were estimated to have broadly similar impacts on households with and without disabilities. However, households with disabilities gained more at the bottom end of the distribution.

When additionally considering temporary measures, on average, households with disabilities experienced smaller gains compared to households without disabilities. This is largely driven by a negative impact on households with disabilities in quintile 2. Households in this quintile, many of whom are of retirement age, are more reliant on temporary measures, such as energy credits, which were reduced in Budget 2025.

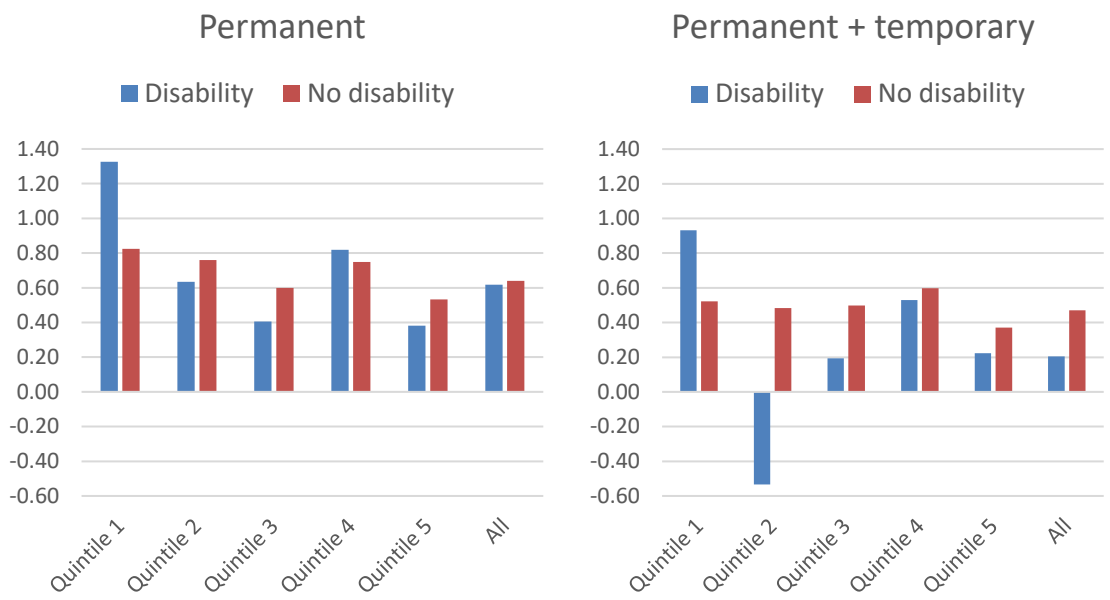
8 ITSim does not currently allow the estimation of indirect taxation measures by disability status.

9 The precise definition we employ in the SILC data is to identify as having a disability those who respond positively to the following two questions:

Do you have any chronic physical or mental health problem, illness or disability?

Are you hampered [limited] in your daily activities by this physical or mental health problem, illness or disability?

FIGURE 5 DISTRIBUTIONAL IMPACT OF BUDGET 2025 (DIRECT TAX AND WELFARE) BY DISABILITY STATUS COMPARED TO A WAGE INDEXED 2024 POLICY



Source: Authors' calculations using SWITCH run on 2022 Survey on Income and Living Conditions data, uprated to 2025 income levels.

Notes: We identify people with a disability as those who respond positively to the following two questions: 'Do you have any chronic physical or mental health problem, illness, or disability?' and 'Are you hampered [limited] in your daily activities by this physical or mental health problem, illness or disability?'
Quintiles are based on equivalised household income, using CSO national equivalence scales.

4.3 The effect of Budget 2025 on income inequality and at-risk-of-poverty rates

Figure 6 (and Table A2 in the appendix) shows the impact of Budget 2025 on income inequality, as measured by the Gini index, and at-risk-of-poverty (AROP) rates. Compared to an indexed 2024 policy, we estimate no change in the Gini index as a result of Budget 2025.

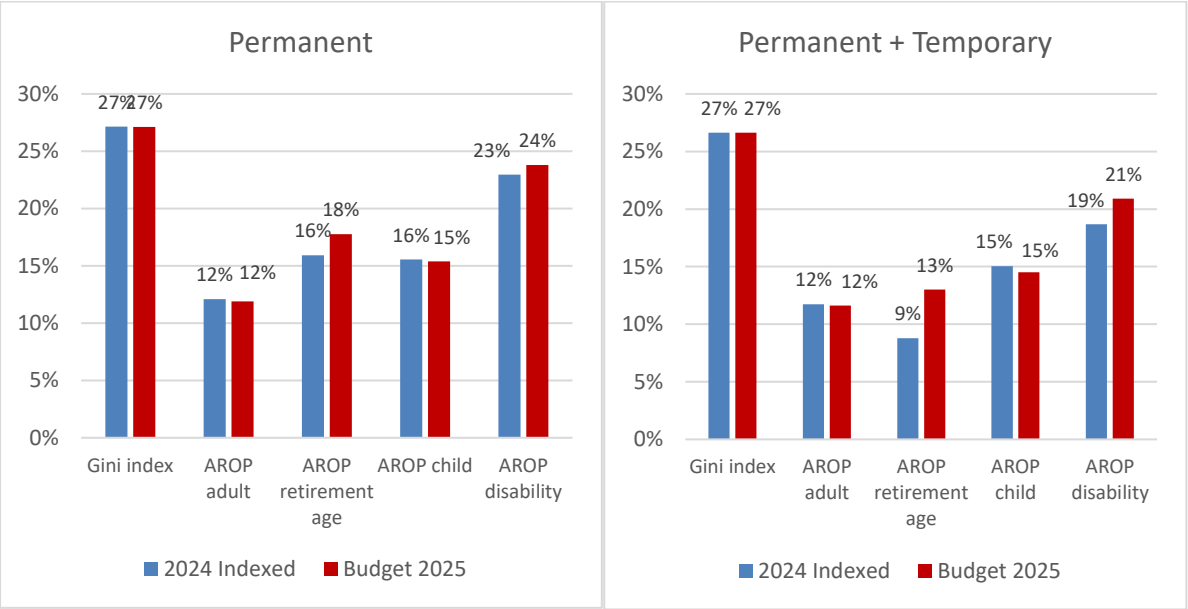
AROP rates for working age adults and children will remain broadly unchanged as a result of Budget 2025 when considering both the permanent measures and the combined permanent and temporary measures. Retirement age poverty is projected to rise once both permanent and temporary measures are considered – the AROP rate among those of retirement age is estimated to increase from 9% to 13% compared to a wage-indexed 2024 policy. If, however, the temporary measures introduced as part of Budget 2025 were not in place, retirement age poverty rates would have jumped much more significantly, to 18%. The same was true of Budget 2024, whereby retirement age poverty rates would have increased significantly if it weren't for the introduction of temporary measures.

Budget 2025 is also anticipated to increase AROP rates for people with disabilities, from 19% to 21%. Similar to retirement age AROP rates, temporary measures have helped prevent rises in AROP rates for people with disabilities over recent years. There is a strong overlap between retirement and disability status; therefore households with disabilities will also be disproportionately affected by the freezing

of the Living Alone Increase and the Fuel Allowance, and the partial withdrawal of temporary policies such as energy credits.

This highlights both the impact of temporary measures in preventing sharp poverty increases in recent years, and the likely impact on poverty rates, for households with disabilities and the older population, of withdrawing or reducing these temporary measures.

FIGURE 6 IMPACT OF BUDGET 2025 ON INCOME INEQUALITY AND POVERTY COMPARED TO WAGE-INDEXED 2024 POLICIES



Source: Authors' calculations using SWITCH run on 2022 Survey on Income and Living Conditions data, uprated to 2025 income levels.

Notes: The poverty rate is calculated based on a poverty line equal to 60% of median equivalised disposable income. The CSO equivalence scale is used. Working age is defined as aged 18-65 and children as those under age 18. People with disabilities are identified as those who self-report to having an illness or disability that limits them in their daily activities.

4.4 The effect of permanent policy reform 2020–2025

We next consider the distributional impact of budgetary policy since 2020. To do so, we compare a 2025 policy system without temporary policies to an indexed 2020 system (see Panel B of Table 1). This shows how changes to the permanent tax and welfare system have affected real income over the last five years. Given the rollout of free school meals and schoolbooks occurred largely over this time period, we also include the distributional impact of these measures.[10] Direct tax and welfare policy parameters in the baseline are indexed by 22.6%, matching actual and forecast wage growth between 2020 and 2025, while indirect tax policy

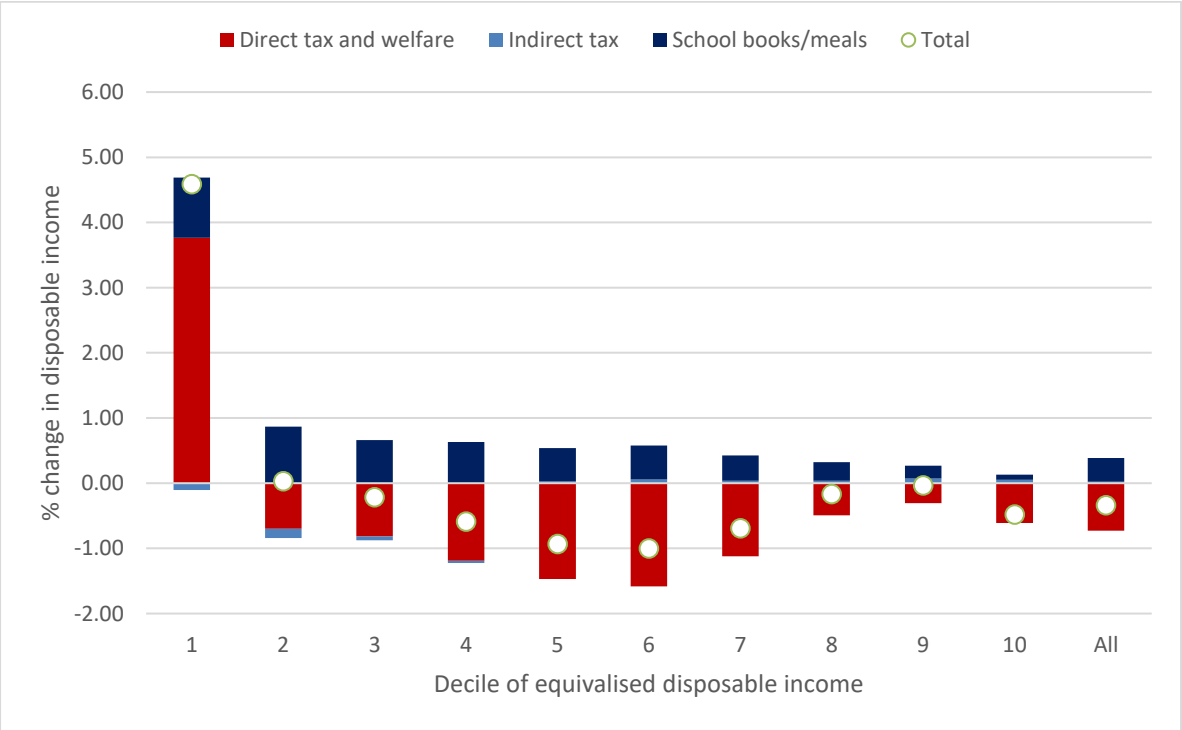
10 Due to data limitations, we assume that no children benefitted from the free school meals programme before 2020. This is a simplification as some schools in under-privileged areas availed of free school meals prior to their blanket introduction.

parameters are indexed by 21.4%, reflecting actual and forecast Consumer Price Index (CPI) growth between 2020 and 2025.

Figure 7 shows the effects of permanent policy changes in Budget 2025 compared to an indexed 2020 policy scenario. This corresponds to Scenario 3 in Table 1. On average, households lose 0.3% of disposable income. The lowest income decile gained most relative to a system pegged to wage growth (+4.6% of income). The second, third, eighth and ninth income deciles saw no real overall change in income. There are small losses, between 0.5 and 1 per cent of disposable income, in the middle of the income distribution and at the very top of the income distribution.

The average losses are overwhelmingly driven by changes to the direct tax and welfare system, particularly in the middle of the income distribution. The changes across the income distribution resulting from reforms to indirect taxes are small overall. The effect of free school meals and books is progressive. Overall, permanent policy changes for the bottom income decile, usually in receipt of welfare benefits, have been ahead of wage growth over the last five years. However, for deciles two and up, permanent changes to the direct tax and welfare system over the last five years have been around or below current and forecast wage growth.

FIGURE 7 DISTRIBUTIONAL ANALYSIS 2020–2025 – PERMANENT MEASURES



Source: Authors' calculations using ITSim linked to the 2015–2016 Household Budget Survey uprated to 2025 prices, and SWITCH run on 2022 Survey on Income and Living Conditions data, uprated to 2025 income levels.
Notes: Deciles are based on equivalised household income, using CSO national equivalence scales.

Comparing Budget 2025 without temporary measures to a wage-indexed 2020 policy setting conveys the magnitude of the challenge that will be faced if

policymakers wish to maintain household living standards once temporary policies lapse. Compared to indexing tax and welfare policies in line with wage growth since 2020, Budget 2025 leaves households worse off on average. Losses are concentrated in the middle deciles of the income distribution, with the first decile experiencing substantial gains and the lower- and upper-income deciles seeing broadly unchanged disposable income.

5. CONCLUSION

Budget 2025 saw a total expenditure package of €10.5 billion. The income tax measures implemented included increases in the standard rate band and tax credits, along with a reduction in USC liabilities. On the welfare side, personal rates of payments for social welfare schemes were increased by €12 per week, with proportionate increases to qualified adult increases. Weekly payments for child dependants rose by €4/€8 for children under/over 12 years of age, and the income limits for the Working Family Payment rose. A new Newborn Baby Grant of €280 was introduced along with an increase in payments received by carers. Those in receipt of Carer's Allowance can now qualify for the Fuel Allowance, and changes will see more people over 66 qualifying.

In line with Budget 2024, a substantial component of Budget 2025 spending was dedicated to temporary measures to assist with ongoing cost-of-living pressures. Energy credits were implemented, although at a lower rate than in 2024. Two double Child Benefit payments were announced along with one-off lump sum payments to those in receipt of qualifying social welfare schemes. The temporary reduction in the student contribution fee for third level students will continue in 2025.

Given that temporary measures are planned to be withdrawn in the future, we analysed the overall impact of Budget 2025 (i.e. all measures, permanent and temporary), as well as the impact of the permanent measures alone. We compare this to the 2024 tax–welfare system adjusted for wage growth. We estimate that households will experience a rise in real income of 0.5% on average in 2025 due to the permanent measures announced in Budget 2025. The permanent measures are broadly progressive, with households in the bottom quintile of income expected to see an increase of around 0.9% of equivalised disposable income, and those in the top quintile to see increases of 0.5%. When accounting for temporary measures, household incomes are estimated to increase by just 0.2%, on average, and the broadly progressive effect of the permanent measures becomes less clear. While households in the bottom decile of income see the largest relative rise in income, of 0.5%, the remainder of the bottom half of the income distribution see either no significant change in income or, in the case of the third decile, a reduction in real income of -0.4%.

When considering both the permanent and temporary changes to the tax and welfare system announced in Budget 2025, the distribution of gains and losses is more uneven across household types. On average, retirement aged households experience losses as a result of the measures, while working aged households see gains, particularly those with children. These findings reflect the fact that State Pensions increased by a lower percentage than working age payments, and that the Fuel Allowance and the Living Alone Increase, often received by those of retirement age, were frozen in nominal terms, and therefore fell in real terms. Households with children benefitted from the two double Child Benefit payments, as well as the introduction of the Newborn Baby Grant and increases for child dependants for those in receipt of social welfare payments.

While at-risk-of poverty (AROP) rates are expected to remain the same for most groups, they are anticipated to rise for those above retirement age and those with disabilities. This research shows that, were it not for the temporary measures currently in place, the AROP rate of these groups would have risen more substantially in 2024 and 2025. These groups are particularly dependent on these temporary measures and therefore will feel their withdrawal more acutely. For this reason, careful consideration is needed, regarding both their withdrawal and how the permanent welfare system will develop, as prices remain at higher levels than before the cost-of-living crisis.

Finally, we saw that households with children will benefit more, on average, as a result of Budget 2025 measures. These measures are not, however, expected to have much of a downward impact on child poverty, which brings into question their efficiency and raises targeting concerns.

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APPENDIX

TABLE A1 REFORMS MODELLED IN DISTRIBUTIONAL ANALYSIS

Taxation	Full year cost/yield, €m	Modelled
Income tax	**-1,290**	
€125 increase to Personal, Employee, and Earned Income Tax Credits; €150 increase to Home Carer and Single Person Child Carer Tax Credits; rise in standard rate cut off by €2,000.		✓
€300 increase in the Incapacitated Child Tax Credit and Blind Person's Tax Credit, €60 increase in the Dependent Relative Tax Credit.		
Universal Social Charge		
USC second band increase from €25,760 to €27,382, USC 4% rate reduced to 3%	**-540**	✓
Housing		
Help to Buy amendments and extension to 31 Dec 2029	-185	
Increase Rent Tax Credit to €1,000	-65	✓
Tax relief on pre-letting expenses extended to 31 Dec 2027	-2	
Increase stamp duty on bulk home purchases from 10% to 15%	11.6	
Increase vacant homes tax to 7 times LPT charge	1	
Carbon tax		
+€7.50 per tonne of carbon	157	✓
Excise duties		
+€1 on a packet of 20 cigarettes	69.7	✓
Introduced e-liquid tax of €0.50 per ml	17	
VAT		
VAT reduction on heat pumps to 9%	-4	
Once-off cost-of-living measures		
Extend mortgage interest tax relief for one further year	-40	
Extension of 9% VAT rate for gas and electricity to 3 Apr 25	-110	✓
Rent Tax Credit Increase for 2024	-65	✓
Inheritance tax		
Thresholds for capital acquisitions tax increased	-88	

TABLE A1 (CONTD.) REFORMS MODELLED IN DISTRIBUTIONAL ANALYSIS

Welfare	Full year cost/yield, €m	Modelled
General	**919.6**	
+€12 (under 66) welfare payments, proportionate increase for qualified adults		✓
+€12 (over 66) welfare payments, proportionate increases qualified for adults		✓
+€15 parental benefits[11]		✓
Child Support Payment		
+€4 for qualified child <12 years +€8 for qualified child >12 years	78.5	✓
Working Family Payment		
+€60 per week to income thresholds	14.8	✓
Carers		
Carer's Allowance becomes qualifying payment for Fuel Allowance	3.7	✓
Carer's Support Grant increased from €1,850 to €2,000	25.4	✓
Carer's Benefit extended to self-employed	7.3	
Increase in income disregard for Carer's Allowance to €625 for singles (€1,250 for couples)	11.8	✓
Domiciliary Care Allowance increased by €20 per month	15.9	
Child Benefit		
Newborn Baby Grant of €280	15	✓
Miscellaneous		
Means test for recipients of State Pension (non-contributory), Disability Allowance and Blind Pension – amount not considered from sale of home upon moving into care increased from €190,500 to €337,500	0.2	✓
Free School Books Scheme extended to Leaving Certificate from Sep 2025	51	✓
Extension of Hot School Meals to all primary schools from Apr 2025	72	✓
Pay-related Jobseeker's Benefit from Mar 2025	*	
Free Travel Scheme Companion pass extended to all people over 70	7	
Free transport extended to 5–8-year-olds	*	
Fuel Allowance means test age criteria reduced from 70 to 66; income disregard increased to €524 for a single person and €1,048 for a couple	4.8	✓
Once-off cost-of-living measures		
2x €125 household energy credits	500	✓

11 Modelled for Maternity Benefits only.

TABLE A1 (CONTD.) REFORMS MODELLED IN DISTRIBUTIONAL ANALYSIS

Welfare	Full year cost/yield, €m	Modelled
Fuel Allowance €300 lump sum	126	✓
Child Benefit double month x 2	371	✓
Social Protection – autumn double week	350	✓
Living Alone Allowance €200 lump sum	50	✓
Working Family Payment €400 lump sum	18	✓
Disability Allowance, Carer's Support Grant, Invalidity Pension €400 lump sum	143	✓
Blind Pension, Domiciliary Allowance €400 lump sum		
€100 lump sum for Increase for a Qualified Child recipients	34	✓
Foster Carer Allowance double payment	2	
€1,000 reduction in student contribution fee, 33% reduction in contribution fee for apprentices. €1,000 increase in Post Graduate Tuition fee contribution.	98	✓
Additional funding for Student Assistance Fund	18	
Fee reduction on School Transport Scheme, State Exam Fee waiver, Additional Schools Capitation and other measures	120	

Source: Department of Finance's Budget 2025 expenditure report and Budget 2025 tax policy changes.
Notes: Costs are in millions of euros per annum and are mostly full year costs for 2024. Some small schemes are excluded. Asterisk (*) indicates no costing was available.

TABLE A2 SIMULATED INCOME INEQUALITY AND AROP RATES IN 2025 WITH AND WITHOUT TEMPORARY MEASURES

Inequality/poverty	Indexed 2024 permanent	Budget 2025 permanent	Indexed 2024 Permanent + temporary	Budget 2025 Permanent + temporary
Gini index	0.272	0.271	0.266	0.266
AROP rate				
Adult	0.121	0.119	0.117	0.116
Retirement age	0.159	0.178	0.088	0.130
Child	0.156	0.154	0.150	0.145
Disability	0.229	0.238	0.187	0.209

Source: Authors' calculations using SWITCH run on 2022 Survey on Income and Living Conditions data, uprated to 2025 income levels.
Notes: The poverty rate is calculated based on a poverty line equal to 60% 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. People with disabilities are identified as those who self-report to having an illness or disability that limits them in their daily activities.

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ASSESSING EXPECTATIONS OF EUROPEAN HOUSE PRICES

Akhilesh Kumar Verma and Kieran McQuinn

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KEYWORDS

House prices; forecasting bias; fundamental variables

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ABSTRACT

Using a new database of consumers' expectations, this paper examines the nature of house price forecasts across a select sample of European Union (EU) member states for the period 2020 to 2024. Across many EU countries, post COVID-19, house price increases have been apparent. Therefore, understanding the dynamics of house price movements is especially important at this time. In particular, we examine the rationality or otherwise of consumers' house price expectations, and then examine the relationship between the expectations and forecasts of key fundamental determinants of house prices, such as interest rates and income levels. In this way we distinguish our work from most other studies of house price forecasts, which have not examined links between house price forecasts themselves and forecasts of the variables typically assumed to be determining prices. This is particularly relevant as oftentimes house price expectations themselves are influenced by changes in market fundamentals.

1. INTRODUCTION

One of the economic legacies of COVID-19, observed across different countries, is an acceleration in house price inflation. According to the International Monetary Fund's (IMF) Global House Price Index,[1] of the over 60 countries participating in the survey, three-quarters witnessed increases in prices in 2020 with the trend continuing into 2021. Indeed, house prices increased by over 5 per cent for 23 countries of the 60. On a cross-country basis, house prices have not experienced such a sustained increase since the period preceding the global financial crisis (GFC) of 2007–2008. Some of this increase may have been due to the accumulation in savings evident among households across European countries. Fitzgerald et al. (2021), for example, note that when European consumers were similarly rationed during the Second World War, excess savings were subsequently converted into physical assets in the housing market.

Consequently, given the prominent role of the housing market in credit and asset price cycles, as well as the link between housing finance and the 2007–2009 GFC (Brunnermeier, 2009; Duca et al., 2010 and 2011), assessing the sustainability of current house price movements is of acute interest from a policymaker's perspective.

Typically, the housing literature assumes that, in the long run, house prices are determined by movements in key fundamental variables; for example, a standard approach in the literature is to adopt an inverted housing demand function such that the dependent variable is the house price, as opposed to the quantity of houses. Applications can be found in Peek and Wilcox (1991), Muellbauer and Murphy (1997), Meen (1996), Meen (2000), Cameron et al. (2006), Kelly and McQuinn (2014) and Cronin and McQuinn (2021a); in all these, the model generally assumes that house prices are positively related to income levels and negatively related to the cost of capital.[2]

The interrelationship between the housing market and the real economy was particularly evident following the GFC in 2007–2008. A robust housing market often signals a strong economy, as increased home sales and rising property values boost consumer wealth, leading to higher consumer spending and investment. This, in turn, stimulates economic growth through increased demand for goods and services, construction, and related industries. Conversely, a downturn in the housing market can have a ripple effect, leading to decreased consumer confidence and spending, reduced construction activity, and potential job losses, thereby slowing economic growth. Additionally, housing prices and availability

1 See https://blogs.imf.org/2021/10/18/housing-prices-continue-to-soar-in-many-countries-around-the-world/.
2 House prices are also generally assumed to be negatively related to the per capita housing stock.

impact affordability and mobility, influencing labour market dynamics and overall economic productivity. Case et al. (2005), for example, find that increases in housing wealth significantly boost consumer spending, more so than increases in stock market wealth, while Leamer (2007; 2015) argues that housing is a leading indicator of business cycles, with downturns in residential investment often preceding broader economic recessions. The construction sector, which is closely tied to housing investment, generates significant employment and drives demand for materials and services, thus magnifying its impact on the economy. Mian and Sufi (2009) demonstrate how housing market collapses can lead to severe banking crises, as falling home prices reduce collateral values, leading to a credit crunch. They emphasise the role of excessive mortgage lending and financial leverage in exacerbating economic downturns.

While increases in house prices can initially arise due to a particular shock or change in a key economic variable, consumer expectations of future price movements can themselves become an important dynamic in the market. As noted by Duca et al. (2021), house price booms are usually:

> *set in motion by shifts in fundamentals (e.g. in interest rates, income and credit standards) whose dynamic effects interact with supply conditions and can be magnified by a tendency for households to form house price expectations that are very different from the rational expectations associated with efficient markets.*

Therefore, the interaction of house price expectations and the fundamental determinants of house prices is of particular interest – i.e., to what extent are consumers' expectations of house prices linked to or associated with their expectations for the key determinants of house prices? To date, however, this relationship does not appear to have been examined in much detail. Much of the literature is concerned with examining the rationality or otherwise of house price forecasts, and when this hypothesis is usually rejected, other dynamics underpinning house price expectations are considered, such as backward looking, extrapolative ones. Few, if any, studies examine the degree to which house price expectations are influenced by consumers' expectations of key underlying fundamental variables, such as income levels and interest rates. Using new survey data on consumer sentiment regarding this issue, which was collated and published by the European Central Bank (ECB)[3], we now address this issue. Among other variables, the ECB survey publishes consumers' expectations for house prices, household income and mortgage interest rates. This allows us to compare the forecast errors for house prices with those of the key fundamental

3 For more information on the survey, see https://www.ecb.europa.eu/stats/ecb_surveys/consumer_exp_survey/html/index.en.html.

determinants of house prices in the short run; namely, income levels and interest rates.

Rational expectations theory has significant implications for economic forecasts, as it posits that individuals and firms form their expectations about future economic variables (such as inflation, interest rates and output) based on all available information, including the likely effects of current policies. This means that if economic agents are rational and markets are efficient, forecasting errors should be random rather than systematic, since individuals would already anticipate the predictable effects of policies or trends. Consequently, policymakers may find it difficult to impact the economy through monetary or fiscal policies if these actions are anticipated. It also implies that traditional macroeconomic models that do not account for rational expectations may overestimate the effectiveness of policy interventions, as individuals will adjust their behaviour to offset the anticipated effects.

Our results reveal that, in accordance with the previous literature, we can reject the null hypothesis of rationality among European households in terms of house price expectations. This is important in terms of the mechanisms regarding house price expectations that are adopted in different housing, and more broadly macroeconomic, models. In turn this can have implications for conclusions reached about the presence of housing bubbles or periods of irrationality among consumers in terms of their attitudes to house price developments. We also find an important distinction between the role played by actual and expected changes in real interest rates. It appears that households are more influenced by expected changes in real interest rates than in changes in the actual rate. Finally, our results suggest that variations in changes in real income expectations have significant implications for expectations regarding real house price changes. Therefore, it would appear that it is consumers' expectations concerning the general economy that is of most importance in shaping their beliefs about the future housing market.

The rest of the paper is structured as follows. In the Section 2, we review the literature on house price expectations. The data and empirical methodology adopted are then discussed in the Section 3, following which the results of our analysis are presented, in Section 4. Section 5 offers some concluding comments.

2. LITERATURE REVIEW

Given the importance of consumers' price expectations mechanisms, in their review paper Duca et al. (2021) contend that this 'suggests that regular surveys of house price expectations should have been a high priority before the boom and bust of the mid-2000s, [yet] surveys are sparse and intermittent'. Kuchler et al. (2022) provide a summary of studies of house price expectations. In the case of the

US residential market, while the Michigan Survey of Consumers has provided information on the housing market since 1960, data on point estimates for house price expectations have only been available since 2007.

Case and Shiller (1989), based on their 1988 survey, contended that people seemed to base their expectations on house prices on past house price movements rather than expectations of key market fundamentals. In 2013, in light of the financial crisis, the Federal Reserve Bank of New York launched the monthly Survey of Consumer Expectations (SCE), which every month contains questions on respondents' expectations of house prices. Fannie Mae's National Housing Survey (NHS) has surveyed US households since 2010 on expectations about housing markets. In addition, between 2003 and 2012, Case et al. (2012) conducted surveys of recent home buyers in four US counties that experienced significant price appreciation prior to 2008.

On a European wide basis, information on house price expectations, income levels, interest rates and credit standards has only become available with the initiation by the ECB of the Consumer Expectations Survey (CES) with data available from 2020. Eurozone member central banks, such as the Bundesbank, the Bank of Spain and the Bank of Italy, conduct country-level surveys, which include questions on the housing market. However, the CES is the only survey available for a number of Eurozone countries. The CES is an online panel survey of consumers, and is carried out on a monthly basis. The microdata for the CES are collected through a survey of a panel of eurozone consumers, which is currently conducted by Ipsos Public Affairs on behalf of the ECB. The countries included since the beginning of the survey are: Belgium, France, Germany, Italy, the Netherlands and Spain. In 2022, the sample was extended to cover five additional countries: Austria, Finland, Greece, Ireland and Portugal.

In comparing variations in the house price expectations of the Michigan Surveys of Consumers and actual house price movements, Kuchler et al. (2022) note two stylized facts among the data: house price expectations tend to be more optimistic after recent periods of actual house price appreciation; and the time-series variation in expectations is actually smaller than the time-series variation in the movement of actual prices.

One of the earlier assessments of the role played by house price expectations was conducted by Abraham and Hendershott (1996). Here, these authors outline the manner in which expectations can interact with market fundamentals. In the context of an equilibrium correction model, they also discuss the concept of positive 'bubble-builder' effects on house prices – from recent rises in house prices – and negative 'bubble-burster' effects – from high levels of real house prices relative to fundamentals. The bubble-builder effect arises if many agents base their

expectations of future price movements on the basis of recent gains, thereby increasing housing demand. However, eventually house prices will fall if they increase more than what key market fundamentals such as incomes, mortgage rates and the housing stock would suggest. In the latter case, if agents' expectations are extrapolative, then a series of positive shocks can ultimately lead to house prices overshooting their long-run equilibrium levels.

In terms of the expectations mechanisms adopted by consumers, most of the surveys and analysis conducted suggest that the concept of rationality is rejected. For example, Capozza and Seguin (1996) and Clayton (1997) find evidence to refute the rational expectations hypothesis, while studies such as De Stefani (2021), Niu and van Soest (2014), Armona et al. (2019) and DeFusco et al. (2017) find evidence to suggest customers adopt extrapolative expectations in terms of future house price movements.

The exact nature of customers' expectations is particularly important in a housing context given the importance and popularity of models such as the user cost of capital. In understanding the stability or otherwise of house price movements, a key relationship well established within the housing literature is that between the house-price-to-rent ratio and the user cost of capital. Variants of this framework applied to housing markets can be found in: Blackey and Follain (1995), Murphy (2005), Campbell et al. (2006), Gallin (2008), Diaz and Luengo-Prado (2012), Duca et al. (2011), Browne et al. (2013) Cronin and McQuinn (2016) and Monteiro et al. (2021).

Central to the user of capital concept is the role played by house price expectations; however, the user cost model is itself neutral on how these expectations are formulated. In a well-known contribution, Glaeser and Gyourko (2007) use the relationship between the user cost of capital and the house-price-to-rent ratio to outline the contrasting impact rent levels could have in models of house prices. The relationship between the price–rent ratio and future house price movements depends on the manner in which house price expectations, central to the user cost model, are formulated. For example, a forward-looking mechanism would imply that a higher price–rent ratio would result in future house price growth. All else being equal, if house prices increase relative to rents, the cost of renting versus buying falls, and homeowners must expect capital gains to be indifferent between renting and buying. In this context, according to this efficient market view, houses are neither overvalued nor undervalued, and this is also the case regarding expectations. By contrast, an alternative, backward-looking view of residential real estate prices contends that elevated levels of the price–rent ratio should be associated with future price declines. In such a case, if home ownership looks more expensive relative to renting than it has in the past, house prices should correct downwards.

Other areas where forecasts of key economic variables have been examined include those that concern traditional economic growth indicators and key fiscal metrics, such as government expenditure and the general government balance – Cronin and McQuinn (2021b) provide a review of this literature.[4]

3. DATA AND METHODOLOGY

The data for this study comes from 2 sources for 11 European countries over the period Q2 2020 – Q4 2023. The first set of data is taken from the ECB's Consumer Expectations Survey (CES) for 11 European countries. The CES is an online panel survey of consumers that has been carried out on a monthly basis since January 2020. Information on consumer expectations is collected across four different areas: inflation; labour markets and economic growth; household income and consumption; and housing and credit access.[5]

In terms of our overall assessment, we restrict our sample based on the sample country and period available in the survey. For our analysis, we employ aggregate data at the country level from April 2020 to December 2023 for European countries covered in the survey.[6] These countries include Austria, Belgium, Finland, France, Germany, Greece, Italy, Ireland, the Netherlands, Portugal and Spain.[7] We take a quarterly average of the survey data to bring it to the same level of frequency as additional macroeconomic variables used in this study. We use four quantitative variables based on the following four survey topics:

- home price expectations 12 months ahead (percentage change) as a proxy for expected house price growth;
- mortgage interest rate expectations 12 months ahead (percentage) as a proxy for expected nominal interest rate;
- household income expectations 12 months ahead (percentage change) as a proxy for expected household income growth; and
- inflation expectations over the next 12 months (percentage change) as a proxy for expected inflation.

The second set of data we use is taken from Eurostat. These variables include actual realised data for house price growth, interest rates, inflation rates and

4 Cronin and McQuinn (2021c) also review the relationship between official forecasts of economic growth and the corresponding official forecasts of key fiscal indicators.
5 Full details of the survey can be obtained at https://www.ecb.europa.eu/stats/ecb_surveys/consumer_exp_survey/html/index.en.html.
6 While individual, consumer level data is available across countries, we use the aggregated country level data.
7 Five countries – Austria, Finland, Greece, Ireland and Portugal – are included in the survey in 2022.

housing supply. In all our analysis we use real variables where the difference between nominal variables and inflation is calculated.

3.1 EMPIRICAL STRATEGY

In our empirical specifications we estimate a series of panel data fixed effect models to examine the relationship between house price expectations and expectations of variables typically taken to be determinants of house prices. As outlined previously, a review of the house price literature clearly establishes income levels and interest rates as two of the main determinants of house prices in the short run, across both time and countries (Duca et al., 2021). In the appendix to this paper, Figures A1–A4 plot both the actual and expected values of the different variables used in the analysis on a cross-country basis.

Initially, we estimate the relationship between the actual values of the different variables and then we examine the relationships between the expectations of the same variables. Finally, we examine the relationship between the forecast error for the main demand-side determinants of house prices (income and interest rates) and the forecast error for house prices themselves.

To test the basic premise that income levels and real interest are important determinants of house prices, we regress the change in actual house prices on the change in actual income levels and the change in the actual real interest rate:

$$\Delta P_{it} = \alpha_i + \beta_1 \Delta Y_{it} + \beta_2 R_{it} + u_{it} \quad (1)$$

where t refers to current quarter. Real house price growth (ΔP_{it}) is calculated as the difference between nominal house price growth and actual inflation. Real income growth (ΔY_{it}) is calculated as the difference between nominal income growth and actual inflation. The real interest rate (R_{it}) is calculated as the difference between nominal interest rate and actual inflation.

Next, to see if the same relationship holds between the expected values of these variables, we regress the expected change in house prices (ΔP_{it}^E) on the expected change in income $\left(\Delta Y_{it}^E\right)$ and the expected real interest rates (ΔR_{it}^E):

$$\Delta P_{it}^E = \alpha_i + \beta_1 \Delta Y_{it}^E + \beta_2 R_{it}^E + u_{it} \quad (2)$$

where t refers to the time of survey data collection. Expected real house price growth is calculated as a difference between expected house price growth and expected inflation. Expected real income growth is calculated as the difference between expected income growth and expected inflation. The expected real interest rate is calculated as the difference between expected interest rates and

expected inflation. Therefore, we are using the expectations of the nominal variables, house prices, income and interest rates, and the expectations of inflation rates as contained in the ECB's CES.[8]

In our third set of estimates, we test for the issue of rationality in house price expectations. In that context we estimate the following panel data model:

$$\Delta B_{it} = \alpha_i + \beta_1 \Delta B_{it}^{E} + u_{it} \quad (3)$$

where actual ΔB_{it} refers to real house price growth, real income growth and real interest rate growth, and ΔB_{it}^{E} is the expected value of the equivalent variable.

To test for bias in the forecasts based on panel data models, two separate tests are used here. First, according to Keane and Runkle (1990) and Bonham and Cohen (2001), two conditions must hold in order for expectations in forecasting to be deemed rational. When ΔB_{it} is regressed on ΔB_{it}^{E}, the coefficient on the regressor must be significantly different from one, and the country dummies must be insignificantly different from zero. A second test of rationality follows the recent approach of Croushore and Van Norden (2018); it tests whether the forecast error (the difference between ΔB_{it} and ΔB_{it}^{E}) is statistically different from zero.

Finally, to decompose the error in the house price regression, we regress the forecast error of the change in house prices on the equivalent forecast error for income levels and for real interest rates:

$$\Delta P_{it}^{EF} = \alpha_i + \beta_1 \Delta Y_{it}^{EF} + \beta_2 \Delta R_{it}^{EF} + u_{it} \quad (4)$$

where ΔP_{it}^{EF} is the forecast error for the change in real house prices, ΔY_{it}^{EF} is the forecast error for the change in real income levels and ΔR_{it}^{EF} is the forecast error for the real interest rate.

The results for the different models are summarised in the next section.

4. RESULTS

4.1 House prices and its key determinants

In Table 1, we present the regression results for the determinants of actual real house price growth using a panel fixed effects model with three different specifications. Across three model specifications, real income growth

8 We also include housing supply growth in equations (1) and (2) to control for supply-side factors that could play a role in the formation of house price expectations. Supply-side constraints in the housing sector could lead to higher house price expectations in the presence of strong demand.

demonstrates a consistently strong, positive and statistically significant impact on real house price growth. In the first model (1), the coefficient for real income growth is 0.64, indicating that a 1 per cent increase in real income growth is associated with a 0.64 per cent rise in real house price growth, holding other factors constant.[9] This relationship strengthens in the second and third specifications, with the coefficients increasing to 0.88 and 0.90, respectively, and both coefficients are significant at the 1 per cent level.

9 This result is in line with that in the literature – see, for example, Harmon (1988) or Liu (2019).

TABLE 1 HOUSE PRICE GROWTH AND ITS DETERMINANTS

	Dependent variable: ΔP_{it}.		
Variable	(1)	(2)	(3)
ΔY_{it}	0.64***	0.88***	0.90***
	(0.10)	(0.18)	(0.22)
ΔR_{it}		-0.44	-0.47
		(0.27)	(0.31)
ΔS_{it}			0.02
			(0.05)
Country fixed effect	yes	yes	yes
R-squared	0.28	0.30	0.28
No of obs.	108.00	108.00	94.00

Note: The table reports the regression estimates, where the dependent variable is house price growth (ΔP_{it}) and the explanatory variables are household income growth (ΔY_{it}), real interest rate ($\Delta R_{)it}$ and house supply growth (ΔS_{it}). Heteroskedasticity robust standard errors are reported in parentheses. Asterisks (***, ** and *) denote statistical significance at 1, 5 and 10 per cent levels.

In contrast, the real interest rate exerts the expected negative but statistically insignificant effect on real house price growth in the second and third specifications, with coefficients of -0.44 and -0.47, respectively. Additionally, we also control for supply-side effects in our models by including house supply growth (ΔS_{it}). This is included in the third specification and has a negligible and statistically insignificant effect, with a coefficient of 0.02, indicating that variations in house supply growth do not significantly influence real house price growth in the short-run. Overall, the analysis underscores the pivotal role of real income growth in driving real house price growth in the short run, while real interest rates and house supply growth appear to have less of an impact.

In the next part of our analysis, we re-estimate the model with expected variables to test for similarities or dissimilarities with the actual house price estimation.

4.2 Expected house prices and determinants

The panel fixed effects regression results presented in Table 2 investigate the factors influencing expected house price growth, again with three distinct model specifications. The results reveal a consistently robust and positive impact of expected income growth on expected house price growth across all models. Specifically, in the first model, a 1 per cent increase in expected income growth is associated with a 0.61 per cent increase in expected house price growth, which is statistically significant at the 1 per cent level. This positive relationship becomes even more pronounced in the second and third models, where the coefficients rise

to 1.07 and 1.11, respectively, maintaining their statistical significance at the 1 per cent level.

However, a significant contrast emerges when considering the influence of real interest rates. In the regression for actual house price growth, the real interest rate has a negative but statistically insignificant effect. In contrast, for expected house price growth, the expected real interest rate has a significantly negative impact, with coefficients of -0.57 and -0.65 where both are statistically significant. This suggests that while actual house prices may not respond immediately to changes in real interest rates, market expectations of future house prices are more sensitive to anticipated changes in interest rates.[10]

TABLE 2 EXPECTED HOUSE PRICE GROWTH AND DETERMINANTS

	Dependent variable: ΔP_{it}^{E}.		
Variable	(1)	(2)	(3)
ΔY_{it}^{E}	0.61***	1.07***	1.11***
	(0.07)	(0.18)	(0.20)
ΔR_{it}^{E}		-0.57***	-0.65***
		(0.20)	(0.23)
ΔS_{it}^{E}			0.01
			(0.01)
Country fixed effect	Yes	yes	yes
R-squared	0.46	0.49	0.50
No of obs.	108.00	102.00	89.00

Note: The table reports the regression estimates, where the dependent variable is house price growth ($\Delta P_{it)}^{E}$ and the explanatory variables are household income growth (ΔY_{it}^{E}), real interest rate (ΔR_{it}^{E}) and house supply growth.

4.3 Rationality tests

We now move to analyse the rationality of house price expectations and that of its key determinants – real income and interest rate. Tables 3, 4 and 5 present the rationality tests for house price, income and interest rate, respectively. For each case, we estimate two models, where column (1) describes the estimation result for a panel setup with all countries combined and column (2) captures cross-country variation. In other words, the former tests for the rationality of house price, income and interest rates for Europe as a whole, while the latter tests for the rationality for each country in our sample separately. In column (1) of Tables 3,

10 We also conduct a robustness check in this case, using an alternative estimation strategy – dynamic panel GMM – and find similar results (please refer Table A2 in the appendix for the results).

4 and 5, we test whether the mean estimate of expected house prices, expected interest rates and expected income are significantly different from 1. Furthermore, in column (2) of each table, we test whether the sum of the mean estimate of the variable of interest (expected house prices, expected interest rate and expected income) and the corresponding country level estimate are statistically different from 1.

For instance, in Table 3, we reject the rationality of Belgium's house prices, as the sum of the coefficient of mean estimate (ΔP_{it}^{E}), 5.22, and country-level estimate BE × ΔP_{it}^{E}, -1.75, is statistically different from 1. Table 3 shows that the coefficient on expected house price growth is 2.49 for the panel setup and 5.22 for the cross-country variation case. The coefficient at the country level in column (2) is such that the combined coefficient of expected house price growth and the respective country's expected house price growth is different from 1, which confirms the rejection of the rationality hypothesis for house prices.

TABLE 3 RATIONALITY TEST: HOUSE PRICE GROWTH

	Dependent variable: ΔP_{it}.	
	(Combined panel)	(Cross-country variation)
Variable	(1)	(2)
ΔP_{it}^{E}	2.49***	5.22**
	(0.31)	(2.37)
BE × ΔP_{it}^{E}		-1.75
		(2.57)
DE × ΔP_{it}^{E}		0.91
		(2.47)
ES × ΔP_{it}^{E}		-5.31*
		(2.82)
FI × ΔP_{it}^{E}		-5.33**
		(2.66)

FR × ΔP_{it}^{E}		-1.98
		(2.57)
IE × ΔP_{it}^{E}		-6.47**
		(2.74)
IT × ΔP_{it}^{E}		-4.27*
		(2.44)
NL × ΔP_{it}^{E}		-2.40
		(2.40)
PT × ΔP_{it}^{E}		-5.37**
		(2.56)
Constant	6.46***	3.74***
	(0.95)	(1.00)
Country fixed effect	yes	yes
R-squared	0.40	0.64
No of obs.	108.00	108.00

Note: The table reports the regression estimates, where the dependent variable is house price growth (ΔP_{it}). and the key explanatory variable is expected house income growth (ΔP_{it}^{E}). The interaction term refers to cross-country variation in the relationship between expected house price and house price growth. Heteroskedasticity robust standard errors are reported in parentheses. Asterisks (∗∗∗, ∗∗ and ∗) denote statistical significance at 1, 5 and 10 per cent levels.

We find similar results in the case of real income as shown in Table 4. The coefficient on expected house price growth is 1.90 for the panel setup and -0.62 for where cross-country variation is allowed for. Moreover, the coefficient at the country level is such that the combined coefficient of the expected house price growth and the respective country's expected house price growth is significantly different from 1.

TABLE 4 RATIONALITY TEST: REAL INCOME

	Dependent variable: ΔY_{it}.	
Variable	(Combined panel)	(Cross-country variation)
ΔY_{it}^{E}	1.90***	-0.62***
	(0.23)	(0.00)

BE × ΔY_{it}^{E}		6.84***
		(0.00)
DE × ΔY_{it}^{E}		3.27***
		(0.00)
ES × ΔY_{it}^{E}		4.76***
		(0.00)
FI × ΔY_{it}^{E}		2.44***
		(0.00)
FR × ΔY_{it}^{E}		3.05***
		(0.00)
IE × ΔY_{it}^{E}		1.24***
		(0.00)
IT × ΔY_{it}^{E}		2.62***
		(0.00)
NL × ΔY_{it}^{E}		3.91***
		(0.00)
PT × ΔY_{it}^{E}		2.12***
		(0.00)
Constant	4.19***	7.11***
	(1.17)	(0.00)
Country fixed effect	yes	yes
R-squared	0.42	0.67
No of obs.	108.00	108.00

Note: The table reports the regression estimates, where the dependent variable is household real income growth (ΔY_{it}) and the key explanatory variable is expected household real income growth (ΔY_{it}^{E}). The interaction term refers to cross-country variation in the relationship between expected household real income growth and household real income growth. Heteroskedasticity robust standard errors are reported in parentheses. Asterisks ($***, **, *$) denote statistical significance at 1, 5 and 10 per cent levels.

Lastly, drawing from Table 5, we reject the rationality hypothesis in the case of the real interest rate. Based on this, we consistently reject the rationality hypothesis across both model specifications for house prices, interest rates and income, as we

find the coefficient of expected house prices, expected income and expected real interest rate is statistically significant and different from 1 on average and in the case of each individual country.

TABLE 5 RATIONALITY TEST: REAL INTEREST RATE

	Dependent variable: ΔR_{it}.	
Variable	(Combined panel)	(Cross-country variation)
ΔR_{it}^{E}	1.67***	0.63**
	(0.14)	(0.26)
BE × ΔR_{it}^{E}		2.83***
		(0.47)
DE × ΔR_{it}^{E}		1.59***
		(0.49)
ES × ΔR_{it}^{E}		3.01***
		(0.54)
FI × ΔR_{it}^{E}		0.51
		(0.39)
FR × ΔR_{it}^{E}		1.51**
		(0.62)
IE × ΔR_{it}^{E}		0.41
		(0.41)
IT × ΔR_{it}^{E}		0.80**
		(0.34)
NL × ΔR_{it}^{E}		2.83***
		(0.46)
PT × ΔR_{it}^{E}		0.54
		(0.39)
Constant	-0.74**	-0.42*

	(0.30)	(0.22)
Country fixed effect	yes	yes
R-squared	0.60	0.81
No of obs.	102.00	102.00

Note: This table reports the regression estimates, where the dependent variable is real interest rate ($\Delta R_{it)}$ and the key explanatory variable is expected real interest rate (ΔR_{it}^{E}). The interaction term refers to cross-country variation in the relationship between the expected real interest rate and real interest rate. Heteroskedasticity robust standard errors are reported in parentheses. Asterisks (***, ** and *) denote statistical significance at 1, 5 and 10 per cent levels.

Rejecting rationality for expectations of house price growth, real income and real interest rates is not unexpected, and indeed it correlates with the literature mentioned previously, which has tended to reject the hypothesis of rationality particularly in the context of house prices. The findings indicate that markets for housing, income expectations and interest rates may not be efficient, likely due to behavioural biases, information asymmetries and other market frictions. This inefficiency highlights the need for tailored interventions to stabilise housing markets and address speculative bubbles. These results also imply that models based on rational expectations may not accurately forecast future movements for house prices.

To understand the non-rationality of house price growth, we next examine house price forecast error, and analyse the role of income forecast error and interest rate forecast error in explaining the variation in this.

4.4 House price forecast error and its determinants

As we examine the role of household income and interest rate as key determinants of house price, we aim to understand the extent to which the forecast error in the former can contribute to the forecast error of the latter. As shown in columns (1) and (2) of Table 6, we find that forecast errors for the growth rate of income have a significant positive association with house price forecast errors, indicating that inaccuracies in income predictions lead to larger errors in house price forecasts. However, it appears to be inconclusive regarding the impact of interest rate forecast errors; while the coefficient is negative in one column, suggesting a decrease in the forecast error for house prices is associated with a higher rate of forecast error for interest rates. The relationship is not statistically significant.

TABLE 6 HOUSE PRICE FORECAST ERROR, INTEREST RATE FORECAST ERROR AND INCOME FORECAST ERROR

	Dependent variable: ΔP_{it}^{EF}	
Variable	(1)	(2)
ΔY_{it}^{EF}	0.66***	0.72***
	(0.11)	(0.22)

ΔR_{it}^{EF}		-0.13
		(0.39)
Constant	2.56***	2.07***
	(0.43)	(0.77)
Country fixed effect	Yes	yes
R-squared	0.28	0.29
No of obs.	108.00	102.00

Note: This table reports the regression estimates, where the dependent variable is the house price forecast error (ΔP_{it}^{EF}), and the explanatory variables are the income forecast error (ΔY_{it}^{EF}) and the real interest rate forecast error (ΔY_{it}^{EF}). Heteroskedasticity robust standard errors are reported in parentheses. Asterisks ($***$, $**$ and $*$) denote statistical significance at 1, 5 and 10 per cent levels.

Overall, while forecast errors for income levels strongly influence the corresponding errors for house prices, the effect of interest rate forecast errors is not significant. The results suggest that, in the context of forecasting house prices, accurate predictions of income play a crucial role. When income forecasts are inaccurate, it leads to significant errors in predicting house prices. This finding aligns with the broader economic understanding that household income is a key determinant of housing demand and affordability. Therefore, any inaccuracies in income projections could have substantial implications for housing market dynamics, affecting areas such as housing affordability, demand–supply dynamics and, ultimately, overall market stability.

On the other hand, the inconclusive relationship between interest rate forecast errors and house price forecast errors is somewhat surprising, given the pivotal role of interest rates in shaping borrowing costs and mortgage rates, which in turn influence housing demand and affordability. While expectations of real interest rates do appear to impact house price forecasts, the same relationship does not pertain for the forecast errors of both variables.

5. CONCLUDING THOUGHTS

Studies of house price expectations have generally been somewhat limited by the absence of data on the issue. This is despite the fact that expectations themselves have been demonstrated to comprise an important factor in terms of impacting market developments. Therefore, the availability of the European Central Bank's (ECB) Consumer Expectations Survey (CES) is particularly welcome, coming as it does at a time when house prices have started to increase following an increase in household savings, which has been evident since the COVID-19 pandemic.

We believe our results in assessing house price expectations have a number of interesting implications. First of all, as noted by much of the literature that has

assessed this issue, in the context of house prices, we fail to find evidence to support the rational expectations hypothesis. The tendency for households to have house price expectations that are different from rational expectations, which are often associated with efficient markets, can exacerbate the variability of house price movements. Periods of significant house price appreciation, which are maybe initially due to variations in fundamental variables in the housing market, can then be amplified by alternative house price expectations among consumers.

Our estimates suggest that while actual movements in real interest rates do not appear to significantly impact changes in house prices, expected changes in real interest rates do have a significant effect on expectations of future house price movements. This underscores the importance of the signalling of monetary policy and, in particular, the growing body of literature that focuses on central bank communications (see Casiraghi and Pio Perez (2022) for more on this). It would appear this communications channel can have a significant impact on the housing market in terms of guiding consumers' expectations.

Finally, in terms of the impact on house prices, our results confirm overall the importance of consumers' expectations regarding the general economy, given the significance of the household income variable. By changing households' perceived potential affordability levels, expectations about the general economy is demonstrated to have the most pertinent impact on the housing market. This bears out the well-established relationship between the housing market and the general economy, and identifies the expectations channel as another means by which developments in the latter can have significant implications for the former.

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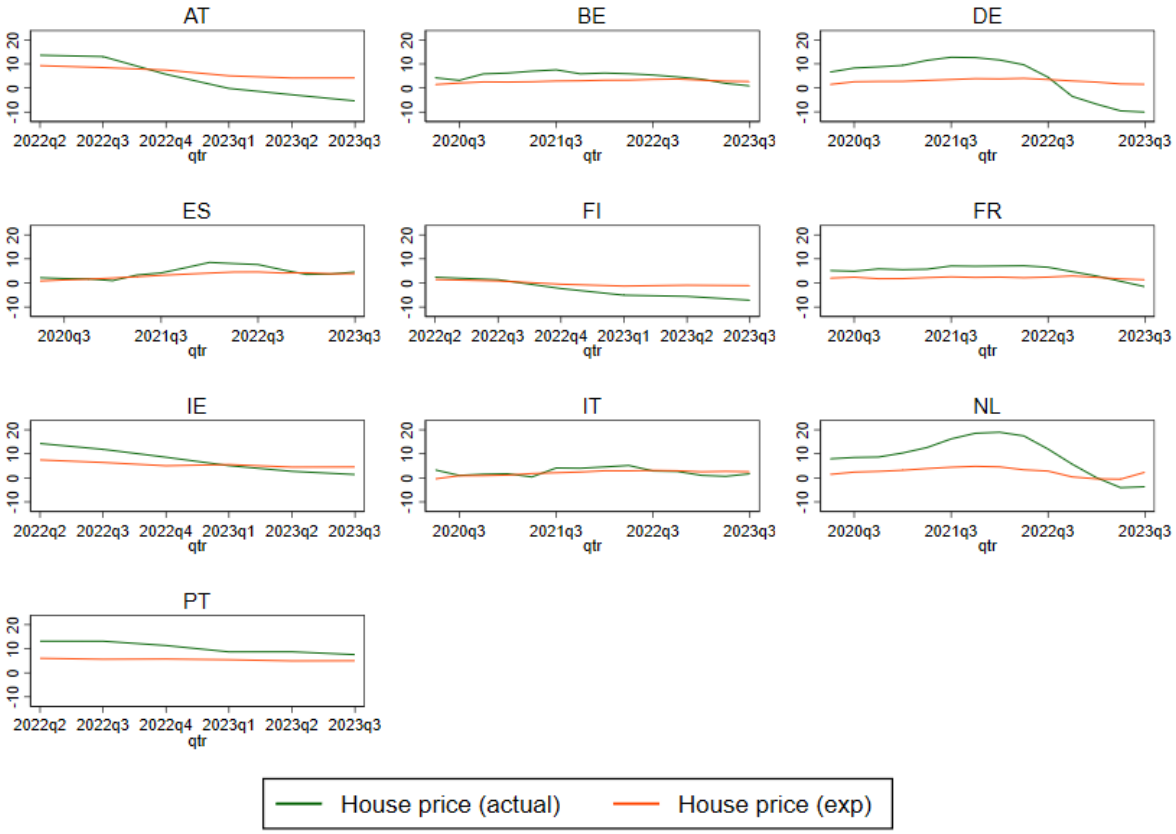
APPENDIX

TABLE A1 SUMMARY STATISTICS: MACROECONOMIC VARIABLES AND HOUSEHOLD EXPECTATIONS

	Observation	Mean	Std. dev	Min	Max
House price growth (real)	108	-0.23	6.57	-16.52	13.84
Real income growth	108	-4.98	5.22	-16.94	6.28
Real interest rate	108	-2.94	3.45	-11.50	2.39
House supply growth	94	3.02	11.49	-26.69	39.00
Expected house price growth	108	-2.69	2.18	-9.27	1.13
Expected income growth	108	-4.83	2.40	-11.33	-1.40
Expected real interest rate	102	-1.47	1.83	-7.10	1.23

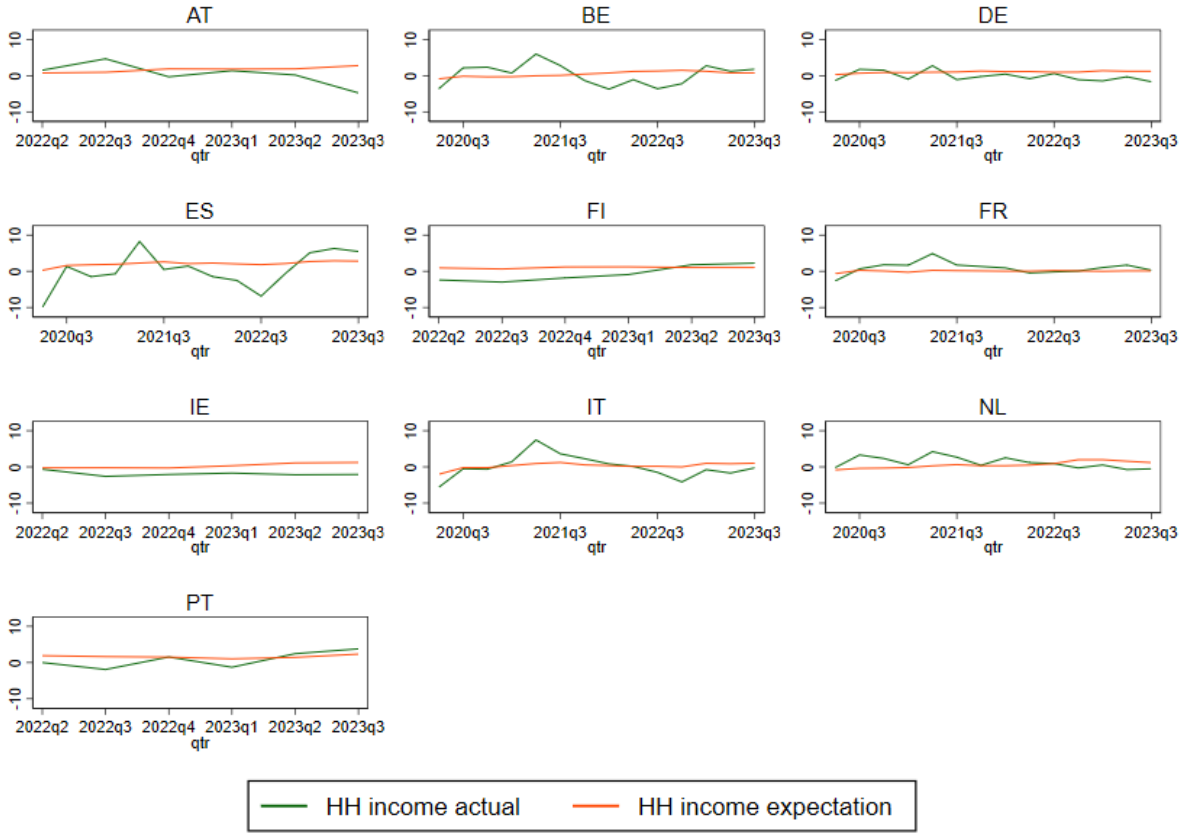
Source: Eurostat, ECB Consumer Expectation Survey, both waves.
Note: This table reports summary statistics of macroeconomic and household expectation variables for the period 2020–2022 for 11 sample European countries.

FIGURE A1 ACTUAL HOUSE PRICE AND EXPECTED HOUSE PRICE: CROSS-COUNTRY COMPARISON



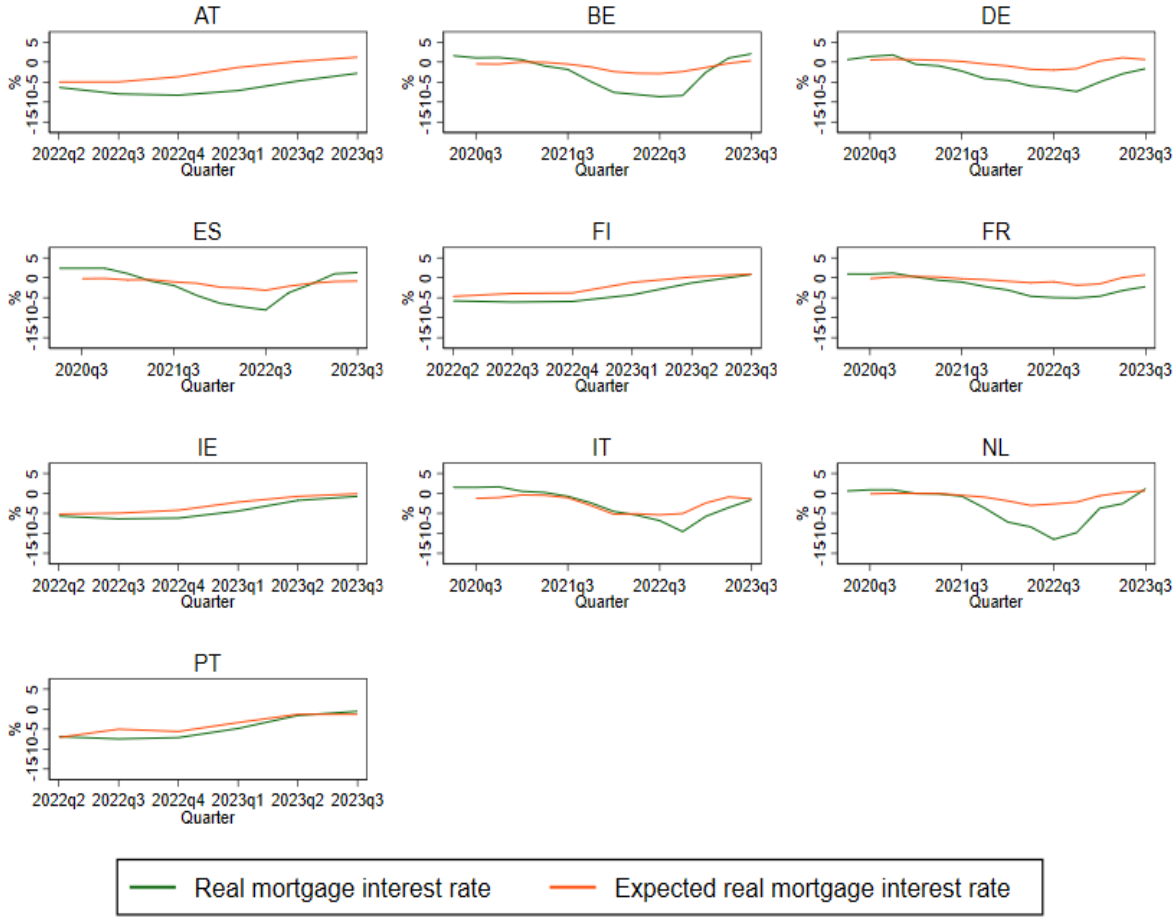
Note: The figure illustrates trends for actual house prices growth and expected house price growth for 11 sample European countries for the period 2020–2022.

FIGURE A2 ACTUAL HOUSEHOLD INCOME AND EXPECTED HOUSEHOLD INCOME: CROSS-COUNTRY COMPARISON



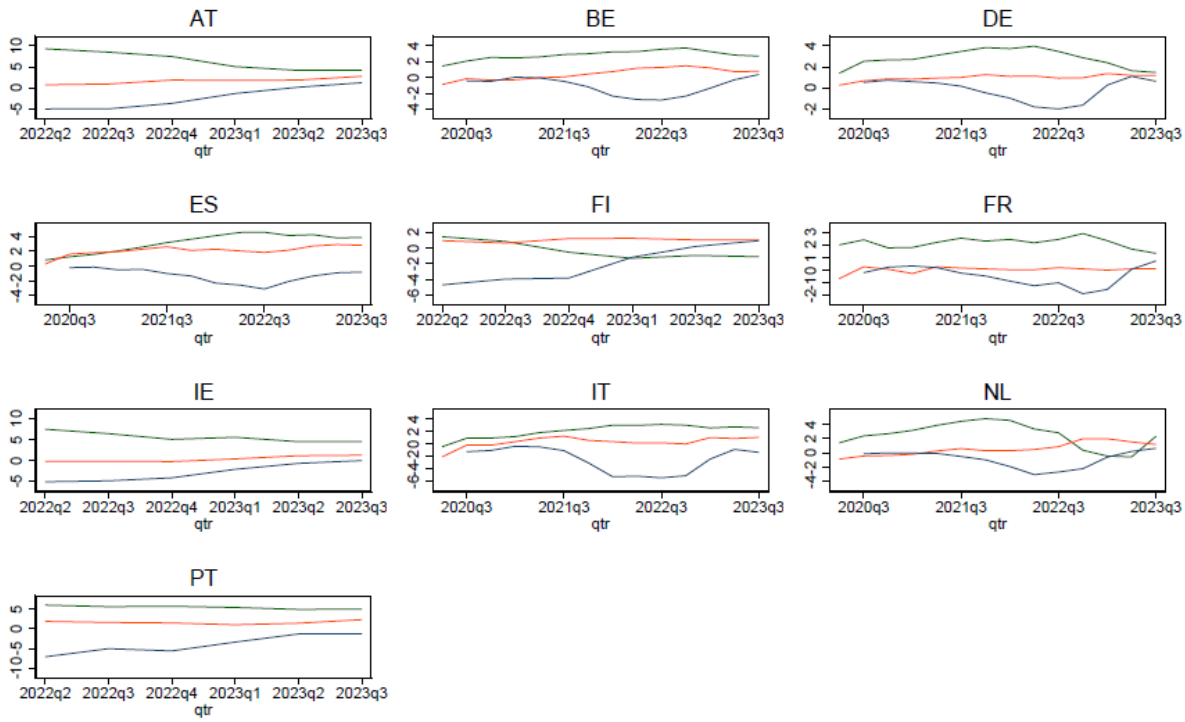
Note: The figure illustrates trends for actual household income growth and expected household income growth for 11 sample European countries for the period 2020–2022.

FIGURE A3 REAL INTEREST RATE AND EXPECTED REAL INTEREST RATE: CROSS-COUNTRY COMPARISON



Note: The figure illustrates trends for real interest rate and expected real interest rate for 11 sample European countries for the period 2020–2022.

FIGURE A4 HOUSE PRICE EXPECTATIONS, INCOME EXPECTATIONS AND INTEREST RATE EXPECTATIONS: CROSS-COUNTRY COMPARISON



Notes: The figure illustrates trends for household forecast error, income forecast error and real interest rate forecast error for 11 sample European countries for the period 2020–2022.

TABLE A2 DYNAMIC PANEL GMM ESTIMATION FOR HOUSE PRICE EXPECTATIONS AND ITS DETERMINANTS

	(1)	(2)	(3)
Expected house price growth			
L1. Expected house price growth	0.511***	0.345*	0.358***
	(3.33)	(1.87)	(2.80)
Expected income growth	0.512***	0.990***	0.918***
	(7.86)	(4.57)	(4.28)
Expected real interest rate		-0.491**	-0.472**
		(-2.40)	(-2.32)
House supply growth			0.003
			(0.29)
P value Hansen statistic	0.981	0.944	0.982
Observations	98	98	85
p value of AR(1)	0.233	0.382	0.212
p value of AR(2)	0.501	0.391	0.444

Note: GMM refers to generalised method of moments.

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