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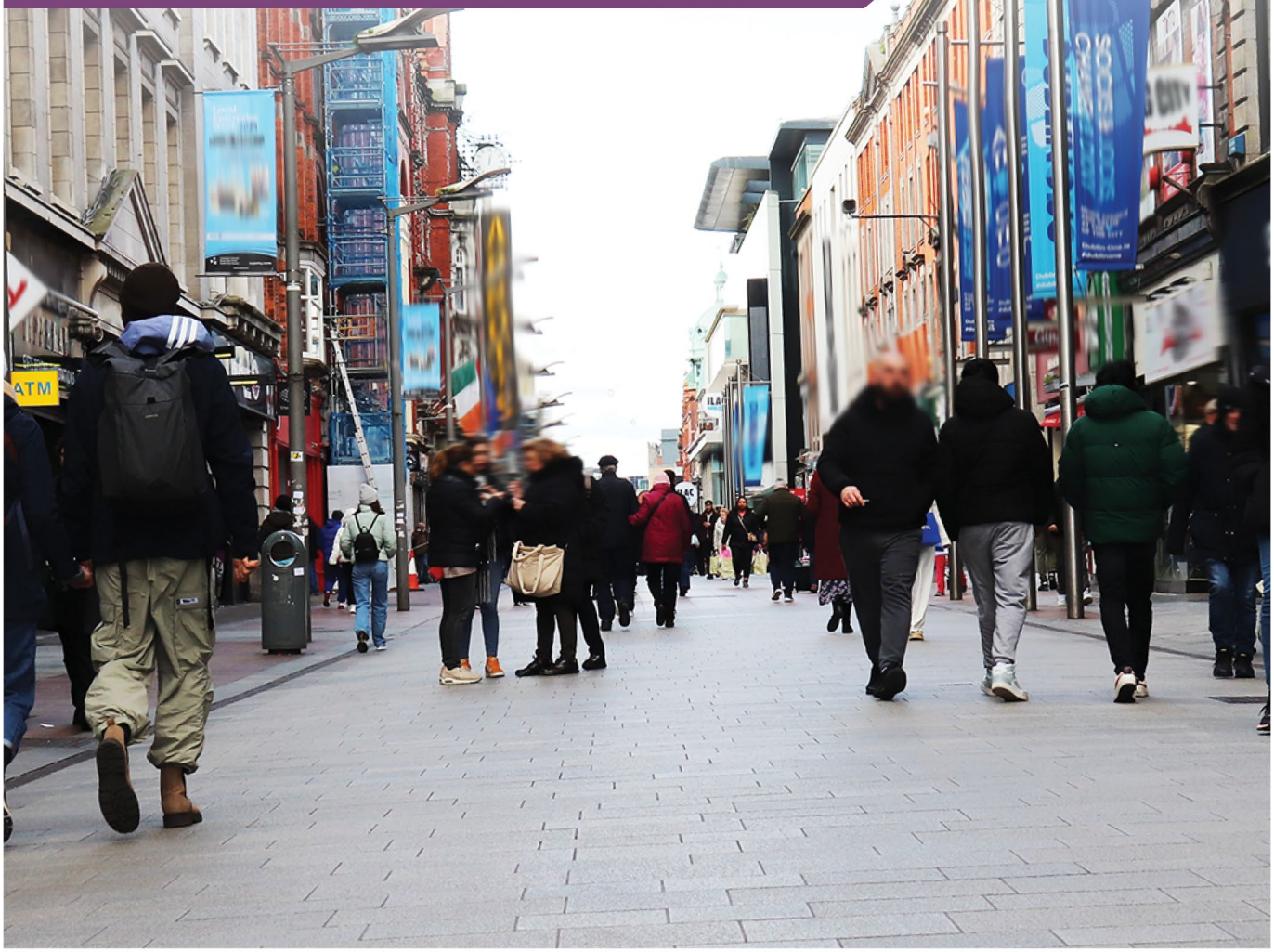

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Notes

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2. Unless otherwise stated, statistics refer to the State, i.e., Ireland exclusive of Northern Ireland.

3. In some cases, owing to the rounding of figures, components do not add to the totals shown.

4. The method of seasonal adjustment used in the Bank is that of the US Bureau of the Census X-11 variant.

5. Annual rates of change are annual extrapolations of specific period-to-period percentage changes.

6. The following symbols are used:

e	**estimated**
n.a.	**not available**
p	**provisional**
. .	**no figure to be expected**
r	**revised**
–	**nil or negligible**
q	**quarter**
f	**forecast**

7. Data on euro exchange rates are available on our website at www.centralbank.ie and by telephone at +353 (0)1 224 5800.

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Comment

The domestic economy has maintained a steady pace of growth in 2024, supported in part by an expansionary fiscal stance and waning external inflationary pressures. The baseline outlook for economic activity remains favourable, but downside risks around that baseline have increased. With the economy operating above its potential, the infrastructural constraints that limit further sustainable growth in living standards have become more apparent. These constraints add to structural vulnerabilities in the economy and public finances, making the near-to-medium term outlook exceptionally sensitive to global economic developments, which have become more uncertain.

Growth in domestic demand, continued strength in the labour market and an easing of inflationary pressures have characterised the Irish economy in 2024. Lower externally-driven inflation alongside growth in household's disposable income, from more people being at work, higher wage rates and an expansionary fiscal policy, have maintained robust domestic economic growth rates. Domestic consumer price inflationary pressures remain contained to date, despite evidence that the economy has been operating above its potential through 2023 and 2024 (Box C).

While this pace of growth relative to potential presents an overheating risk and warrants caution, there are a number of mitigating factors why these developments have not resulted in persistently excessive consumer price and wage inflation to date. First, labour supply has in some dimensions been responsive to economic growth with higher labour force participation and inward migration occurring, although this has been partially offset by lower hours being worked on average and skill shortages persisting across many service sectors and the construction sector. Secondly, the boost to real disposable incomes in 2023 and 2024 coincided with the household savings rate being above its long-term average, muting the potential boost to domestic demand. Thirdly, cost-push inflationary pressures appear to have been more absorbed in the domestic-oriented sectors of the economy than in 2021 and 2022 by contained profit margins and sufficient productivity growth. Fourthly,

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the disinflation momentum from external factors in 2024 has been more pronounced than initially expected.

However, when evaluating the cyclical position of the Irish economy relative to its potential growth rate, it is clear that the responsiveness of labour supply to demand conditions is not matched by a similar responsiveness in investment. It is constraints in capital formation which limit the capacity of the economy and present the most salient indicators of overheating risk. High costs and delays in the delivery of housing, energy, water and transport infrastructure manifest themselves in asset price inflation and rents inflation. In turn, these price rises can eventually feed through to higher wage demands and a higher cost of living and doing business more generally, thus damaging competitiveness. They can also lead to consumption and investment opportunities being foregone or delayed, as the economy cannot sustainably supply the volume of goods and services society demands.

The ability to deliver infrastructure sustainably is especially important in a small open economy such as Ireland in order to maintain incentives for foreign investment. This is especially the case as the risks of geoeconomic fragmentation are rising. Given the extent of trade and investment links between the two countries, the Irish economy would be particularly susceptible to changes in US policy on trade and tax, and the implications of an escalation of trade tensions globally (Box D). While specific policy actions of the incoming administration in the US have yet to emerge, higher tariffs or changes in tax regimes that reduce the profitability of US MNEs operations in Ireland could influence future investment decisions by those companies here. This could affect employment levels in their Irish operations and, most immediately, the related tax receipts to the Irish Exchequer from their activities in Ireland and globally. There are some mitigating factors to this risk, such as the extent of existing physical investment by US MNEs in high-value added sectors of the economy acting potentially as an inertial force to their operations here. However, a dependance of the Exchequer on substantial corporation tax receipts, in the main likely linked to the activities of US MNEs, has emerged in recent years. These receipts are in part smoothing public capital expenditure over time and allaying the emerging fiscal cost of the ageing and climate transitions through the establishment of the Infrastructure, Climate and Nature Fund and the Future Ireland Fund. However, windfall corporaton tax receipts currently being received is also partially funding within-year Government expenditure, as only around one third of estimated windfall receipts are being diverted to the long-term savings funds.

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The disinflation in the euro area has continued broadly in line with expectations through 2024. This has supported the decision by the ECB Governing Council to decrease the main policy rates by 25 basis points at their meeting in December 2024, further reducing the restrictive stance of monetary policy in the euro area. The Governing Council also reiterated the measured and predictable divestment of the Asset Purchase Programme (APP) portfolio and the gradual decline of the Pandemic Emergency Purchase Programme portfolio as reinvestments in the latter conclude at end 2024. In a *Signed Article* accompanying this *Bulletin*, the recent update to the Eurosystem operational framework is discussed.[1] This sees a move to a demand-driven 'soft-floor' system and the narrowing of the spread between the Deposit Facility Rate and the Main Refinancing Operations Rate in the context of the expected further decline in excess liquidity. The *Article* reflects on how the new framework interacts with the liquidity needs and expected demand for central bank reserves of the Irish banking system.

With euro area monetary policy becoming less restrictive and the Irish economy expected to grow in-line with its medium-term potential, the role of domestic policy in maintaining macroeconomic stability comes to the fore. An appropriate fiscal stance needs to be adopted that minimises excess aggregate demand and creates the economic and fiscal space for the necessary investment in housing, energy, water and transport infrastructure to support sustainable growth in Irish living standards over time. While managing this balance in the economy from a near-term cyclical perspective is important, it also coincides with needs that arise from a more structural and long-term perspective. As outlined in a *Signed Article* accompanying this *Bulletin*, the potential per capita growth rate of the Irish economy is set to halve to around 1.4 per cent by the middle of the century as the working age population declines.[2] The analysis in the *Article* also shows, however, that an enhanced level of investment in human and physical capital to support productivity growth and enabling people to stay longer in the workforce can in part offset this decline, supporting continued sustainable growth in Irish living standards. Such growth is also necessary to provide a tax base to fund the delivery of essential public services and infrastructure over the long-term. The current

[1] Larkin, Frayne, and McKiernan (2024), https://www.centralbank.ie/docs/default-source/publications/quarterly-bulletins/quarterly-bulletin-signed-articles/the-evolution-eurosystem-operational-framework-and-how-recent-changes-may-impact-banks-in-ireland.pdf

[2] Conefrey, Keenan, Staunton and Walsh (2024), https://www.centralbank.ie/docs/default-source/publications/quarterly-bulletins/quarterly-bulletin-signed-articles/long-term-growth-prospects-for-the-irish-economy.pdf

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reliance on a relatively narrow tax base, especially as it relates to corporaton tax and the vulnerabilities therein, given the risk of geoeconomic fragmentation, is an issue that needs to be addressed. It is appropriate in future budgetary cycles to take steps to expand and diversify the tax base in light of the near-term cyclical position of the economy, the medium-term growing demands on the public finances, and to bolster the long-term resilience of both the economy and the public finances in light of prevailing risks. From a broader perspective, sustainably mobilising household savings across the EU for investment in Europe's – including Irelands's - productive capital stock would also enhance the resilience of households, businesses and the economy as a whole.

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An Timpeallacht Gheilleagrach

Bhí an geilleagar intíre ag fás ar luas seasmhach le linn 2024, le tacaíocht go páirteach ó staid fhioscach fhorleathnaitheach mar aon le brúnna maolaitheacha boilscitheacha seachtracha. Tá an t-ionchas bonnlíne do ghníomhaíocht eacnamaíoch fabhrach i gcónaí, ach tá méadú tagtha ar na rioscaí ar an taobh thíos a bhaineann leis an mbonnlíne sin. I bhfianaise go bhfuil an geilleagar ag feidhmiú os cionn a acmhainne, tá na srianta bonneagair, lena dteorannaítear fás inbhuanaithe breise ar chaighdeáin mhaireachtála, ag éirí níos soiléire. Cuireann na srianta sin le leochaileachtaí struchtúracha sa gheilleagar agus san airgeadas poiblí, rud a fhágann go bhfuil an t-ionchas sa ghearrthéarma agus sa mheántéarma fíor-íogair i leith forbairtí eacnamaíocha domhanda a bhfuil éiginnteacht níos mó ag baint leo anois.

Ba iad an fás ar éileamh intíre, neart leanúnach an mhargaidh saothair agus maolú ar bhrúnna boilscitheacha, príomhghnéithe gheilleagar na hÉireann in 2024. Coinníodh rátaí láidre fáis eacnamaíoch ar bun a bhuíochas do bhoilsciú níos ísle arna spreagadh go seachtrach, d'fhás ar ioncam indiúscartha na dteaghlach toisc líon níos mó daoine a bheith i bhfostaíocht, do rátaí pá níos airde agus do bheartas fioscach forleathnaitheach. Go dtí seo, tá srian coinnithe ar bhrúnna boilscitheacha ar phraghsanna do thomhaltóirí, in ainneoin go bhfuil fianaise ann go raibh an geilleagar ag feidhmiú os cionn a acmhainne le linn 2023 agus 2024 (Bosca C).

Cé go bhfuil riosca an róthéimh ag baint le luas an fháis i gcoibhneas le hacmhainneacht agus gur cóir a bheith cáiréiseach faoi, tá roinnt tosca maolaitheacha ann a chiallaíonn nach bhfuil boilsciú seasmhach iomarcach tagtha chun cinn go dtí seo ar phraghsanna do thomhaltóirí nó ar phánna. Ar an gcéad dul síos, bhí an soláthar saothair ag freagairt don fhás eacnamaíoch trí rannpháirtíocht níos airde sa lucht saothair agus trí inimirce, cé go ndearnadh é sin a fhritháireamh go páirteach le líon níos lú uaireanta oibre ar an meán le agus ganntanais scileanna i mórán earnálacha seirbhíse agus san earnáil tógála. Ar an dara dul síos, tharla an borradh faoi fhíorioncaim indiúscartha in 2023 agus 2024 an tráth céanna a bhí ráta coigiltis na dteaghlach os cionn an mheáin fhadtréimhsigh, rud a mhaolaigh an borradh ionchasach faoin éileamh intíre.

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Ar an tríú dul síos, is cosúil go raibh níos mó brúnna boilscitheacha costbhrú á n-iompar ag earnálacha intíre den gheilleagar ná mar a bhí in 2021 agus in 2022 trí chorrlaigh bhrabúis agus trí fhás leordhóthanach ar tháirgiúlacht. Ar an gceathrú dul síos, bhí neart an díbhoilscithe ó thosca seachtracha in 2024 níos suntasaí ná mar a bhíothas ag súil leis ar dtús.

Nuair a dhéantar measúnú ar staid thimthriallach gheilleagar na hÉireann i gcoibhneas lena acmhainn fáis ionchasach, áfach, is léir nach bhfuil freagrúlacht na hinfheistíochta ag teacht le freagrúlacht an tsoláthair saothair do dhálaí éilimh. Is iad srianta ar fhoirmiú caipitil a chuireann teorainn le hacmhainn an gheilleagair agus a léiríonn na táscairí is suntasaí maidir le riosca an róthéimh. Tá costais arda agus moilleanna ar sholáthar bonneagair tithíochta, fuinnimh, uisce agus iompair le feiceáil i mboilsciú ar phraghsanna sócmhainní agus cíosanna. Dá réir sin, féadfar go ndéanfar na harduithe praghais sin a tharchur chuig éilmh pá níos airde agus costais mhaireachtála níos airde agus chuig an gcostas a bhaineann le gnó a dhéanamh, rud a dhéanfadh damáiste don iomaíochas. Ina theannta sin, d'fhéadfaí go gcaillfí deiseanna tomhaltais agus infheistíochta nó go gcuirfí moill orthu toisc nach féidir leis an ngeilleagar freastal go hinbhuanaithe ar an éileamh ón tsochaí ar earraí agus ar sheirbhísí.

I ngeilleagar beag oscailte cosúil le geilleagar na hÉireann, tá tábhacht ar leith ag baint leis an gcumas chun bonneagar a sheachadadh ar bhonn inbhuanaithe chun go leanfar de dhreasachtaí don infheistíocht choigríche. Tá sé seo amhlaidh go háirithe toisc go bhfuil rioscaí maidir le hilroinnt gheo-eacnamaíoch ag dul i méid. I bhfianaise mhéid na nasc trádála agus infheistíochta idir an dá thír, bheadh geilleagar na hÉireann soghonta i leith athruithe ar bheartas na Stát Aontaithe maidir le trádáil agus cáin, agus i leith na n-impleachtaí a bheadh ag aon mhéadú ar theannas trádála domhanda (Bosca D). Cé nach eol go fóill bearta sonracha beartais an rialtais nua a thiocfaidh isteach sna Stáit Aontaithe, d'fhéadfadh go mbeadh tionchar ag taraifí níos airde nó athruithe ar chórais cánach lena laghdófaí brabúsacht oibríochtaí FINanna SAM in Éirinn ar na cinntí a ghlacfaidh na cuideachtaí sin amach anseo. D'fhéadfadh go ndéanfadh sé sin difear do na leibhéil fostaíochta ina gcuid oibríochtaí Éireannacha agus bheadh éifeacht láithreach aige ar na fáltais ghaolmhara ó cháin chorparáide a fhabhraíonn chuig Státchiste na hÉireann óna gcuid gníomhaíochtaí in Éirinn agus ar fud an domhain. Baineann tosca maolaitheacha leis an riosca seo amhail méid na hinfheistíochta fisiciúla reatha ag FINanna SAM in earnálacha den gheilleagar a mbaineann breisluach ard leo, rud a bheadh mar fhórsa támhúil i leith a gcuid oibríochtaí anseo. Mar sin féin, tá spleáchas an Státchiste ar fháltais shuntasacha ó cháin chorparáide, rud atá nasctha is dóigh le gníomhaíochtaí FINanna SAM, tagtha chun cinn le

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blianta beaga anuas. Leis na fáltais seo, déantar caiteachas caipitil phoiblí a leathadh le himeacht ama agus maolaítear an costas fioscach atá ag teacht chun cinn maidir le daonra atá ag dul in aois agus le hathruithe aeráide trí Chiste Bonneagair, Aeráide agus Nádúir, agus trí Chiste do Thodhchaí na hÉireann, a bhunú. Ar a shon sin, tá caiteachas Rialtais in-bhliana á mhaoiniú go páirteach ag na fáltais amhantair atá ag teacht isteach faoi láthair ó cháin chorparáide toisc nach bhfuil ach tuairim is aon trian de na fáltais amhantair mheasta á tharchur chuig na cistí coigiltis fadtéarmacha.

Lean an díbhoilsciú sa limistéar euro le linn 2024 i gcomhréir, tríd is tríd, leis na hionchais. Thacaigh sé sin le cinneadh Chomhairle Rialaithe BCE na príomhrátaí beartais a laghdú faoi 25 phointe céatadáin ag a cruinniú i mí na Nollag 2024, rud a laghdaíonn tuilleadh staid shriantach an bheartais airgeadaíochta sa limistéar euro. Ina theannta sin, athdhearbhaigh an Chomhairle Rialaithe go ndéanfaí punann an Chláir Ceannaithe Sócmhainní (APP) a dhífheistiú ag ráta intuartha tomhaiste agus go laghdófaí go céimseach punann an chláir ceannaigh le haghaidh éigeandáil na paindéime de réir mar a thiocfaidh deireadh le hathinfheistíochtaí sa phunann sin ag deireadh 2024. In *Alt Sínithe* a ghabhann leis an bh*Faisnéis Ráithiúil* seo, pléitear an nuashonrú a rinneadh le déanaí ar chreat oibríochtúil an Eurochórais.[3] Leis seo, aistrítear chuig córas 'urlár bog' bunaithe ar éileamh agus caolaítear an raon difríochta idir Ráta na Saoráide Taisce agus ráta na bPríomhoibríochtaí Athmhaoinithe i gcomhthéacs an laghdaithe ionchasaigh bhreise ar róleachtacht. Léirítear san *Alt* seo an chaoi ina n-idirghníomhaíonn an creat nua le riachtanais leachtachta agus le héileamh ionchasach córas baincéireachta na hÉireann ar chúlchistí bainc ceannais.

I bhfianaise gur lú srian atá ag baint anois le beartas airgeadaíochta an limistéir euro agus go meastar go mbeidh geilleagar na hÉireann ag fás i gcomhréir lena acmhainn mheántéarmach, beidh níos mó tábhachta ag baint le ról an bheartais intíre i dtaca le cobhsaíocht mhaicreacnamaíoch a choimeád ar bun. Is gá staid fhioscach iomchuí a ghlacadh lena n-íoslaghdófaí ró-éileamh comhiomlán agus lena gcruthaítear spás eacnamaíoch agus fioscach don infheistíocht riachtanach i mbonneagar tithíochta, fuinnimh, uisce agus iompair chun tacú le fás inbhuanaithe i gcaighdeáin mhaireachtála in Éirinn le himeacht ama. Cé go bhfuil sé tábhachtach an chothromaíocht sin sa gheilleagar a bhainistiú ó thaobh dearcadh gearrthéarmach timthriallach, tá riachtanais ann freisin ó

[3] Larkin, Frayne, agus McKiernan (2024), https://www.centralbank.ie/docs/default-source/publications/quarterly-bulletins/quarterly-bulletin-signed-articles/the-evolution-eurosystem-operational-framework-and-how-recent-changes-may-impact-banks-in-ireland.pdf

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thaobh dearcadh fadtéarmach níos struchtúrtha. Mar a leagtar amach in *Alt Sínithe* a ghabhann leis an *bhFaisnéis Raithiúil* seo, meastar go dtiocfaidh laghdú faoina leath ar ráta fáis ionchasach gheilleagar na hÉireann in aghaidh an duine go dtí thart ar 1.4 faoin gcéad faoi lár an chéid de réir mar a laghdóidh an daonra in aois oibre.[4] Léiríonn an anailís san *Alt* seo, áfach, gur féidir an laghdú sin a fhritháireamh go páirteach le leibhéal feabhsaithe infheistíochta i gcaipiteal fisiciúil agus daonna chun tacú le fás táirgiúlachta agus, trína chumasú do dhaoine fanacht níos faide sa lucht saothair, rud a thacóidh le fás inbhuanaithe ar chaighdeáin mhaireachtála in Éirinn. Tá an fás sin riachtanach chun bonn cánach a chur ar fáil lena maoineofaí soláthar seirbhísí riachtanacha agus bonneagar riachtanach poiblí san fhadtéarma. Is gá dul i ngleic leis an spleáchas reatha ar bhonn cánach atá sách cúng, go háirithe a mhéid a bhaineann sé le cáin chorparáide agus leis na leochaileachtaí gaolmhara, i bhfianaise an riosca maidir le hilroinnt gheo-eacnamaíoch. I dtimthriallacha buiséadacha amach anseo, is iomchuí bearta a ghlacadh chun an bonn cánach a leathnú agus a éagsúlú i bhfianaise staid thimthriallach an gheilleagair sa ghearrthéarma, éilimh mhéadaitheacha ar airgeadas poiblí sa ghearrthéarma, agus chun athléimneacht fhadtéarmach an gheilleagair agus an airgeadais phoiblí araon a neartú i bhfianaise na rioscaí atá i réim. Ó thaobh dearcadh níos leithne de, neartófaí athléimneacht na dteaghlach, na ngnóthaí agus an gheilleagair ina iomláine dá bhféadfaí coigilteas na dteaghlach ar fud AE a úsáid lena infheistiú i stoc caipitil tháirgiúil na hEorpa - stoc caipiteal táirgiúil na hÉireann san áireamh.

[4] Conefrey, Keenan, Staunton agus Walsh (2024), https://www.centralbank.ie/docs/default-source/publications/quarterly-bulletins/quarterly-bulletin-signed-articles/long-term-growth-prospects-for-the-irish-economy.pdf

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The Irish Economy

Overview

Economic activity and employment increased again in 2024 at a solid pace and the central forecast is for growth to continue in the near term, with the economy expected to operate at close to its sustainable capacity. Economic activity (Modified Domestic Demand) expanded by just over 3 per cent over the first nine months of 2024, with employment growing by 2.8 per cent. This follows a similar pace of expansion in 2023. With the unemployment rate averaging 4.5 per cent for almost three years, the economy is at full employment and overheating risks are present. Growth in residential construction stalled in 2024 but is projected to pick up in 2025 based on the large number of housing commencements registered this year. The government's budgetary stance continues to add demand to the economy. Combined with further growth in consumer spending as gross disposable incomes rise and monetary policy becomes less restrictive, these elements underpin the outlook for overall MDD which is forecast to grow by 3.1 per cent in 2025 and by 2.5 per cent on average in 2026 and 2027. The MNE-dominated sector is adding to overall economic growth in 2024 through the strength of pharmaceutical and ICT services exports. Although external demand conditions are weak by long-run historical comparison, net exports are projected to support economic activity out to 2027.

Externally influenced price pressures have substantially waned with domestically-driven services inflation making the largest contribution to overall price changes in 2024. Inflation for energy and non-energy goods is negative to date in 2024 and food inflation has dropped sharply. A range of measures of underlying inflation – stripping out some of these more volatile components – points to inflation running close to or below 2 per cent currently, with downward momentum. The largest positive contribution to overall inflation in 2024 is from services and this pattern is expected to persist over the forecast horizon. Services inflation is forecast to average 3.0 per cent from 2025 to 2027, close to its long-run historical average, with the headline rate projected to average 1.8 per cent over the same period.

The number of people at work continues to rise supported by net inward migration. Employment increased by 88,400 persons in the first nine months of 2024, lifting the ratio of the number employed to the total population aged 15-64 to just below 75.3 per cent, the highest on record. Employment growth is being enabled by a favourable mix of net inward migration of skilled workers

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and improvements in labour force participation. Contingent on the economy continuing to grow as projected, labour market conditions should remain benign in the near term, with the unemployment rate expected to stay close to its current low level of 4.5 per cent. With some easing of labour demand expected, nominal wage growth is projected to slow in 2025 and 2026. Disposable income per household – which includes wage and non-wage income and social transfers – is forecast to grow by 4.7 per cent in nominal terms on average from 2025 to 2027. When combined with the projection for inflation, real income growth per household is forecast to average 1.8 per cent over the same period, slightly below its pre-Covid (2014-2019) average. This projection would see real income per household in 2027 8.4 per cent above its 2023 level.

Risks to the growth outlook are firmly to the downside owing to the economy's exposure to more pronounced global trade and wider geopolitical tensions. In the near term, with the labour market already at full employment, further demand stimulus could result in higher and more persistent inflation with a negative effect on Ireland's relative competitiveness. This would damage the resilience of the economy to negative external risks, the likelihood of which have increased over recent months. An escalation of global trade tensions (for example, from the widespread introduction of tariffs) would lower net exports and overall economic activity relative to the central forecasts. As the US is Ireland's largest bilateral trade partner, the direct exposure of the economy and public finances to changes in US economic policy is material. Lower Ireland-US trade flows as a result of tariffs – or other changes affecting the activities of US MNEs in Ireland – could lower net exports, domestic investment, employment, tax revenue and economic activity more broadly relative to the central forecasts.

Risks to the inflation outlook are judged to be broadly balanced. An escalation of geopolitical tensions, renewed stress in global supply chains or a wider imposition of tariffs could cause higher prices for goods, relative to current assumptions. Domestically, with the economy at full employment and consumers' inflation perceptions and expectations remaining elevated, ensuring envisaged productivity growth is realised and avoiding an excessively expansionary fiscal stance will be important in keeping price and wage inflation on a sustainable path. Delays in addressing existing capacity constraints in housing and in other infrastructure would risk increasing price and wage inflation above central projections. There are downside risks to inflation from slower global growth than currently expected. This could spillover to the Irish economy in the form of weaker domestic demand and inflation and downward pressure on imported commodity prices.

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Table 1: Macroeconomic Projections for the Irish Economy
(annual percentage changes unless stated)

		2023	2024f	2025f	2026f	2027f
Constant prices	Modified Domestic Demand	2.6	3.1	3.1	2.7	2.3
	Gross Domestic Product	-5.5	0.3	4.2	4.5	3.7
	Final Consumer Expenditure	4.2	2.9	3.0	2.3	1.9
	Public Consumption	5.6	3.4	2.8	2.6	2.3
	Gross Fixed Capital Formation	2.8	-21.2	16.6	2.8	2.7
	Modified Gross Fixed Capital Formation	-4.4	3.0	4.0	3.6	3.4
	Exports of Goods and Services	-5.8	9.4	5.1	5.5	4.9
	Imports of Goods and Services	1.2	7.0	7.0	4.7	4.5
Total Employment		3.4	2.9	2.4	2.2	1.9
Unemployment Rate		4.3	4.4	4.5	4.5	4.5
Harmonised Index of Consumer Prices (HICP)		5.2	1.3	1.7	2.0	1.6
HICP Excluding Food and Energy (Core HICP)		4.4	2.3	1.5	1.8	1.7
Compensation per Employee		6.7	4.5	4.6	4.4	4.3
General Government Balance (% GNI*)		2.6	7.2	2.2	2.8	2.5
'Underlying' General Government Balance (% GNI*)[5]		-1.5	-2.6	-2.7	-2.7	-3.0
General Government Gross Debt (%GNI*)		75.9	70.4	64.9	61.4	59.9
Revisions from previous Quarterly Bulletin						
Percentage points	*Modified Domestic Demand*		*0.7*	*0.1*	*0.4*	*N.A.*
	Gross Domestic Product		*1.1*	*-0.4*	*0.1*	*N.A.*
	HICP		*-0.2*	*-0.2*	*0.5*	*N.A.*
	Core HICP		*-0.2*	*-0.5*	*0.2*	*N.A.*

[5] 'Underlying' General Government Balance excludes estimates of excess corporation tax receipts.

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Recent Developments

GDP grew by 2.9 per cent in Q3 of 2024 in year-on-year terms. This expansion followed six consecutive quarters of negative growth. Growth in Q3 was driven by investment, which grew by 13.9 per cent in year-over-year terms (Figure 1). Multinational-dominated (MNE) sectors expanded by 9.1 per cent in the quarter with Domestic sectors increasing by 1.5 per cent. Gross Value Added (GVA) in both the domestic and MNE-dominated sectors grew in the quarter (Figure 2).

Modified Domestic Demand (MDD) continues to grow in year-on-year terms. MDD in Q3 of 2024 grew by 4.1 per cent compared to the same quarter of 2023 (Figure 3). Growth was driven by modified investment, which grew by 10.4 per cent in year-on-year terms. Following a decline in Q2 of 2024, MDD grew by 1.3 per cent quarter-on-quarter. Consumption declined in Q3, falling by 0.2 per cent when compared to the previous quarter. After strong growth in 2023, the volume of retail sales has declined, with a year-on-year decrease of 0.2 per cent in October (Figure 4). Despite persistent inflation in the services sector, services volumes grew by 9 per cent in September 2024 compared to the same month in 2023. The consumer sentiment index stood at 74.1 in November, up from 61.9 a year earlier (Figure 5).

Overall exports grew by 10.5 per cent in year-on-year terms in Q3 of 2024. The value of goods exports grew by 21 per cent in the third quarter of 2024 compared to the same period in 2023 (Figure 6). Growth has been driven by strong exports of Chemicals and Related Products. Medicinal and pharmaceutical products exports grew by 31 per cent, while Organic Chemicals grew by 25 per cent. The EU accounted for 47 per cent of total goods exports in September 2024, while the USA was the main non-EU destination, accounting for a further 31 per cent of total goods exports (See Box D). Services exports grew by 7.4 per cent in year-on-year terms in Q3 2024.

Headline inflation has eased significantly due to lower energy and services inflation, albeit the latter continues to exert strong upward pressure on the headline rate. The Harmonised Index of Consumer Prices (HICP) for Ireland is estimated to have increased moderately by 0.5 per cent in the 12 months to November 2024. Food prices, including alcohol and tobacco, rose by 2.4 per cent while energy prices fell by 7.7 per cent in the 12 months to November. Services inflation at 2.9 per cent contributes the most to the headline rate, mainly reflecting inflation in recreation services as well as housing services. This marks a moderation from 3.1 per cent in October and 3.3 per cent in

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September 2024 (Figure 7), though Government measures to reduce childcare costs contribute to this decline. Strong domestic demand for services continue to push up services inflation, while supply-side factors play a decreasing role (Figure 8).

Wage growth has levelled off while easing labour market pressures are reflected in moderating demand for labour. The estimated employment rate for people aged 15-64 years was 75.3 per cent in Q3 2024. This is equivalent to an increase of 98,600 persons in employment since Q3 2023. The seasonally-adjusted monthly unemployment rate was 4.1 per cent in November 2024, and has been below 5 per cent for 34 consecutive months, surpassing the previous longest period between 2000 and 2002. The CSO monthly employee index recorded a year-on-year increase of 33,900 persons in September 2024, compared to 68,300 persons in the previous year, which reflects an easing labour market pressures. Job postings data from the website Indeed indicate moderating labour demand with the index down 18 per cent in year-on-year terms (Figure 9). Growth in posted wages for prospective new hires has also decreased slightly to 4.4 per cent (Figure 10).

While there was a pick-up in new dwelling completions in Q3 2024, completions are still down 3.3 per cent for the first three quarters of the year compared to the same period in the previous year. There was another sharp increase in commencements in September related to the timing of the Uisce Éireann connections exemption and starts for the year to October are now running at 59,510. The Building and Construction Index for Q3 2024 points to some pick-up in housing activity, offset by declines in commercial and civil engineering (Figure 11). Overall, the index is down by 1.7 per cent for the first three quarters of the year compared to the same period the previous year. The construction PMIs are consistent with growth in the housing sector and a decline in non-residential construction in 2024 (Figure 12).

Exchequer tax receipts and gross expenditure have continued to grow at a very strong pace in recent months. Total tax receipts were €17bn (20.8 per cent) higher in the year to November when compared to the same period in 2023. This partly reflected the impact of the Apple state aid judgement, which boosted corporation tax receipts in October and November. Even excluding this, however, tax revenue has remained robust, as shown by the pace of growth in the other major tax heads. Gross exchequer Expenditure increased by €9.7bn (11.7 per cent) in the first eleven months of the year, reflecting strong increases in both current and capital expenditure. Gross spending was also €5.1bn (6 per cent) ahead of profile over this period, with around one-third

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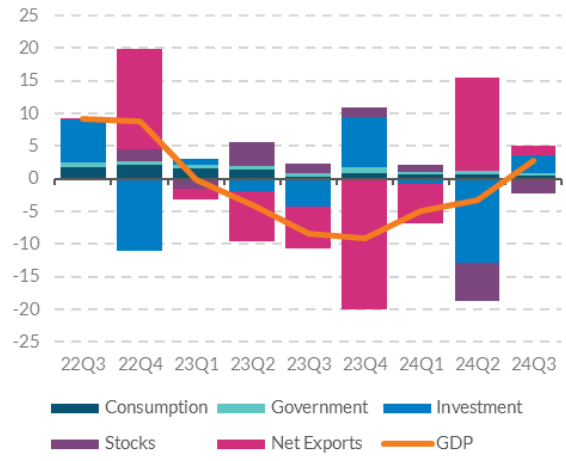
of this driven by developments in the Health vote group. There was a notable increase in the overspend in the month of November, which appears to partly reflect the cost of living measures introduced in Budget 2025.

The Central Bank's Business Cycle Indicator (BCI) shows the positive momentum in domestic economic activity in the third quarter continued into October. After a small dip in June, the BCI indicates above average growth in domestic economic activity for the four months up to October 2024. (Figure 13). In October, traditional sector output, tax revenues, housing and PMIs were the main positive contributors to the BCI. The contributions from consumption and labour market variables were marginally negative.

GDP returned to growth in Q3 of 2024

Figure 1
Per cent

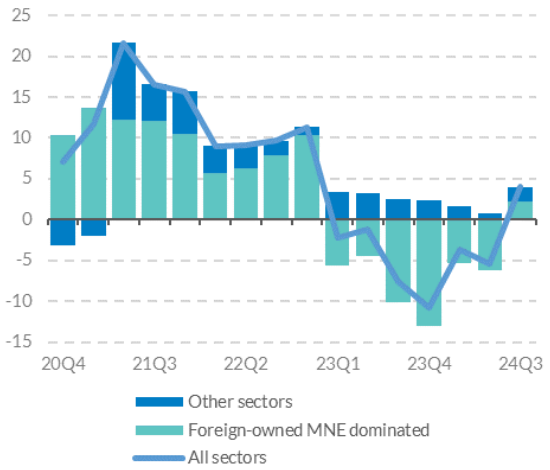


Source: CSO, author's calculations.

Notes: Year-on-year real GDP growth decomposed into constituent components.

GVA from MNE-dominated sectors also returned to growth

Figure 2
Per cent



Source: CSO, author's calculations.

Notes: Year-on-year GVA growth decomposed into the contributions of MNE-dominated sectors and Other sectors

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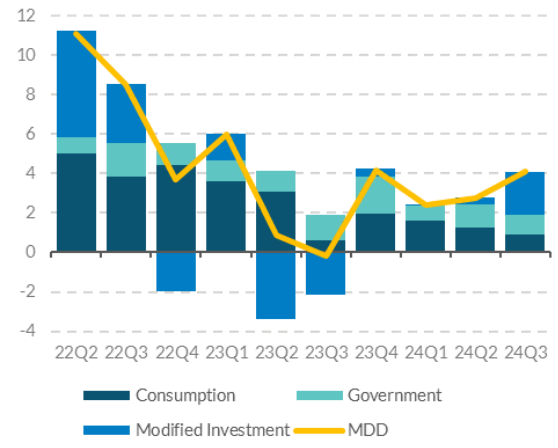
MDD grew for the fourth successive quarter

Figure 3
Per cent



Source: CSO, author's calculations.

Notes: Year-on-year MDD growth decomposed into constituent components.

Services volume continues to grow strongly while retail sales are stagnant

Figure 4
Per cent

Source: CSO, author's calculations.

Notes: Year-over-year growth in non-seasonally adjusted Retail Sales Index and Services Index Volumes.

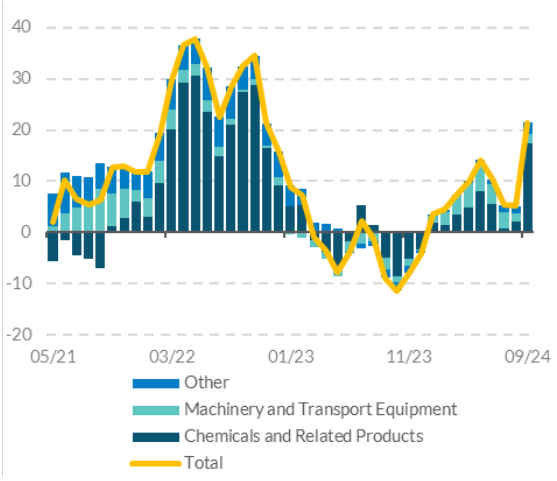
Consumer Sentiment continues to rise

Figure 5
Index (Base = 2015)

Source: Credit Union Sentiment Survey.

Exports of Pharmaceuticals and Organic Chemicals spiked in September

Figure 6
Per cent



Source: CSO Value of Merchandise Trade, author's calculations.

Notes: Three-month moving average of the value of merchandise exports decomposed into its constituent parts.

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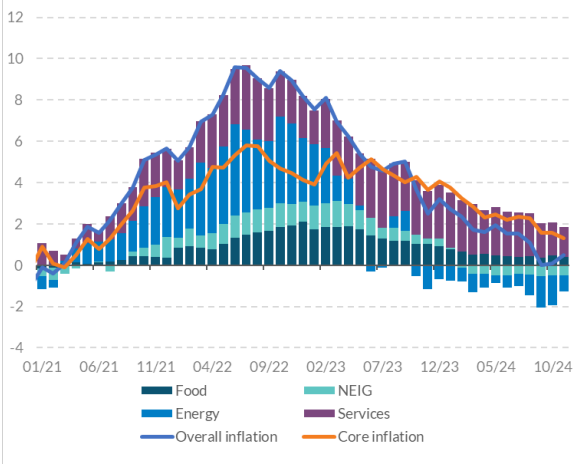
Services remains the main contributor to headline inflation

Figure 7
Per cent

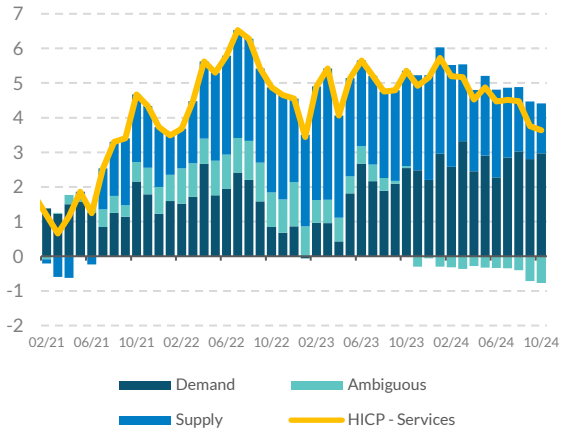


Source: CSO, author's calculations.

Notes: Decomposition of headline inflation into its component parts. Last observation: November 2024.

High Services inflation is driven by strong domestic demand

Figure 8
Per cent

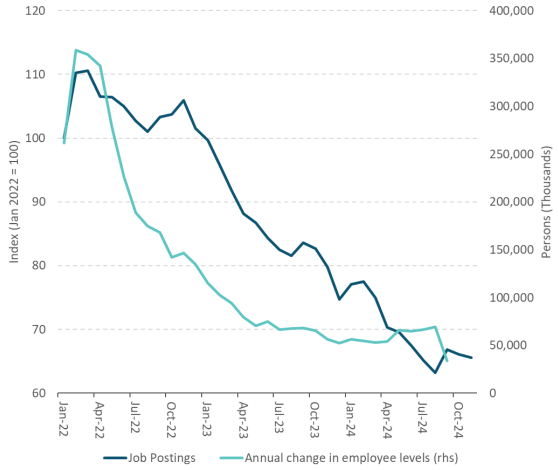


Source: CSO, author's calculations.

Notes: Services inflation decomposed into its Supply and Demand components. Last observation: October 2024. See Economic Letter Vol 2023, No. 4 for details.

Labour demand continues to moderate as annual growth in employee numbers slows

Figure 9
Index (Base = 2022)



Source: Indeed, CSO and Central Bank of Ireland.

Notes: Indeed jobs posting index (LHS), employee levels (RHS).

Posted wage growth has exceeded Core HICP inflation in recent months

Figure 10
Per cent

Source: Indeed, CSO and Central Bank of Ireland.

Notes: Posted wage growth and HICP Core Inflation. HICP Core inflation consists of HICP excluding energy and food components.

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Weakness in construction activity in 2024

Figure 11 Building & Construction Index
Y-o-Y %

Source: CSO Building and Construction Index.

Notes: Year-on-year percentage growth of the CSO Building and Construction Index.

… but outlook more positive reflecting new orders

Figure 12 Construction PMIs
Index

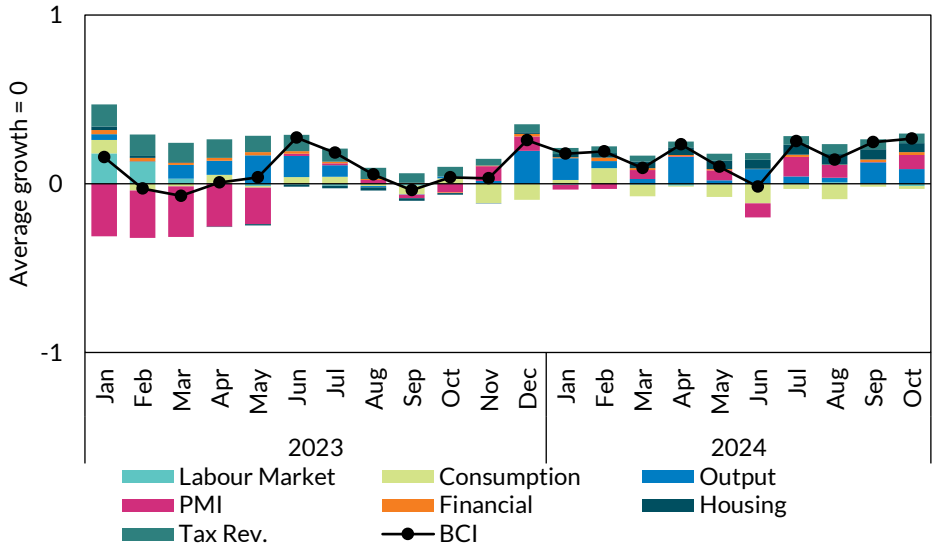
Source: AIB and BNP Paribas

Notes: Purchasing Manager's Index for Construction Sector.

The BCI shows positive momentum going into Q4

Figure 13

Average growth = 0



Source: CSO and Central Bank of Ireland.
Notes: Central Bank of Ireland Business Cycle Indicator.

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Consumption

Despite recording negative quarterly growth in Q3 2024, consumption is expected to pick up by the end the year. Upward revisions to National Accounts data indicate stronger real final consumption growth in the first half of 2024 than previously reported by the CSO. Taking the year to date, consumption is 2.4 per cent higher than the equivalent nine-month period in 2023, with the level of real consumption now close to its pre-pandemic trend (Figure 14). Once-off spending measures announced in Budget 2025 that take effect before the end of the year (such as double child benefit in December) should support a stronger final quarter than expected at the time of the last *Bulletin*. As such, the forecast for annual consumption growth in 2024 has been revised up to 2.9 per cent from 2.6 per cent in QB3.

Consumption growth of 3 per cent is projected for 2025, with growth weakening over the remainder of the forecast horizon as income growth is projected to moderate. Lower inflation combined with disposable income growth should support consumption next year. However, wage growth is expected to moderate somewhat over the latter part of the forecast period (see the Earnings section for more detail). Consequently, the forecast for consumption growth in 2025 is unchanged from the last *Bulletin* at 3 per cent; 2026 growth is revised down marginally by 0.1 percentage points to 2.3 per cent, and 2027 is expected to see annual growth of 1.9 per cent (Figure 15).

The outturn for consumption could be stronger, but the propensity to save remains high. The broader tax and spending measures in Budget 2025 could produce higher consumption growth in 2025 than currently projected. Demographic trends and further employment growth pose potential upside risks for consumption growth in 2026 and 2027. However, households continue to save at a high rate. The seasonally adjusted saving ratio measured 14.1 per cent in the third quarter of 2024, with deposits and the acquisition of other financial instruments important stores for household savings.[6] Data from the ECB's Consumer Expectations Survey (CES) also suggest a strong preference for saving amongst Irish consumers and that this preference has increased over recent years (Figure 16). At present, the saving rate is forecast to grow modestly over the period, averaging a rate of 15.6 per cent over 2024 to 2026, above its historical norm (Figure 17). Should a higher propensity to

[6] See QFA Q2 2024 for more detail.

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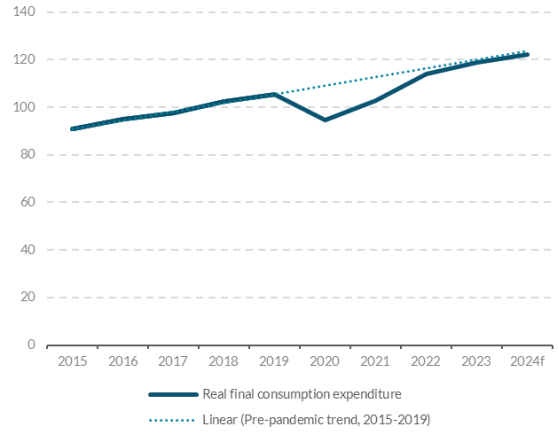
save than this materialise, this could translate to a weaker consumption outturn than in the central forecast.

Level of real consumption is broadly consistent with pre-pandemic trend

Figure 14

Real final consumption expenditure (€ bn)

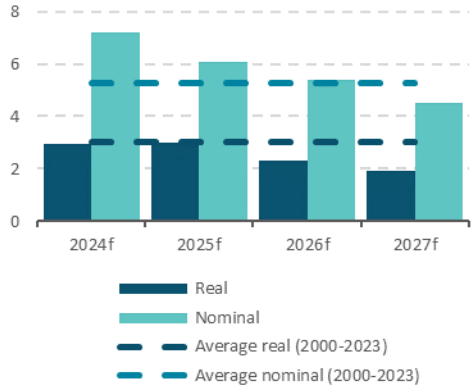


Source: CSO (National Accounts) and authors' calculations

Consumption growth is expected to moderate over the forecast horizon

Figure 15

Projected real and nominal consumption growth (percentage change, %)



Source: Central Bank of Ireland

Survey data indicates growing intentions to save over the next 12 months amongst Irish consumers

Figure 16

Share of households planning to save in the next 12 months – by income quintile (per cent, %)

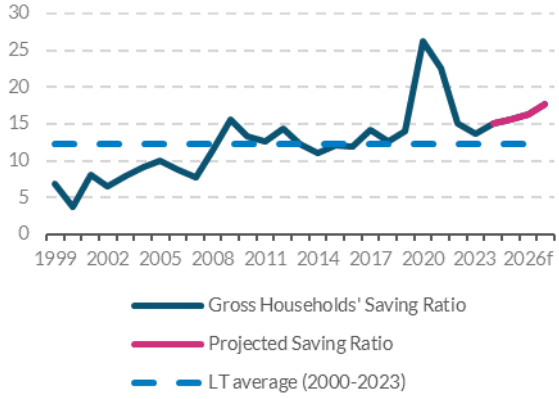
Source: ECB (Consumer Expectations Survey), October 2024

Note: Data reflects respondents who reported "Yes, definitely" and "Yes, probably" to the CES question

The household saving rate is elevated and forecast to remain above its long-term average

Figure 17

Gross households' saving ratio (per cent, %)



Source: CSO (Institutional Sector Accounts) and Central Bank of Ireland

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Investment

Modest growth in investment is forecast over the *Bulletin* horizon. Modified investment is forecast to increase by 3 per cent, 4 per cent and 3.6 per cent and 3.4 per cent in 2024, 2025, 2026 and 2027, respectively (Figure 18). Headline investment is expected to decline by approximately 21.2 per cent in 2024, partially recovering through an increase of 16.4 per cent in 2025, and increasing by approximately 3 per cent over the rest of the forecast horizon.[7] Investment as a proportion of national income remains low by historical standards and key infrastructure deficits in the areas of housing, water and energy remain (Figure 19). Business and residential spending on the green transition will also require a substantial increase in investment in the years ahead.

Housing investment should increase over the forecast horizon, but will remain below updated estimates of requirements. Housing commencements increased sharply again in September and are now running at 60,000 on an annual basis (Figure 20). These figures, however, at least partly reflect a change in government policy that incentivised a frontloading of commencements in April and September 2024 and may not be representative of the underlying pick-up in house building.[8,9] This change in policy has introduced some uncertainty into the usual permissions-commencements-completions cycle. The timing of the completion of these units is somewhat uncertain and is assumed to occur in 2025/26 in the current forecasts. Housing investment could benefit from the decline in non-residential construction, with a shift in resources, including of labour, to housing arising. Despite this transfer of labour from non-residential to residential construction, in the absence of substantial productivity gains and more widespread adoption of innovative construction methods, the availability of labour and delays in the planning system may limit the scale of increase in residential construction over the near-to-medium term. Housing completions are forecast to increase to 32,500, 37,500, 41,000 and 43,500 units in 2024, 2025 and 2026, and 2027 respectively.

[7] There has been a change in the technical assumption relating to the imports of Intellectual Property (IP) following the first export of IP in Q2 2024. IP imports are assumed to return to recent historical trends more rapidly in the second half of this year and into 2025.
[8] The rise in commencements coincided with temporary reductions in development levies and rebates for water connections, which were due to expire in April 2024 but were subsequently extended to later in the year.
[9] See Box D Housing Supply: uncertain in the delivery cycle in QB2 2024.

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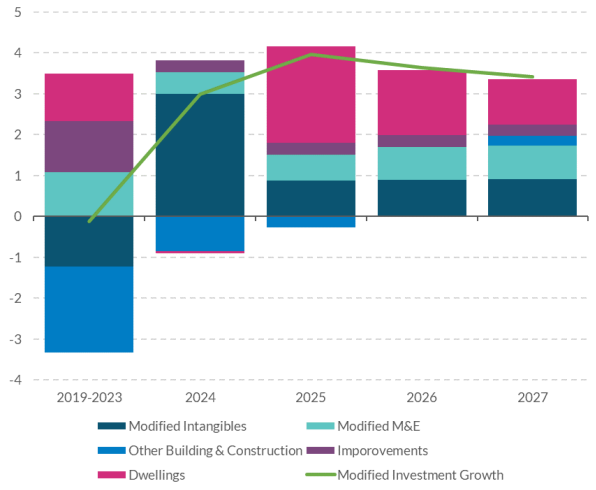
Investment in machinery and equipment is forecast to decline by 1.5 per cent this year before recovering to growth of approximately 3 per cent over the remaining forecast horizon. Business spending on machinery and equipment is usually cyclical in nature but can be influenced by large firm-specific fit-outs. The manufacturing new orders PMI and the services new business PMI were both in modest expansion territory in October (Figure 21). Imports of machinery and equipment for the first three quarters of 2024 were up 10 per cent year-on-year.

Investment is the most volatile component of domestic demand with a high degree of uncertainty around central forecasts. Instabilities in the geo-political and international regulatory environment have increased uncertainties around our baseline forecasts and remain downside risks. Investment by US multinationals could be sensitive to potential changes in US trade or tax policies under the new administration (Box D). Improved financial conditions[10] as monetary policy eases are an upside risk to the forecasts. Substantial firm-specific investment by the MNE sector could also increase or decrease expenditure more than that projected in the central forecasts.

Investment forecast to increase modestly...

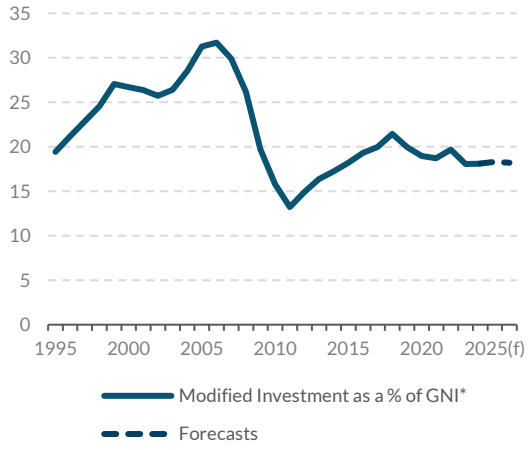
Figure 18
Contributions to modified investment growth (%)



Source: Central Bank of Ireland.

...with modified investment below its historical share of GNI*

Figure 19
Modified investment shares (%)



Source: CSO and Central Bank of Ireland

[10] The Bank Lending Survey for October 2024 reported that firms' aggregate loan demand remained unchanged in Q3, and an increase is expected in Q4 2024.

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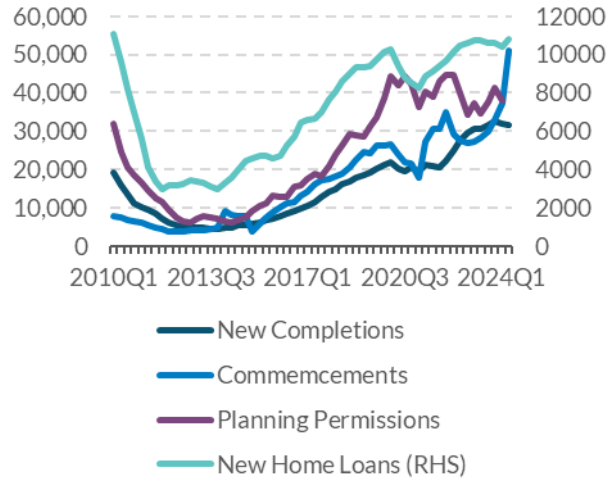
House completions forecast to pick up

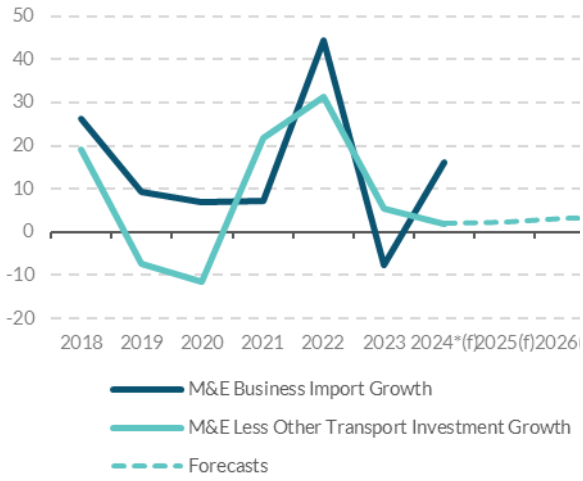
Figure 20
Rolling annual units



Source: CSO, DoHLGH, BPFI

Modest growth in M&E projected

Figure 21
Per cent



Source: CSO and Central Bank of Ireland,

Exports, Imports and the Balance of Payments

Exports have recovered strongly in 2024 based on data for the first three quarters of the year. The recovery in exports reflects a recovery in the chemicals and pharmaceuticals sector, which experienced a decline in activity in 2023 as pandemic-related production subsided. Output in this sector has recovered, and continued global demand for key pharmaceutical products is expected to support further growth. Additionally, exports of computer services have remained resilient, driven by sustained investment in intellectual property (IP) in the high-value added services sector.

Demand from Ireland's main trading partners is now expected to grow more slowly than previously anticipated in the very near term (Figure 22). The European economic outlook, in particular, has deteriorated since October. While real GDP growth in the euro area is expected to rise from 0.8 per cent in 2024 to 1.5 per cent in 2025, domestic demand remains subdued. Political uncertainty in key trading partners and the risk of US trade barriers arising (see Box D), present additional headwinds. While slower than previously expected, the recovery in external demand should support growth in exports next year by the indigenous exporting sectors. Prospects for the ICT sector globally are positive and this should support continued growth in computer services exports in Ireland. These exports are driven by the large imports of intellectual property (IP) in recent years. Exports produced offshore (contract manufacturing (CM)), which were the main driver of the decline in overall

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merchandise exports in 2023, appear to have stabilised. The forecasts incorporate the technical assumption that the level of contract manufacturing exports remains at its 2024Q3 level over the entire forecast horizon. This implies that CM exports make a negative contribution to export growth in 2024. Taken together, exports are expected to have grown by 9.4 per cent in 2024 and to grow by 5.1 per cent in 2025.

The baseline outlook for Irish exports in 2026 and 2027 remains strong, but with significant downside risks from rising trade tensions. Demand from Ireland's trading partners is projected to increase in 2026 and 2027 (Figure 23). Moreover, trends in the pharmaceutical sector appear favourable, with industry reports suggesting that Irish pharmaceutical production facilities are expected to expand production to meet rising global demand. While it is difficult to make a precise link between investment in production by MNEs and subsequent export growth, the forecasts assume that current levels of investment will generate rates of growth in merchandise exports similar to those seen between 2016 and 2019, when similar expansions occurred. Overall, exports are forecast to grow by 5.5 and 4.9 percent in 2026 and 2027, respectively.

Import growth is expected to moderate after strong gains in 2024, when imports were boosted by large MNE investments in IP and offshore production. Over the forecast horizon, the impact of these factors is expected to diminish, with imports growing by 7.0 per cent in 2025 and 4.7 per cent in 2026, broadly in line with rising domestic demand and export-led activity. Offshore production as well as investment by MNEs have driven large surges in imports in the first half of the year. Looking ahead, the impact of contract manufacturers on overall import growth is forecast to wane, but large investments by MNEs in intellectual property are forecast to drive significant import growth. Imports are forecast to grow by 7.0 per cent this year, before averaging 5.4 per cent in 2025 and 2027.

The risks to this outlook remain tilted to the downside. The weaker-than-expected European recovery heightens concerns about demand for Irish exports, while geopolitical uncertainties and the threat of increased U.S. trade barriers present additional challenges. The pharmaceutical sector is particularly exposed to changes in US trade barriers, with approximately 45 per cent of that sector's exports currently going to the US (see Box D). Given the sector's share in overall exports, the introduction of tariffs or other trade disruption would have a sizeable impact on the aggregate outlook for exports. The semiconductor industry, which accounts for nearly 3 per cent of Ireland's

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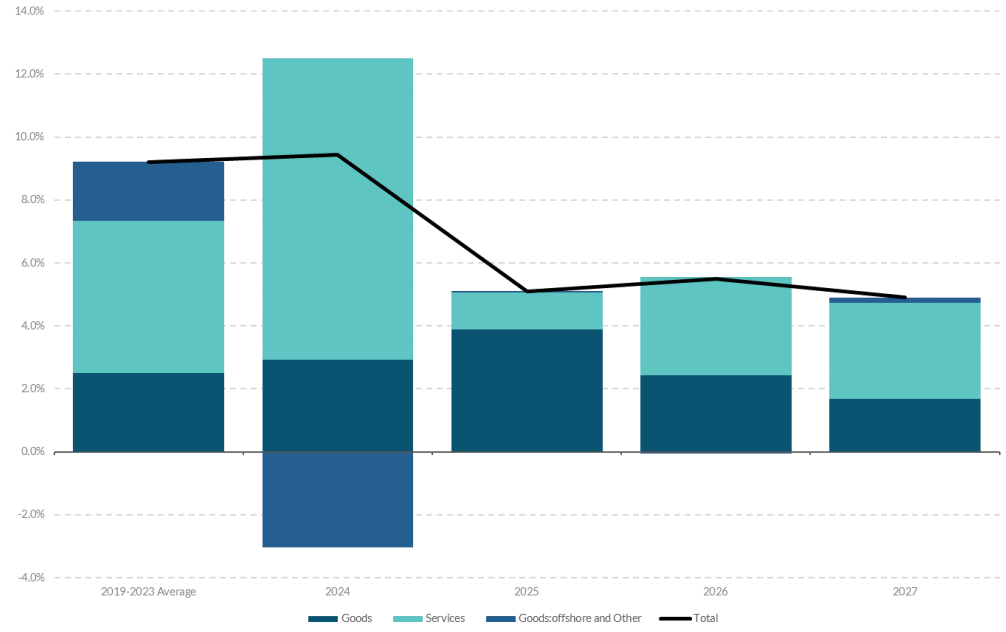
goods exports, remains vulnerable to fragmentation risks, with significant sensitivity to firm-specific performance arising. Additionally, while geopolitical tensions remain elevated, any escalation could disrupt global trade flows, with knock-on effects for Ireland as a small open economy occurring. On the upside, stronger-than-anticipated growth in the pharmaceutical sector could provide additional support to exports, particularly if current investments translate into faster-than-expected capacity increases and higher pharmaceutical output.

Headline measures of the current account balance are forecast to remain robust, with the modified current account surplus (CA*) stabilising over the forecast horizon (Figure 24). Merchandise exports are expected to grow faster than imports, widening the trade surplus. However, significant net income outflows are expected to continue, reflecting the profitability of MNEs. Abstracting from these effects, the modified current account (CA*) is projected to average 9.5 per cent of GNI* between 2025 and 2027, broadly in line with recent trends.

Growth in goods produced in Ireland will support the export recovery

Figure 22

Per cent



Source: CSO and Central Bank of Ireland calculation

Note: Services growth in 2024 is boosted by a large export of intellectual property in the second quarter. In the forecast this is assumed to be once off.

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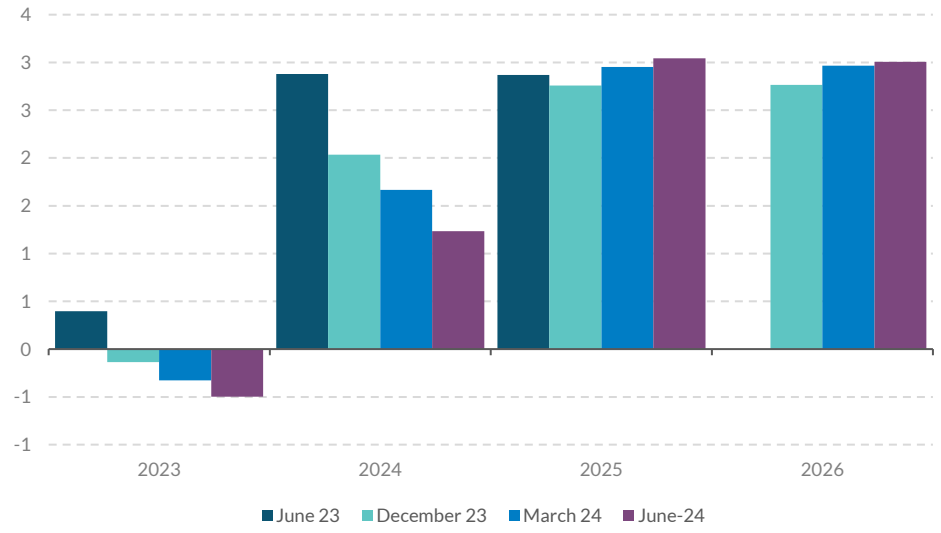
Trading partner demand is forecast to recover during 2025 and 2026, though uncertainties remain.

Figure 23

Per cent

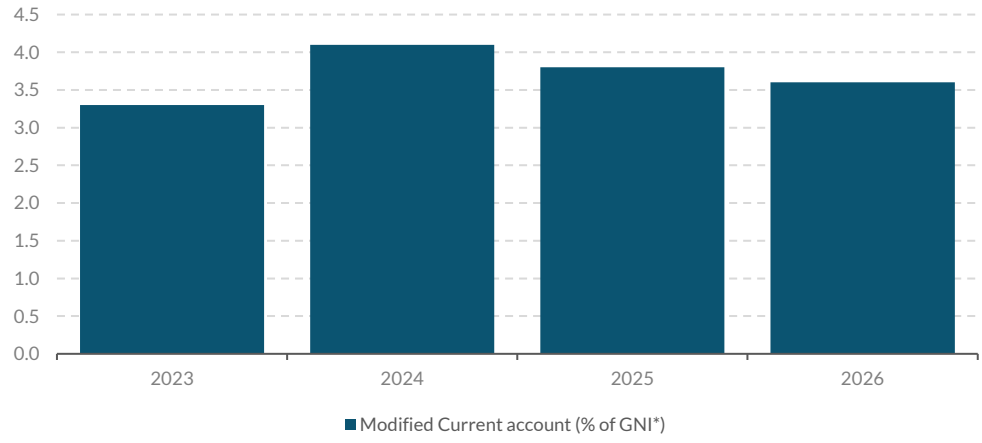


Source: ECB and Central Bank of Ireland calculations

The modified current account is expected to stabilise over the forecast horizon

Figure 24

Per cent of GNI*



Source: ECB and Central Bank of Ireland calculations

Prices and costs

Pipeline price pressures globally and domestically remain contained. The Global Supply Chain Pressure Index by the Federal Reserve Bank of New York continues to indicate supply chain pressures in line with their historical

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average at the time of writing.[11] In the domestic economy, manufacturing suppliers' delivery times lengthened in recent months, reflecting staff shortages among suppliers and shipping delays. Nevertheless, the index value is still consistent with broadly contained supply chain pressures. Although input and output prices among manufacturing firms continue to increase, both indicators are close to their levels in years preceding the pandemic (Figure 25). Producer price inflation for domestic sales has also increased recently but remains relatively low (Figure 26). Price pressures in the services sector have come down to the pre-pandemic level but are robust, in line with reported resilient demand and strong wage growth (Figure 25).[12]

Underlying inflationary pressures have eased further since the last *Bulletin*. Underlying inflation continued to decline and the majority of the measures are now below 2 per cent (Figure 27).[13] Underlying inflation, however, remains higher than in the years prior to the pandemic, when domestic economic conditions were also favourable. The easing of consumer price inflation has also become broader based since the last *Bulletin*, with items experiencing price increases of below 2 per cent comprising half of the consumer basket.

Surveys show that firms' costs and prices expectations as well as consumers perceived and expected inflation continue to decline. In the third quarter of 2024, firms' expectations of input costs (including wages) and selling price growth rates over the next year eased (Figure 28).[14] Irish consumers' perceptions of the current inflation rate continue to decline gradually, but remain well above the measured headline inflation. In October, the average (median) perceived inflation was 7.3 (4.5) per cent. One-year-ahead inflation expectations of Irish consumers have also fallen over most recent months, averaging at 4.4 per cent and with a median of 2.7 per cent. Uncertainty around inflation expectations has decreased as well. Three-year-ahead inflation expectations have also fallen on average, but they continue to exceed short-term expectations.[15] Elevated perceived and expected inflation may influence consumers' future economic decisions, including wage demands, posing upside risks to the inflation outlook.

[11] The index is available here. Drewry's World Container Index shows shipping rates declined since the previous *Bulletin*, despite a pick-up since the end of October.
[12] See recent Manufacturing and Services PMI releases here.
[13] For details how these measures are constructed see Signed Article in QB2.
[14] The latest round of the Survey on the Access to Finance of Enterprises (SAFE) was conducted between 2 September and 15 October 2024. See here for more information about the survey.
[15] The data on inflation perception and expectations is available from the ECB's Consumer Expectations Survey.

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Overall energy price assumptions are lower than in the last *Bulletin*, while non-energy commodity price assumptions are higher and the euro exchange rate is assumed to be lower against both GBP and USD (Table 2). In recent months, the oil price (in USD) was lower than previously assumed. Financial market expectations imply a decline in oil prices over the projection horizon. Compared to the last *Bulletin*, the assumed oil price is lower over the full forecast horizon. Recent European wholesale electricity and gas price outturns have also been below prior expectations. The technical assumptions for electricity prices underpinning the HICP forecast in this *Bulletin* are lower than the previous forecast in September, while gas price assumptions overall remain broadly unchanged. The wholesale prices of both items are expected to increase next year and then gradually decline over the remaining horizon. Non-energy commodity inflation is expected to be higher in 2024-25 and lower in 2026 compared to the last *Bulletin*. The euro exchange rate assumptions against both GBP and USD are lower in this *Bulletin*.

Headline HICP inflation is expected to be 1.3 per cent in 2024 before increasing in 2025-26 and then declining to 1.6 per cent in 2027 (Figure 29). The expected increase in HICP inflation to 1.7 per cent in 2025 is mainly due to higher energy inflation, driven by base effects. This is due to the cuts to consumer energy prices at the end of 2023 and the beginning of 2024 falling out from the annual comparison. The forecast for higher energy inflation next year also reflects higher wholesale electricity and gas prices in 2025, as well as the reversal of the VAT rate cut for electricity and gas[16]. After peaking in 2026, energy inflation is expected to decline in 2027, bringing down headline inflation. Food inflation is forecast to pick up slightly next year before easing again, reflecting dynamics in food commodity price assumptions. HICP inflation excluding food and energy is forecast to decline from 2.3 per cent in 2024 to 1.5 per cent next year, before increasing to 1.8 per cent on average in 2026-27 as services inflation pick up. NEIG inflation is forecast to remain negative over the projection horizon but the uncertainty around this forecast is high. Lower services inflation in recent months can be partly explained by a one-off reduction in childcare fees[17]. It is expected to reach its long-term historic mean of 3.2 per cent (1997 to 2024) in 2026-27. Robust services inflation is consistent with expectations for tight labour market conditions and resilient domestic economic conditions (Table 2). Inflation for all main components in 2027 are expected to be above their respective averages in

[16] The reversal is postponed to May 2025 (previously planned for November 2024).
[17] The impact of this on headline inflation rate in September is approximately -0.3 percentage points.

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2015-19. Consumer prices as measured by the CPI and the personal consumption deflator are also expected to gradually moderate over the projection horizon.

A downward revision to the headline inflation forecast for 2024-25 reflects revisions to energy and services inflation, while the upward revision for 2026 is driven by higher food inflation. Energy and services inflation forecasts have been revised down for 2024-25, largely reflecting lower than expected data outturns recently. Food price inflation is now expected to be higher than previously forecast, especially for 2025-26, due to higher food commodity price assumptions and higher than expected food inflation in recent months.

Risks surrounding the inflation outlook are considered to be broadly balanced. Upside risks to the headline inflation forecast may arise from continued geopolitical tensions, higher tariffs on certain goods and increasing pressures in global supply chains. Stronger than expected labour costs, in light of the tight labour market, or additional fiscal stimulus could result in higher domestically-generated inflation. This may be amplified in light of relatively high consumer inflation perceptions and expectations. On the downside, a sharper slowdown in the global economy than currently expected, and a more pronounced effects of past increases to interest rates could lead to lower inflation pressures in Ireland.

Table 2: Changes in key technical assumptions

	QB4 2024				QB3 2024		
	2024	2025	2026	2027	2024	2025	2026
Oil (USD/barrel)	81.8	71.8	70.1	69.2	83.2	76.1	73.2
Natural gas (EUR/MWh)	34.3	42.9	34.9	29.3	34.2	41.1	35.4
Electricity (EUR/MWh)	76.7	89.9	79.5	73.6	77.4	93.3	82.2
Non-energy commodities (USD, percent change*)	8.9	5.8	-0.4	-1.7	7.3	1.3	2.5
USD/EUR	1.08	1.06	1.06	1.06	1.09	1.10	1.10
GBP/EUR	0.85	0.83	0.83	0.83	0.85	0.86	0.86

Source: ECB, Refinitiv. Notes: *Annual percent change. Cut-off date: November 20th.

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Table 3: Inflation Projections

	2023	2024	2025	2026	2027
HICP	5.2	1.3	1.7	2.0	1.6
Energy	5.1	-7.8	1.8	2.9	0.2
Food	8.1	3.0	2.9	2.3	1.7
Non-Energy Industrial Goods	3.3	-2.0	-1.6	-1.4	-1.7
Services	5.0	4.0	2.7	3.2	3.2
HICP ex Food & Energy (Core)	4.4	2.3	1.5	1.8	1.7
CPI	6.3	2.1	1.9	2.1	1.7
Personal Consumption Deflator	8.5	4.2	3.0	3.1	2.6

Source: CSO, Central Bank of Ireland

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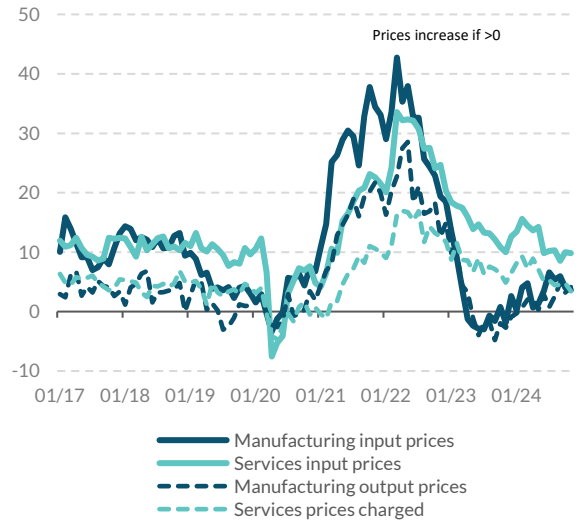
Domestic input and output price pressures for firms returned to pre-pandemic levels

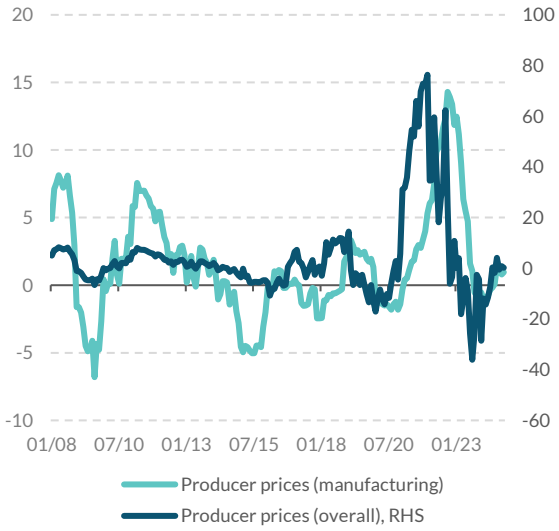
Figure 25
Deviation from neutral level = 0



Source: Refinitiv.
Notes: Last observation: November 2024.

Domestic producer price inflation has normalised and remained relatively low

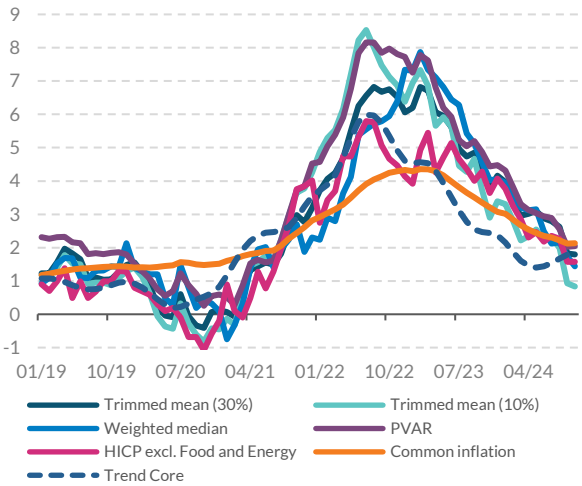
Figure 26
Year-on-year percent change (%)



Source: Eurostat, Central Bank of Ireland calculations.
Notes: Last observation: October 2024.

Most of underlying inflation measures declined below 2 per cent

Figure 27
Year-on-year percent change (%)



Source: Eurostat, Central Bank of Ireland calculations.
Notes: Last observation for Trend Core inflation is September 2024, for all other measures – October 2024.
PVAR: Volatility and Persistence Adjusted Rate of inflation.

Firms expectations of input costs and selling price inflation over the next twelve months moderated so far in 2024

Figure 28
Year-over-year percentage change (%)

Source: ECB SAFE, CBI calculations.
Notes: Weighted average expectations; the pink dots denote the respective median expectation. Data is trimmed at 1st and 99th percentile. Four survey waves reflect the following periods: Oct'22 to Mar'23 (W1), Apr-Sep'23 (W2), Jan-Mar'24 (W3), Apr-Jun'24 (W4), and Sep-Oct'24 (W5).

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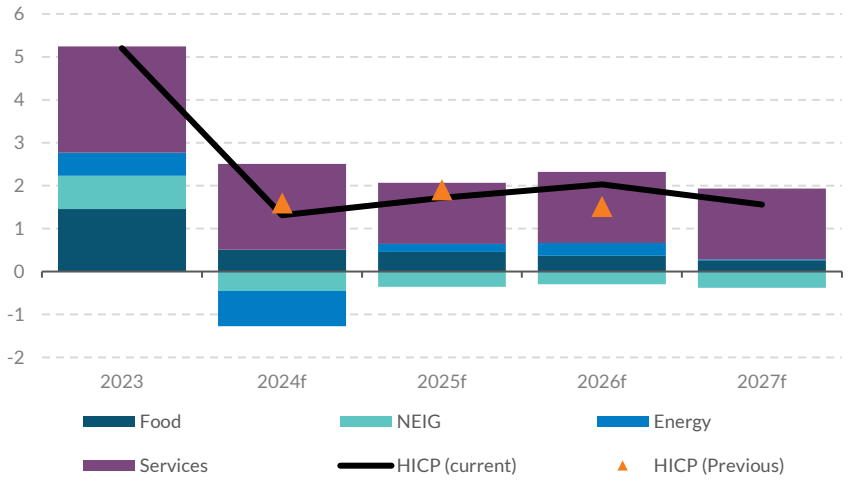
HICP inflation forecast

Figure 29
Year-on-year percent change (%)



Source: CSO and Central Bank of Ireland
Notes: forecast figures for 2024-2027.

Labour Market

Employment growth exceeded expectations in Q3 2024, prompting an upward revision to the 2024 projection compared with the QB3 forecast. The number at work increased year-on-year by 3.7 per cent (98,600 workers) up from 2.7 per cent in Q2 2024. The largest sectoral increases were observed in Public Administration (up 12 per cent year-on-year) and Professional services (11.8 per cent), while declines were recorded in four sectors including Administrative Services (-7.4 per cent) and Agriculture (-0.6 per cent) (Figure 30). Total actual hours worked increased year-on-year by 2.9 per cent, which relative to employment growth implies further declines in average hours worked to 30.7 hours per week.[18] Projected employment growth for 2024 as a whole has now been increased to 2.9 per cent with positive carryover and continued strong levels of net inward migration contributing to a forecast of 2.4 per cent growth in 2025.

The labour force increased by 3.5 per cent year-on-year Q3 2024 driven by robust net inward migration while female participation rates continue to rise.

[18] As total actual hours worked only measures hours in a worker's primary employment, supplementary analysis to include hours in secondary employments does not fully explain the decline in average hours since the pandemic. Including these additional hours, average hours per worker were down by 6 per cent in Q2 2024 compared to 2019 levels rather than a 7 per cent decline when using only primary employment hours.

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The demographic effect contributed 58,000 persons while increased participation from the existing population increased the labour force by 40,000 persons.[19] These developments supported an upward shift in the labour force participation rate (LFPR) to 66.6 per cent, the highest level recorded since 2008. The gap between male and female participation rates is now in single digits for the first time (Figure 31). Persons aged 45 years and older have recorded large increases in labour force activity in recent years with increased educational attainment amongst other factors contributing to greater labour force attachment, relative to similar aged persons in previous decades (Figure 32). As younger persons remain in education for longer periods relative to persons of the same age in previous years, future LFPR rates will likely see a pushing out of the curve higher in the age distribution. Looking ahead, the labour force is projected to increase by 3.1 per cent this year and 2.6 per cent in 2025.

Labour supply has increased at a faster rate than labour demand with the job vacancy rate down slightly in the quarter. Labour supply (the sum of the labour force and the potential additional labour force) increased by 4.7 per cent year-on-year in Q3 2024. Labour demand (the sum of employment and job vacancies) increased comparatively by 3.7 per cent over the same period (Figure 33). The job vacancy rate measured 1.2 per cent in Q3 2024, down from 1.3 per cent in the previous quarter. Part-time underemployment, a proxy for labour hoarding, has fallen by 3.4 per cent year-on-year in Q3 2024 with the share of total employment broadly similar to pre-pandemic levels. Increases in vacancies for non-consumer facing services sectors failed to offset larger declines in public and industrial sector vacancies.[20] These trends appear to align with higher frequency data. Indeed job postings showed a 7.8 per cent decline in Q3 2024 relative to the previous quarter. The ILO unemployment rate was down slightly over the quarter to 4.4 per cent though levels remain low relative to historical outturns. Overall, some further easing of labour market tightness is expected as job vacancies continue to moderate in certain sectors.[21] Unemployment is projected to average 4.5 per cent over the forecast horizon.

[19] The demographic effect is the change in population that would have added to the labour force if participation rates had not changed. The participation effect measures the change in participation rates had the population had not changed.
[20] Non-consumer facing services sectors refers to ICT, Professional, and Financial services.
[21] Additional capacity in the labour market can also be observed though the vacancy-slack ratio with labour slack being the sum of unemployment and the potential additional labour force. Levels for available persons per vacancy have increased from 8.1 persons in Q3 2023 to 9 persons in Q3 2024.

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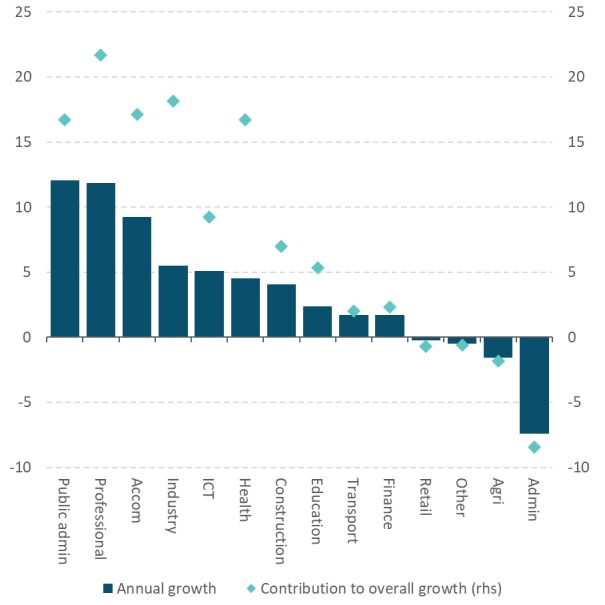
Employment growth largely driven by public-dominated and non-consumer facing sectors

Figure 30

Annual percentage growth percentage points

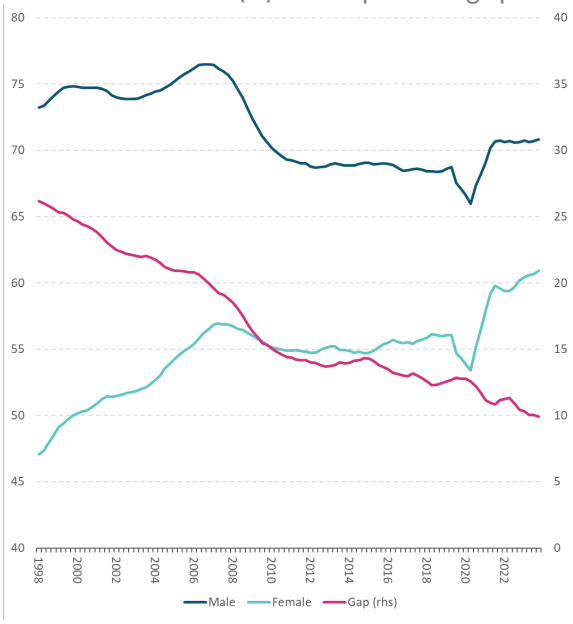


Source: LFS

Female labour force participation closing gap on male rate

Figure 31

Share of labour force (%) percentage points

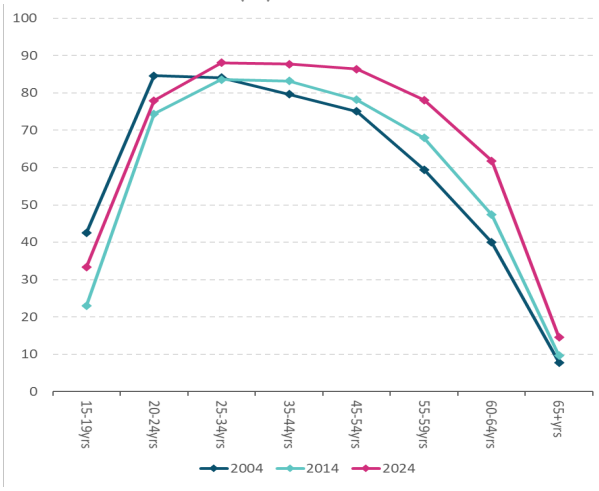


Source: LFS

Participation rising in older age categories due to impact of educational attainment

Figure 32

Share of labour force (%)



Source: LFS

Labour supply catching up on labour demand, especially in 2024

Figure 33

Index (2019=100) Persons (Thousands)

Source: CSO; LFS and EHECS

Earnings and Income

Nominal hourly earnings increased by 4.7 per cent year-on-year in Q3 2024 with positive wage growth observed across all economic sectors. The largest growth rates were observed in ICT (10.1 per cent) followed by transport (6.7

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per cent) and accommodation services (6 per cent).[22] Growth in nominal earnings for employees broadly aligns with posted wage growth for prospective hires as Indeed data averaged growth of 4.6 per cent in Q3 2024. In an international context, posted wage growth for Ireland is slightly ahead of the US and euro area trends though the recent uptick appears to have stabilised (Figure 34).

A return to positive real wage growth is projected over the forecast horizon while continued positive developments in gross disposable income have supported consumption and added to household balance sheets. Nominal compensation per employee growth of 4.5 per cent is projected for 2024 with real developments turning marginally positive following recent years of elevated inflation. While revisions in the annual National Accounts may alter the wage profile when annual submissions are incorporated, average real wage growth of 1.5 per cent is projected from 2025 onwards facilitated by continued tight labour market conditions and moderating inflation developments to support consumption growth.[23] The contribution of taxes and transfers announced in Budget 2025, particularly changes to the taxation bands, will see gross disposable income remain positive in real terms, which together with easing labour demand may curb wage pressures in certain sectors of the economy. Growth in real GDI per household of 2.8 per cent is projected for 2024, and to average 1.8 per cent over the remainder of the forecast horizon (Figure 35).

[22] The increase in ICT earnings is partly due to an increase in irregular earnings such as bonuses. Irregular earnings accounted for 5.1 percentage points of the 10.1 per cent increase while regular earnings accounted for the remaining 5 percentage point growth. At the aggregate level, irregular earnings accounted for 0.3pp of the total 4.7 per cent growth.
[23] Upward revisions to COE in the annual national accounts were applied due to the inclusion of PAYE income for PRSI class S individuals. These changes resulted in Compensation of Employees increasing by an average of 4.5 per cent per year back to 2011.

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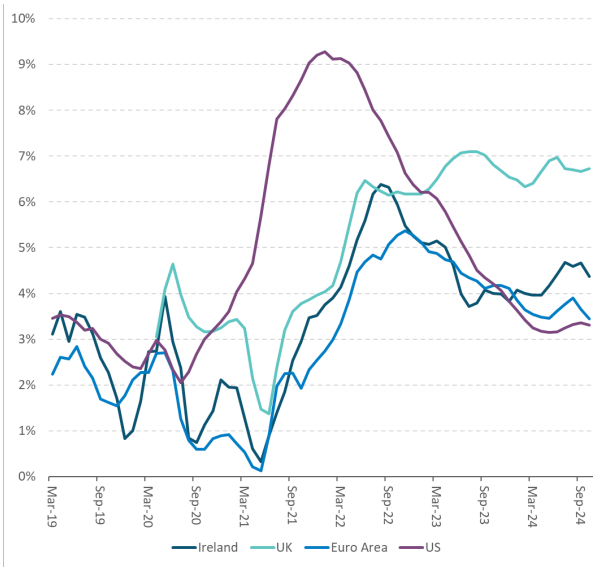
Posted wage growth in Ireland appears steady following recent uptick

Figure 34

Annual percentage change

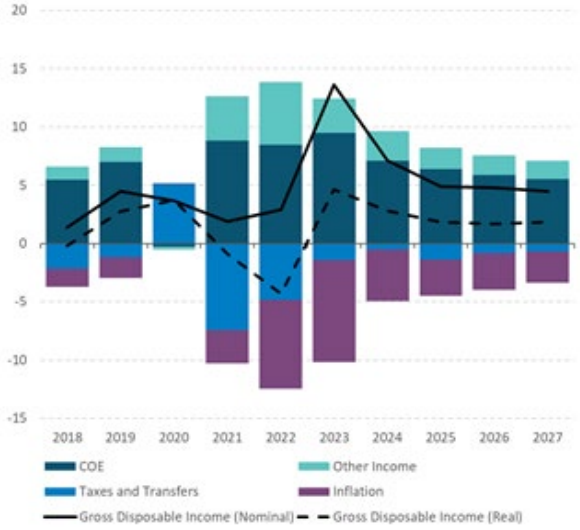


Source: CSO; EHECS

Gross Disposable Income growth remains strong as wage growth begins to increase above inflation

Figure 35

Annual percentage change



Source: CSO and author's calculations.
Notes: in per Household terms.

Table 4: Labour Market Projections

	2023	2024f	2025f	2026f	2027f
Employment (000s)	2,685	2,764	2,831	2,892	2,949
% change	3.5%	2.9%	2.4%	2.2%	1.9%
Labour Force (000s)	2,805	2,890	2,964	3,029	3,087
% change	3.3%	3.1%	2.6%	2.2%	1.9%
Participation Rate (% of Working Age Population)	65.5%	66.0%	66.4%	66.5%	66.6%
Unemployment (000s)	120	127	133	136	139
Unemployment Rate (% of Labour Force)	4.3%	4.4%	4.5%	4.5%	4.5%

The Public Finances

Supported by the Apple state aid case judgement, the headline General Government Balance (GGB) will increase sharply this year, but the medium term outlook remains much more uncertain (Figure 36). The Court of Justice of the EU's (CJEU) ruling in the Apple state aid case,[24] and subsequent transfer

[24] On 10 September 2024, the Government was notified of the judgment from the CJEU relating to the Apple state aid case. As a result of this judgement, the Government has begun the process of transferring €14.1bn (including interest) in back taxes that have been held in an

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of assets from the Escrow Fund to Ireland, is expected to boost the GGB surplus by 4.8 per cent of GNI* in 2024. Against this backdrop, tax revenue increased by 21 per cent in the first eleven months of the year, led by a 59 per cent increase in corporation tax receipts. Excluding the impact of the state aid case, tax revenue growth has remained strong, with both income tax and VAT receipts increasing by 6.4 per cent in the year to November. While gross voted government expenditure was 7.4 per cent ahead of profile over the same period – led by a 9.5 per cent overspend in Health – the strength of headline revenue (including Escrow funds) means a headline surplus of 7.2 per cent of GNI* (€22.4bn) is expected this year.

Table 5: Key Fiscal Indicators, 2023-2027

	2023	2024	2025	2026	2027
GG Balance (€bn)	7.5	22.4	7.2	9.9	9.2
GG Balance (% GNI*)	2.6	7.2	2.2	2.8	2.5
GG Balance (% GDP)	1.5	4.3	1.2	1.6	1.4
GG Debt (€bn)	220.7	218.0	214.5	213.1	218.5
GG Debt (% GNI*)	75.9	70.4	64.9	61.4	59.9
GG Debt (% GDP)	43.3	41.5	37.3	34.7	33.4
Excess CT (€bn)	11.8	16.2	16.5	19.2	20.1
Underlying GGB (€bn)	-4.3	-7.9	-9.3	-9.3	-10.9
Underlying GGB (% GNI*)	-1.5	-2.6	-2.7	-2.7	-3.0

Source: Central Bank of Ireland Projections
Note: Underlying GGB excludes estimates of excess CT and receipts from the Apple state aid case

With the impact of the CJEU ruling having only a temporary impact on revenue in 2024, and the previous *Quarterly Bulletin* having taken account of most of the Government's permanent budgetary measures, the outlook for the headline GGB over the medium term is broadly unchanged from September. Headline surpluses of 2.2 and 2.8 per cent of GNI* are projected for 2025 and 2026, respectively.[25] With much of the improvement in 2026 being driven by the introduction of BEPS Pillar 2, the headline surplus is expected to moderate back to 2.5 per cent in 2027. These projections do not make any assumption about possible additional expenditure financed by the funds released following the CJEU ruling or the sale of bank shares acquired by the Government during the financial crisis. Furthermore, the outlook for the GGB is much less

escrow account since 2018. The receipts are expected to benefit the GGB in the year of the ruling (2024) even though it is anticipated they will be collected over the period 2024-2025.
[25] The 2025 projection represents a small downward revision reflecting base effects from the preceding year and some additional expenditure outlined in Budget 2025.

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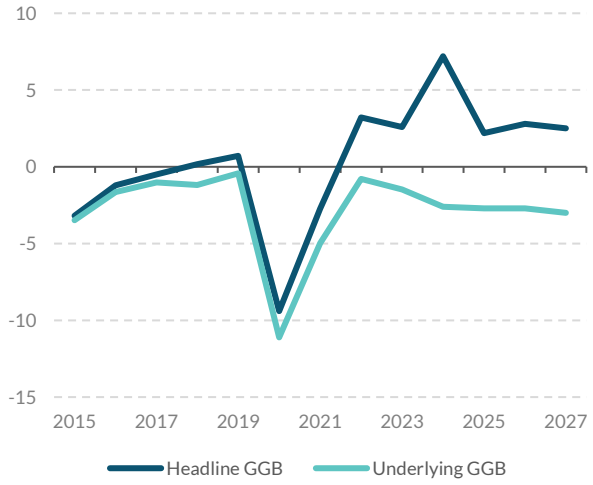
favourable when excess corporation tax - revenue which cannot be explained by developments in the real economy and, as a result, could be subject to a sudden reversal – are excluded. This 'underlying' GGB would record a deficit of 2.6 per cent of GNI* in 2024, deteriorating to a deficit of 3 per cent of GNI* in 2027.

Headline GGB projected to remain in Surplus over medium term

Figure 36

per cent of GNI*



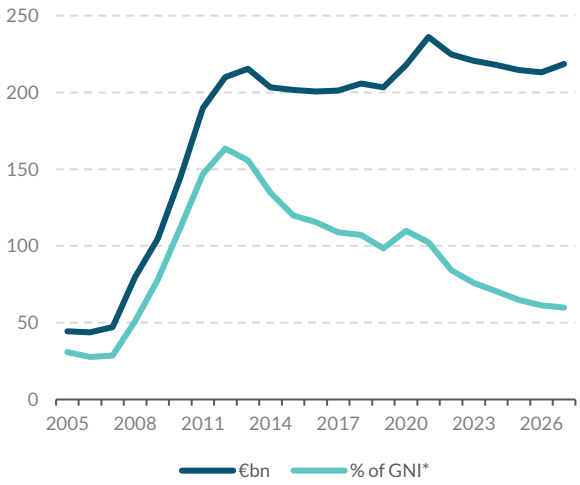
Source: Central Bank of Ireland

Notes: Underlying GGB excludes Central Bank estimates of Excess corporation tax receipts and receipts from Apple State aid case

Debt ratio continues to decline

Figure 37

€bn, per cent of GNI*



Source: Central Bank of Ireland

Budget 2024 introduced a further package of "temporary" cost of living measures, that the Government estimate will cost €2.2bn (0.8 per cent of GNI*). The majority of these new measures affect the GGB in 2024 and, accordingly, increase the underlying GGB deficit this year. The package in Budget 2024 was the fifth such set of cost of living supports introduced since 2022. The total cost of the measures implemented since then is estimated at €11.2 billion (3.8 per cent of GNI*), with only around one-third fully targeted to those most affected by stronger price pressures.

The General Government debt (GGD)-to-GNI* ratio is forecast to continue to decline in the coming years. Following an exceptionally large fall in recent years, the GGD ratio is expected to decline by 10 percentage points over the medium term, to 60 per cent of GNI* in 2027 (Figure 37). As recently as 2019, prior to the Covid-19 pandemic, the ratio was around 100 per cent. The improvement over the medium term is expected to reflect favourable

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developments in the primary (non-interest) balance and a projected negative interest-growth differential. The former is forecast to average 3.5 per cent of GNI* in the coming years, while the latter is driven by average GNI* growth of 5.5 per cent. These favourable developments are partly offset by the deficit-debt adjustment, although some of this reflects transfers from the Exchequer to the state's long-term savings funds. The sovereign funding outlook remains positive; the National Treasury Management Agency (NTMA) has issued €6bn of bonds with a weighted average yield of 2.7 per cent this year and it continues to hold significant cash and liquid short term investments (€21 billion or equivalent to 7.4 per cent of GNI* at end-October).

The underlying General Government balance is projected to remain in deficit out to 2027 and risks are tilted firmly to the downside. Recent external developments have emphasised once again the vulnerability of Ireland's tax base to a loss of corporation tax and the public finance's reliance on such receipts from a relatively small number of companies. Even excluding the impact of the CJEU ruling, corporation tax receipts are forecast to drive 60 per cent of the total increase in Exchequer tax revenue in 2024. As noted above, when estimates of 'excess' corporation tax receipts are considered – receipts not linked to underlying activity in the Irish economy and so at particular risk of reversal – the GGB would record large deficits over the medium term. The potential negative impact of BEPS Pillar 1 on receipts – if an agreement on this reform is reached – adds an additional layer of uncertainty. [26] On the expenditure side, the trend of government spending exceeding budgetary targets – and the Government's own net expenditure rule – will continue this year, driven by developments in the Health vote group. Given the resources available following the CJEU ruling and bank share sales, the next Government will face a difficult balancing act, supporting necessary public infrastructure investment while not providing excessive stimulus to an economy already at full employment. At the same time, there is a need to build resilience in the public finances by broadening the tax base in order to address the risk from a loss of corporation tax revenues and to meet growing long-term demands on public resources.

[26] As noted in the previous *Quarterly Bulletin* no assumption is made about the possible impact of BEPS Pillar 1 given there is no clarity on the specific details of the possible changes that could be implemented and the timing of any changes is uncertain at present.

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Box A: The International Economic Outlook

By Simone Cima & Ciaran O'Sullivan (Monetary Policy Division)

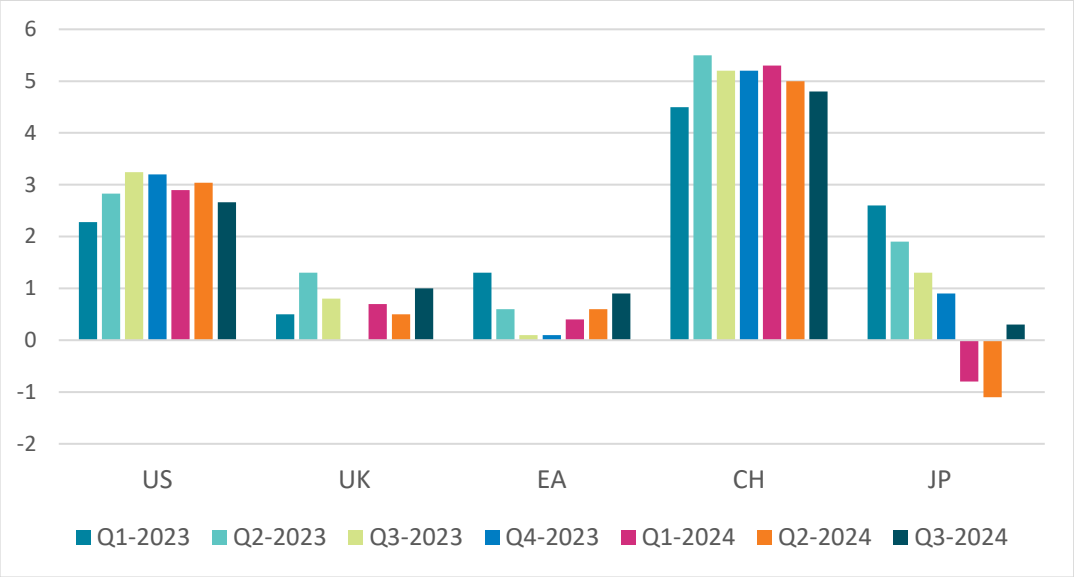
Overview

Across the world, inflation is easing and supply shocks are dissipating. Overall, global economic growth remains steady (with the IMF expecting growth of 3.2 per cent in 2024) but is becoming more and more dependent on the US, China and other emerging markets as the source of that growth. Geoeconomic fragmentation and trade barriers risk damping future growth.

Heterogeneous growth dynamics

Figure 1

GDP Growth rates (%) previous s quarters



Source: National Statistics Agencies

The US and China are growing at a relatively fast pace (Figure 1), but for different reasons. In the US, GDP growth (2.7 per cent year-on-year in Q3) is being driven by exceptionally strong consumer demand and large deficit-driven government spending. China, despite seeing challenges in its real estate sector and weak consumer demand, is seeing Q3 year-on-year growth of 4.6 per cent due to increased industrial output and greater fixed investment enabled by government bond issuances. This growth rate is, however, below the government's target of 5 per cent and marks a slowdown from the exceptional growth seen up until the pandemic.

The euro area and the UK are experiencing more subdued growth (0.9 per cent and 1 per cent annually in Q3, respectively) while Japanese output growth has fluctuated over the past year (currently at 0.3 per cent year-on-

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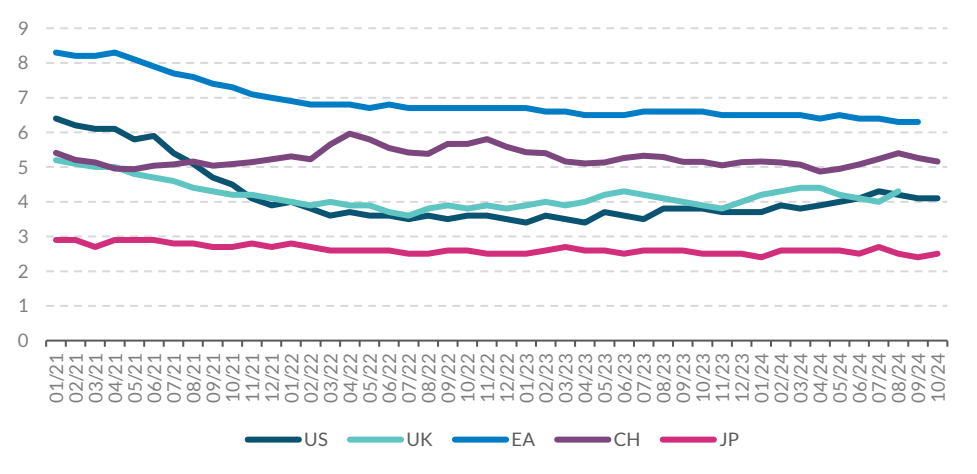
year). In the euro area, net exports are the primary driver of growth with private and government consumption also contributing positively, while investment continues to wane. Growth in the UK during 2024 was primarily driven by government expenditure, while business investment and domestic demand are only adding marginally to output. Somewhat differently, Japanese growth appears to be picking up due to a resurgence in private consumption but remains low compared to the other economies.

Little movement in unemployment despite monetary policy conditions

Figure 2

Unemployment rates over the past three years.



Source: National Statistics Agencies

There has been little change in unemployment rates in any of the aforementioned economies. In the euro area, the unemployment rate is at record lows (averaging 6.45 per cent in the past 12 months) despite interest rates remaining high. Labour hoarding, job creation and labour force growth (driven by immigration) are maintaining such a positive outlook but it remains to be seen how long this will continue.

Outlook

Forecast output growth (Table 1) across the world is moderate and subject to uncertainty, with considerable heterogeneity arising across economies.

China and the US are expected to continue growing at a rapid pace with the former outpacing much of the world in 2024, 2025 and 2026. In the US, growth is expected to be supported by strong consumer and government spending with investment in technology and manufacturing also contributing positively. China's investment and export-led model should continue to contribute positively to economic growth but there are signs that returns on

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investment are diminishing. Additionally, it is uncertain what may happen to Chinese exports should economic fragmentation continue to worsen.

Future global growth steady but low by recent standards; China and advanced economies except US suffering from weak domestic demand

Table 1

Forecast GDP growth rates (%)

Region	2023	2024f	2025f	2026f
Global	3.3	3.2	3.2	3.3
Euro area	0.4	0.8	1.2	1.4
US	2.9	2.8	2.2	2
UK	0.3	1.1	1.5	1.5
Japan	1.7	0.3	1.1	0.8
China	5.2	4.8	4.5	4.1
Emerging Economies	4.4	4.2	4.2	4

Source: ECB for euro area and IMF for others

In the euro area, the United Kingdom and Japan forecasted growth is moderate. Similar dynamics are playing out in all three economies whereby each are relying on a consumption-led recovery driven by rising real incomes, falling inflation and monetary easing. Moreover, the euro area, the UK and Japan face many of the same structural issues: falling working age population, low productivity growth and a reversal of globalisation trends.

Monetary Policy

Central banks across the world are continuing to moderate their monetary policy stance as inflation converges towards national targets. By October, the median central bank had reduced interest rates by over 60 basis points since the start of the year (see Figure 3). In 2022 and 2023, the world economy had experienced a remarkably synchronised and steep monetary tightening cycle as inflation surged across the globe and most central banks responded by tightening monetary policy. Median rates were raised during this period by over 4 per cent cumulatively (reaching 5.9 per cent at end-2023, the highest level since 2008). The current reversal of some of this policy tightening appears to be less synchronised and less steep as of yet, as inflationary risks remain non-negligible in a number of jurisdictions, prompting central banks to take a relatively cautious approach to rate reductions.

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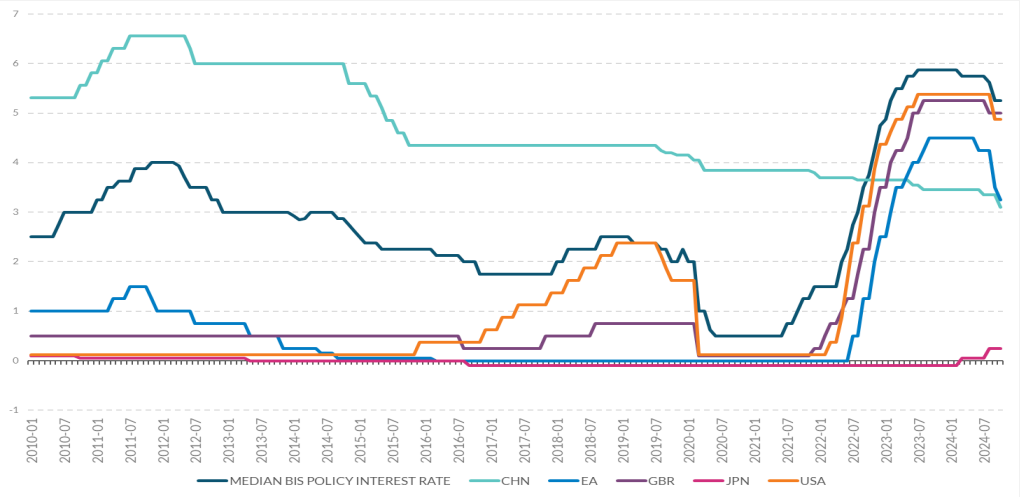
Central banks have started to reduce levels of restriction, with a few exceptions

Figure 3

Main monetary policy interest rate (%)



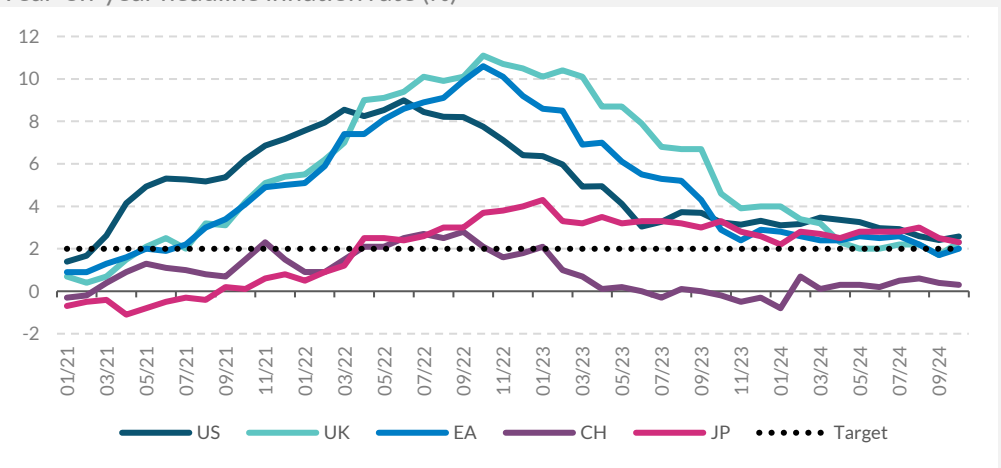
Source: Bank for International Settlements central bank policy rates statistics & authors' calculations

The Governing Council of the European Central Bank has reduced its Deposit Facility Rate by 25 basis points at each of its last three meetings in September, October and December 2024. Inflation in the euro area was 2.3 per cent, close to the ECB's target of 2 per cent, in November (see Figure 4). Due to higher but slowly declining core inflation (2.7 per cent in November), headline inflation is forecast to rise slightly in the following months before reaching the ECB's target rate of 2 per cent in the medium term (2.2 per cent next year and 1.9 per cent in 2026 according to forecasts).

Inflation is returning towards targets from 2022/23 heights in major advanced economies, while China faces deflationary risks

Figure 4

Year-on-year headline inflation rate (%)



Source: National sources. Note: US, EA, UK and Japan have a target inflation of 2% (with the US fed additionally targeting 'full employment'), while China's target is 'around 3%'.

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Inflation in the US has been close to but above the Federal Reserve's 2 per cent target since mid-2023. The continuing underlying disinflationary process has allowed the FOMC to start lowering the federal funds rate, with a 50 basis point fall occurring in September, and a further decrease of 25 basis points in November, bringing the federal funds rate on a range of between 4.5 and 4.75 per cent. The medium-term outlook for inflation and growth in the US is highly uncertain due to the change in administration and a number of potential policy announcements, especially with regards to trade policy, that could have a strong impact on inflation in particular.

In November, the Bank of England noted continued progress in the disinflationary process, prompting the monetary policy committee to cut the bank rate for a second time (after lowering it to 5 per cent in August), to 4.75 per cent. The committee forecasted inflation to rise to 2.7 per cent next year, before gradually falling towards target afterwards.

The Bank of Japan has recently indicated that it intends to continue to raise the policy rate and adjust the degree of monetary accommodation. The Bank projects inflation to be 2 percent in 2025 and 2026, marking a significant turnaround from decades of 'lowflation' and allowing it to continue normalising its decades-long ultra-accommodative policy. Despite the divergence in monetary policy movements (Figure 3), the remaining very large differentials in risk-free rates between Japan and other advanced economies have contributed to a strong depreciation of the Japanese Yen, currently exchanging for more than 150 JPY per US dollar. Relatively high risk-free returns in the US have indeed led to a strong appreciation of the dollar with respect to a large number of currencies.

Against a backdrop of subdued domestic demand and very low inflation, the People's Bank of China has further reduced its official 1-year loan prime rate to 3.10 per cent in October (down from 3.35 per cent previously), along with a number of other official rates to stimulate the economy. In light of economic headwinds, in December the Chinese government changed its stance on monetary policy to "moderately loose" and declared that they needed to "strengthen extraordinary countercyclical adjustments and . . . vigorously boost consumption, improve investment efficiency and expand domestic demand in all directions," in a sign of further upcoming stimulus.

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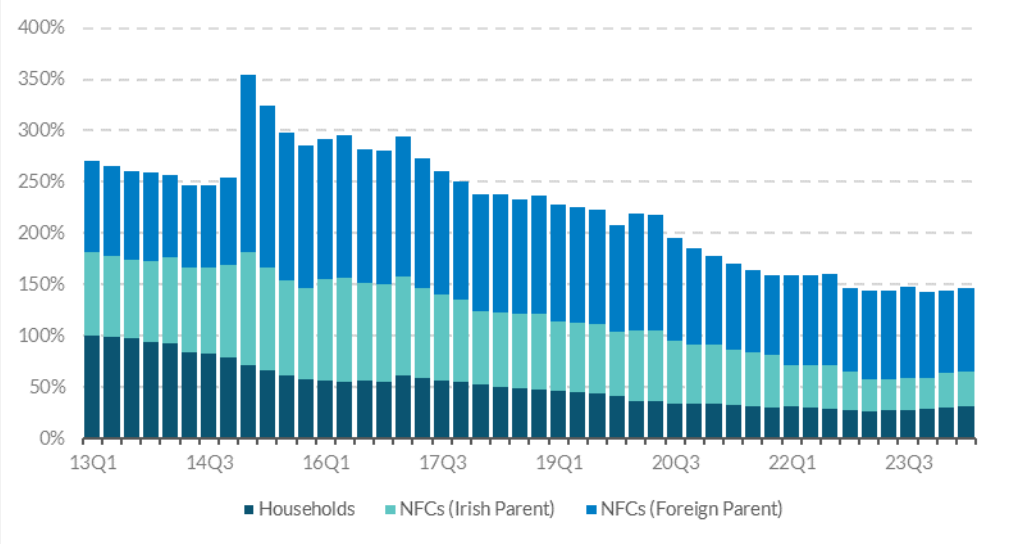
Box B : Developments in Private Sector Debt

By John Andreuccetti and Daniel Martin (Statistics Division)

This *Box* describes developments in Irish private sector debt, which stood at 146 per cent of GDP on a consolidated basis in Q2 2024. Private sector debt refers to the total debt securities and loan liabilities of Irish non-financial corporations (NFCs) and households. Private sector indebtedness forms part of the European Commission's macroeconomic imbalances procedure (MIP), which aims to identify risks and trends that could adversely affect member state economies[27]. Consolidated debt, which eliminates inter-sectoral transactions and positions[28], is the preferred debt measure for MIP analysis.

Private Sector Debt has been on a downward trajectory

Figure 1
Consolidated Private Sector Debt to GDP (%), Ireland

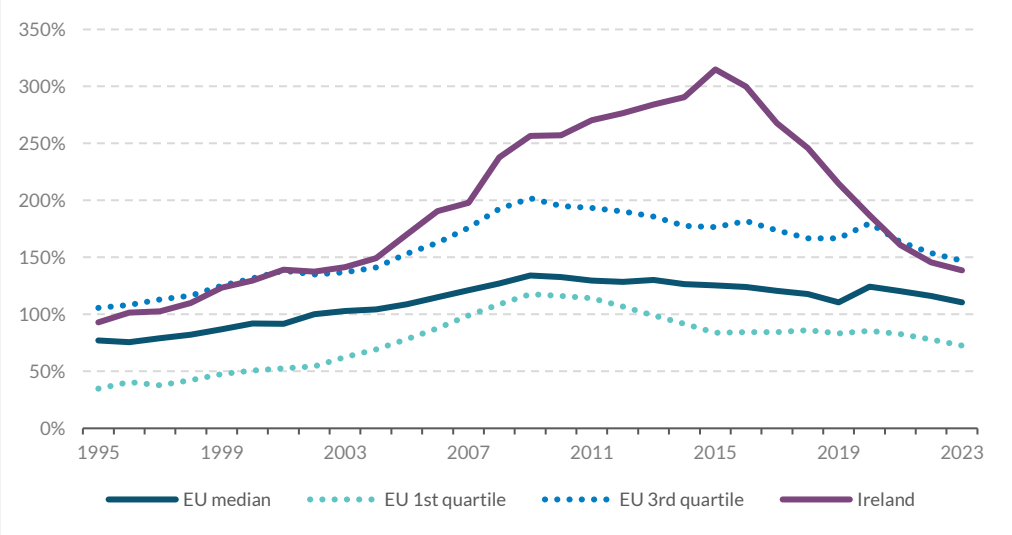


Source: CSO, Central Bank and Author Calculations

[27] Macroeconomic Imbalances Procedure Introduced from Eurostat and Eurostat's Alert Mechanism Report (2024)

[28] Private sector debt is shown on an unconsolidated basis within Quarterly Financial Accounts (QFA) and totalled €832.7bn in Q2 2024. For more details on consolidation see Eurostat's methodology.

Figure 2
Consolidated Private Sector Debt to GDP, EU Comparison



Source: Eurostat and Author Calculations

Irish private sector debt was 146 per cent of GDP in Q2 2024 under the consolidated measure, as shown in Figure 1. The Irish private sector debt to GDP ratio has been decreasing and ranked ninth highest among European Union (EU) countries in 2023, an improvement by historical standards, as highlighted in Figure 2, but it remains above the EU median.

Consolidated NFC debt, stood at 115 per cent of GDP in Q2 2024 and movements in NFC debt have consistently driven changes in total private sector debt given their large share of the total. This creates a risk that focusing on overall private sector debt measures could overlook important movements in Irish-controlled NFC debt and household debt.

Large multinational enterprises (MNEs) activity and the globalised nature of the Irish economy distort measures of private sector debt for Ireland. GNI* attempts to more accurately capture domestic economic activity (see Byrne et al, 2021) and indicates a higher level of consolidated private sector indebtedness, 250 per cent of GNI*, as of Q4 2023[29], when used as a benchmark.

Debt held by MNEs in Ireland may be decoupled from their Irish economic activity and more reflective of their global activity. Consequently, it is useful to analyse households, Irish-controlled NFCs, and foreign-controlled NFCs[30] separately. Households and Irish-controlled NFCs debt was each equivalent to approximately 50 per cent of GNI* in Q4 2023, with the remaining 150 per

[29] GNI* is an annual measure and available to reference period 2023.
[30] Note, this is based on CSO annual shares of foreign-controlled NFCs available as part of their institutional sector accounts applied to Central Bank QFA data.

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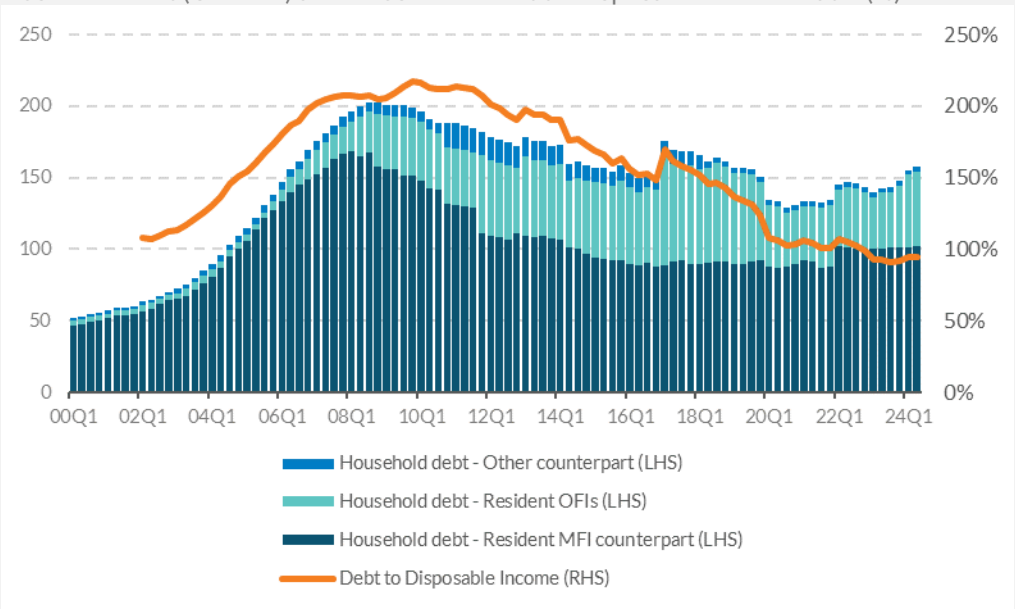
cent accounted for by foreign-controlled NFCs. Prior to Q4 2021, the path of foreign-controlled debt was similar to that of household and Irish-controlled NFC debt. Since then, foreign-controlled NFC debt and household debt have increased by 18 per cent and 17 per cent respectively but Irish-controlled NFC debt has decreased by 26 per cent. Decreasing loan liabilities have driven this decline for Irish controlled NFCs, with contractions in lending to certain sectors of the real economy in this period such as Hotels and Restaurants, and Manufacturing (Ó Cléirigh & Kaiser, 2024).

Household debt has increased in recent quarters but income growth has limited the change in debt to disposable income

Figure 3
Household Debt (€ Billion) and Household Debt to Disposable Income Ratio (%)



Source: Central Bank and Author Calculations

The stock of household debt has increased in each of the last five quarters, reaching €157.6bn (Figure 3), the highest household debt level since Q4 2018[31]. Income growth has largely matched the rise in household debt meaning that the debt to disposable income ratio has been relatively stable even as the stock of debt rose. At 95 per cent in Q2 2024, debt to disposable income was low by Irish historical standards but remained above the euro area average of 85 per cent.

Beyond incomes, household deposits are also relevant when considering the resilience of household balance sheets and debt sustainability more generally. The accumulation of excess savings during the pandemic has been well documented (Byrne, McIndoe-Calder & Wu, 2023). The latest Money and

[31] This does not take account of differences in debt across the wealth distribution (see Moreno, 2024).

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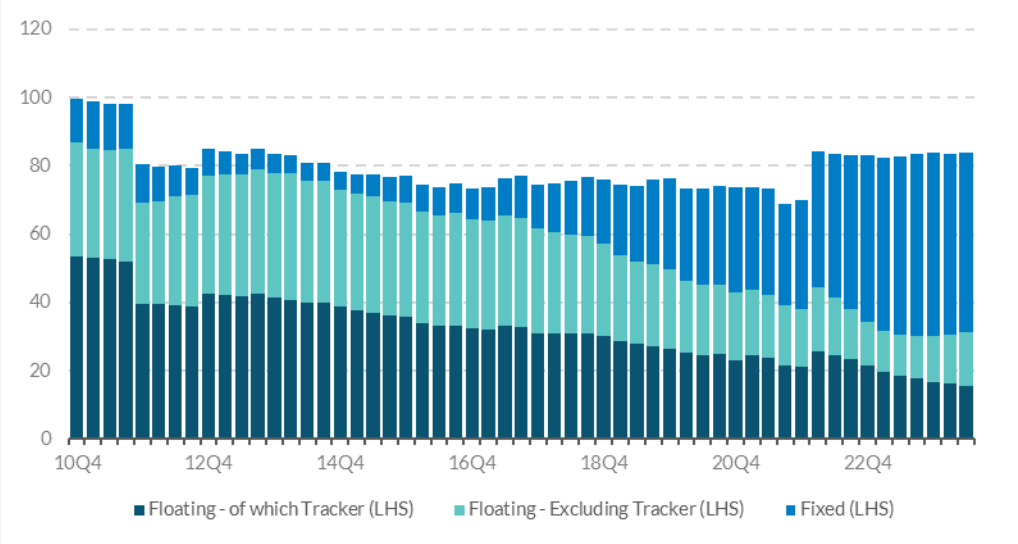
Banking Statistics show that, although the rate of growth in household deposits has declined, it remains positive and broadly in line with pre-pandemic levels. In the year to end-September 2024, household deposits increased by 3.1 per cent to stand at €157.5bn.

Figure 3 also shows that loans to households from domestic other financial institutions (OFIs) have been the main driver of household debt growth in recent quarters. However, domestic monetary financial institutions (MFIs) continue to account for the largest share of the total, accounting for around two thirds of total household debt in Q2 2024.

Total mortgage debt has been stable but the concentration of fixed rate loans has increased

Figure 4
Volume of Total Household Mortgage Debt by Type (€ Billion)



Source: Central Bank and Author Calculation

Mortgage loans remain the key determinant of household debt, accounting for around 83 per cent of household loans from MFIs and over 50 per cent of total household debt in Q2 2024. Central Bank Mortgage arrears statistics show that in addition to this MFI mortgage debt, non-banks held around €25bn of Irish household mortgage debt at the end of Q2 2024 (also see Gaffney et al, 2022).

While the share of household debt with domestic banks accounted for by mortgage loans has been relatively stable, the type of mortgages making up this debt has changed in recent years. Figure 4 shows that total household mortgage debt has been relatively stable since Q1 2022 but fixed rate mortgages have increased their share of total mortgage debt from 47 per cent in Q1 2022 to 63 per cent in Q2 2024.

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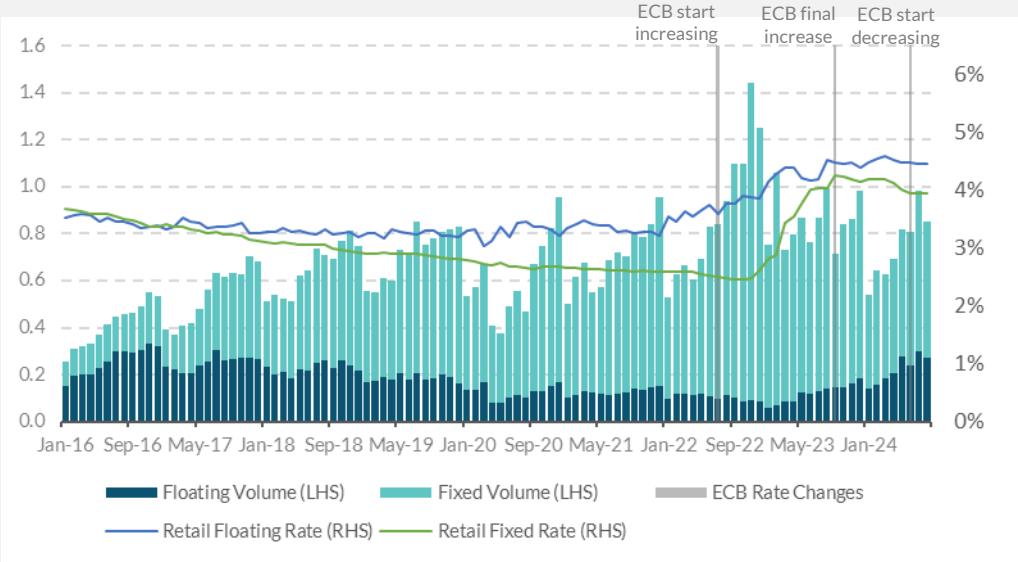
New lending at fixed rates peaks before ECB rate changes pass through to retail rates

Figure 5

New mortgage lending by type (€ Billion) and retail interest rates (%)



Source: Central Bank

Figure 5 shows new mortgage lending to households from Central Bank retail interest rate statistics. The share of new lending accounted for by fixed rate mortgages has been increasing, in line with the discussion on total outstanding mortgage debt above. Fixed rate mortgages accounted for over 50 per cent of all new mortgage lending for the first time in 2017 and peaked at over 90 per cent in late 2022, coinciding with the first ECB rate increase of the current cycle in July 2022. Although remaining elevated by long-term historical standards, the share of fixed rate loans within new mortgage lending has steadily decreased since then. This decrease in the fixed rate share coincided with the ECB moving from interest rate increases towards their first rate reduction of the current cycle. Therefore, the change may reflect household expectations around future interest rate movements and the perceived benefit of opting for a fixed rate. Previous Central Bank research (Byrne and Foster, 2023) highlighted that the pass-through of ECB base rate increases to retail mortgage rates has been uneven across Europe. In June 2022, prior to the interest rate increases, retail mortgage rates in Ireland were the second highest in Europe but Irish rates ranked sixth as of September 2024. As mortgage loans account for over half of total household debt, the interest households pay on these loans is of particular importance for total household debt and ultimately private sector debt.

In conclusion, the globalised nature of the Irish economy creates challenges interpreting standard international measures such as private sector debt to

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GDP. Comparisons to GNI* are more informative and enhanced further by considering Irish-controlled NFCs, foreign-controlled NFCs, and households individually. Prior to Q4 2021, the trends were similar but since then foreign-controlled NFCs and households have increased their debt levels while Irish-controlled NFC debt has decreased. Irish-controlled NFC debt may have been impacted by negative lending to certain sectors of the real economy while foreign-controlled NFC debt is impacted by the global activity of MNEs based in Ireland. Mortgage loans are the key component of household debt and fixed rate loans account for a larger share of this debt than the historic norm, which could have implications for future interest payments by households.

Box C: Assessing the Cyclical Position of the Irish Economy

By David Staunton (Irish Economic Analysis Division)

The Irish economy experienced a rapid recovery from the pandemic with activity (measured by GNI*) growing at an annual average rate of 7.8 per cent since 2021. An important question for policymakers is what the recent realised growth in the economy implies for the overall cyclical position of the economy, i.e. whether economic activity is above or below its sustainable level. If the economy is operating above its sustainable capacity, overheating risks and imbalances could emerge. Among other implications, this could manifest in growing wage or price inflationary pressures leading to a loss of competitiveness and a crowding out of the traded or export-oriented part of the economy.

The cyclical position is not directly observed and there is no single approach for assessing overheating pressures. Moreover, for a small open economy such as Ireland, assessing the cyclical position is complicated given the flexibility of labour supply through migration in particular. This flexibility means that estimates of the economy's sustainable growth rate are uncertain, therefore making it difficult to decipher the extent to which current actual economic activity is consistent with its sustainable level.

Given these uncertainties, a useful approach is to inspect a broad range of indicators. This data-driven approach can be used as a preliminary analysis, but has obvious shortcomings as no single indicator can fully capture conditions in the overall macroeconomy. Nevertheless, it is useful to monitor

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these data to check for signs of imbalance in different parts of the economy alongside the use of formal model-based estimates. For this purpose, Figure 1 shows a range of indicators for the Irish economy.

The unemployment rate (A) is close to an all-time low and stood at 4.5 per cent in Q3 2024 with the employment rate (B) near its previous historic peak. Coupled with high levels of net inward migration (C), these indicators would suggest that the labour market is operating at or above capacity at present. The job vacancy rate, which experienced a large increase during the pandemic, declined in 2023 but remained elevated. More recently the job vacancy rate has fallen further, suggesting a closer match between the supply and demand for labour in 2024. Although the data are somewhat volatile, labour productivity growth (D) in the domestically oriented parts of the economy picked up from late 2022, measuring 3.9 per cent in 2023. The growth in productivity adds to the capacity of the labour market, along with the increases in labour supply.

After experiencing a large external shock to commodity prices, inflationary pressures have eased with headline inflation (E) falling to 2.3 per cent on average in 2024, down from over 8 per cent in 2022. The most recent data for October signal a further decline in headline inflation to 0.7 per cent. While externally driven price pressures have abated somewhat, domestically driven (services sector) inflation remains slightly above 3 per cent in the latest data. Inflation in rents (F) has also come down from its post-pandemic peak to around 5 per cent per annum but remains elevated and well above general inflation.

Hourly wage growth (G) has stood at around 4.6 per cent throughout 2024. This is about one percentage point ahead of 2019 hourly earnings growth, reflecting the continued strength in the labour market. Compensation per employee (G) depicts a similar trend, albeit with a pronounced slowdown in the most recent data.

Having declined to very low levels in the years following the financial crisis, housing completions have recovered gradually and exceeded 32,000 in 2023. House price growth increased in 2024, however, in part due to continued issues with inadequate supply (H). While the level of construction activity has picked up, overall modified investment remains low as a proportion of modified national income (GNI*) (I) at close to the level observed in the mid-1990s and over 10 percentage points below its 2006 peak.

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In terms of fiscal developments, the headline General Government balance (J) has been in surplus over recent years reflecting the strong growth in tax revenue, particularly corporation tax, and overall economic activity. Stripping out estimated excess CT, the General Government balance has remained in deficit over recent years. This implies that excluding the effect of windfall CT receipts which are generated outside Ireland, the government remains a net borrower.

While the run up to the global financial crisis was characterised by rapid expansion of credit, the current cycle does not appear to be supported by a similar trend. Turning to international financial flows, the modified current account (CA*) (K) is in surplus up to 2023 but the size of the surplus has declined sharply since 2021, and is in deficit when excess corporation tax (all of which is paid by foreign-owned firms) is excluded. The household savings rate (L) has declined from the high levels observed during the pandemic but remains above its long run average in 2024.

To derive a single indicator of the cyclical position by drawing on the information contained in the broad range of indicators discussed above, we use more formal methods to calculate estimates of the output gap – the estimated gap between the current level of output in the economy and what could be produced if all resources in the economy were employed at a sustainable level. An average of output gap estimates calculated from a range of models is used to provide a single summary indicator of the cyclical position of the economy (M). The estimate is calculated using a range of univariate and multivariate statistical filters, as well as a production function approach. Since this method is still subject to uncertainty due to the unobservable nature of potential output, we present the median as well as the interquartile range of the estimates. As of late 2024, the output gap is estimated to be lower than in 2023 but still positive, indicating that overheating risks are present.

In summary, the range of indicators present a mixed picture as to the degree of overheating pressures currently. Labour market data provide the clearest signals that the economy is operating close to its sustainable capacity. Looking at other indicators such as inflation and wages, there is less evidence of pronounced overheating pressures at present consistent with the strength of the labour market. At least part of the explanation for this is likely to be due to the response of labour supply to the growth in the economy. As shown above, as labour demand has increased, there has been a significant rise in labour supply through both higher labour force participation and a large increase in net inward migration. Along with improvements in productivity, this has

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helped to expand the capacity of the economy as demand has increased. This does not mean that overheating pressures are absent in all parts of the economy. Price signals from the housing market (rents, house prices) are consistent with binding capacity constraints in this part of the economy.

Looking ahead, the central projections in this Bulletin indicate that the economy will continue to grow strongly in 2025 at around 3 per cent in MDD terms. Thereafter, the pace of growth is expected to moderate to below 2.5 per cent by 2027. Among other factors, this growth profile is influenced by the projected easing of wage growth – in line with inflation remaining below 2 per cent – and the savings rate staying above its long-run average. Conditional on this central projection for growth, the level of output in the economy should converge to close to its long-run sustainable level over the coming years. However, stronger demand and inflationary pressures than projected in current central forecasts, for example as a result of a looser than currently assumed fiscal stance, could trigger overheating risks. Conversely, if higher tariffs or other fragmentation risks materialised resulting in slower economic growth over the coming years, there is the potential for activity to fall below its sustainable level leading to some spare capacity in the economy.

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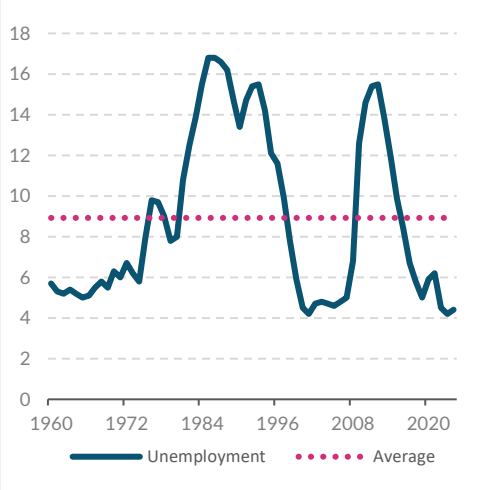
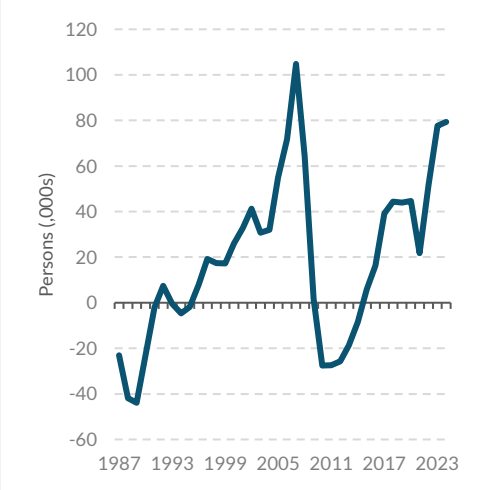
Figure 1: Indicators of the Position of the Economy in the Economic Cycle

A) Unemployment is close to all-time low

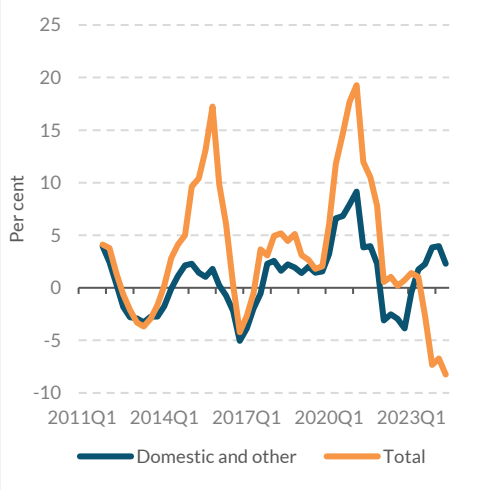


B) Employment rate near record high

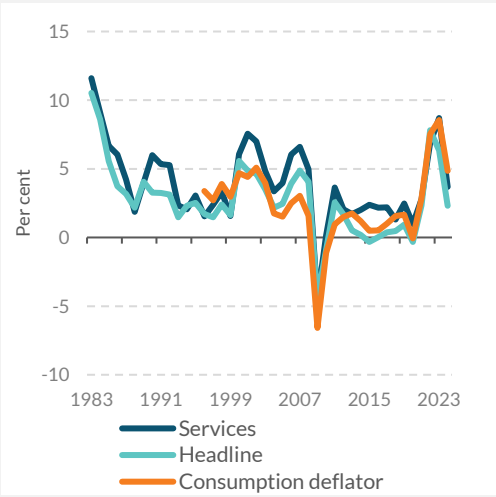
C) Net inward migration has increased sharply since 2019



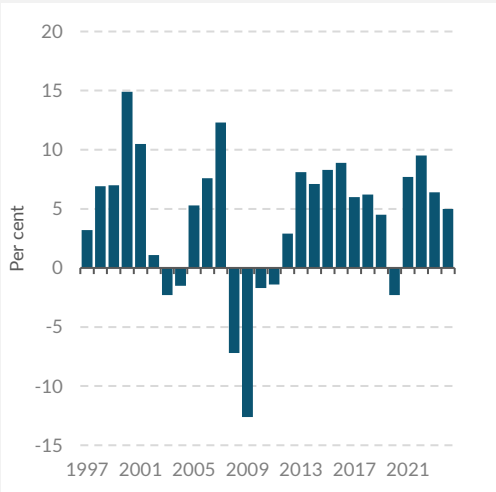
D) Labour productivity growth (4qma)



E) Inflation (Headline and Services) has eased since 2022 peak



F) Rental inflation remains elevated in 2024



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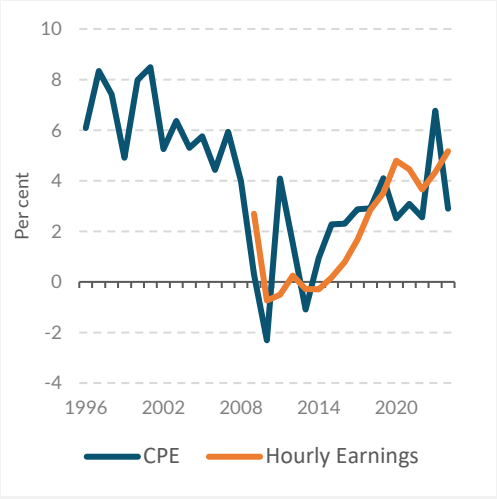
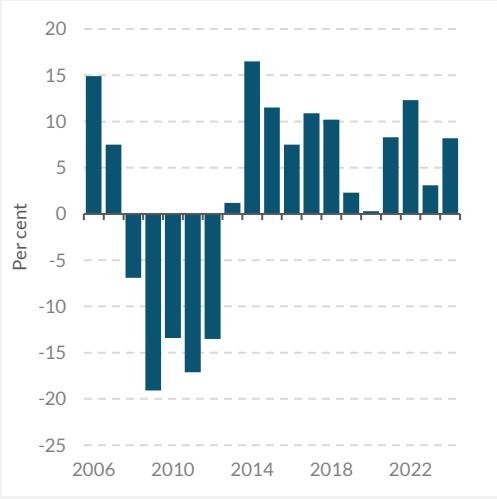
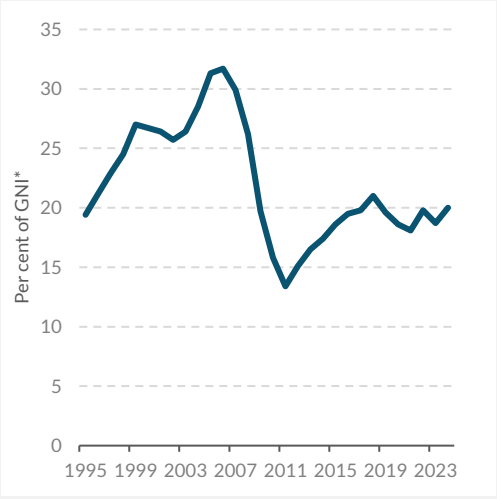
G) Nominal wage growth has increased since pre-pandemic



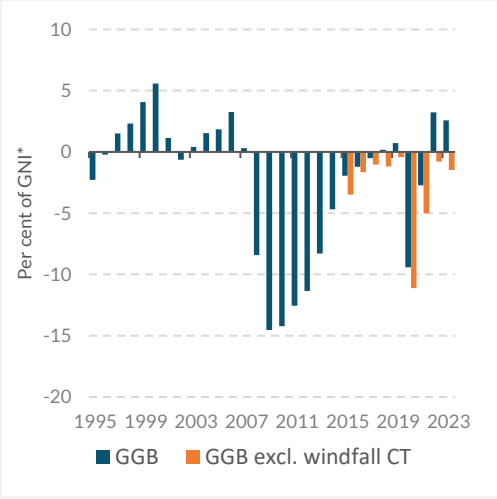
H) House price growth accelerated in 2024



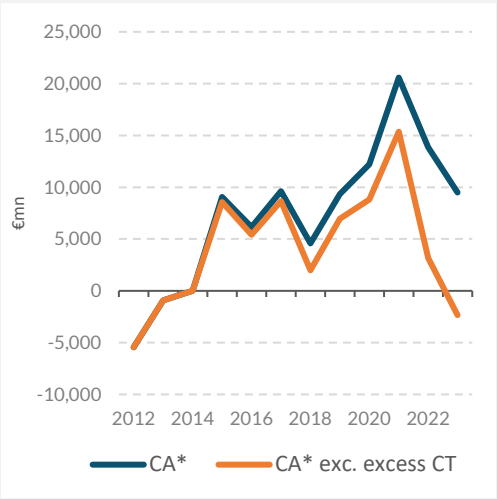
I) Modified investment ratio at mid-1990s levels



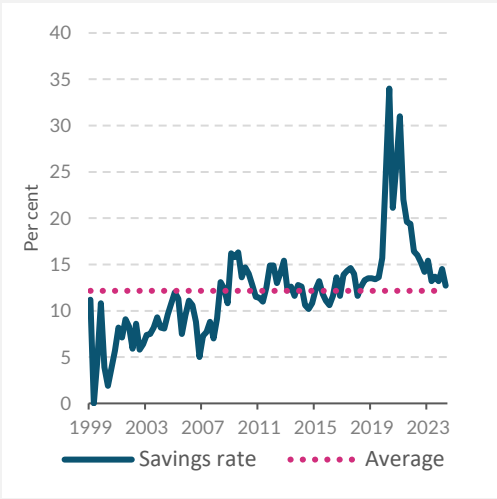
J) General Government Balance excluding excess CT in deficit



K) Modified current account surplus has declined since 2021



L) Household saving rate above long-run average



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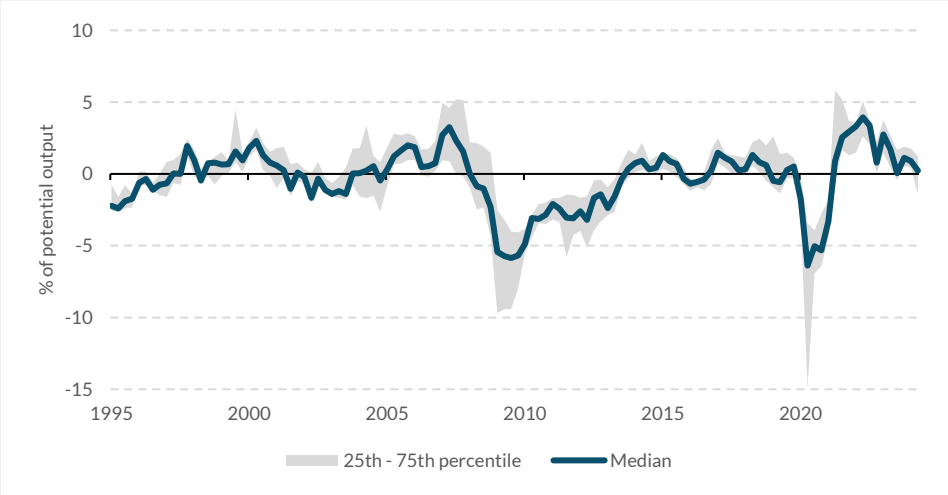
M) Output gap estimates for 2024 consistent with presence of overheating risks



Note: Where possible, figures for 2024 are included using year to date figures. No forecast values are used.
Source: CSO, Eurostat, Central Bank of Ireland, Department of Finance, author's calculations

Box D: Geoeconomic risks to the outlook: The possible impact of escalating trade tensions, alternative tariff and tax regimes on the Irish economy

By Irish Economic Analysis Division

As a small open economy, Ireland has benefitted for many decades from greater global integration involving more seamless cross-border movement of goods, services, people, ideas and capital, and the broad multilateral framework that enables such activity to take place. In recent years, a combination of geopolitical developments – UK leaving EU, US-China trade tensions, Russia's invasion of Ukraine, concerns over supply chain security - have all challenged that multilateral framework and raised the risk of greater geoeconomic fragmentation, reversing the extent of global market integration (Aiyar *et al*, 2023). The varying effects of the Covid-19 pandemic and recent inflationary shocks on countries has also been of influence. In this *Box*, the implications of one of the most substantial risks in this vein to the Irish economy that has emerged are discussed, namely a significant escalation of trade tensions globally and a fundamental reorientation of trade and tax policy in the United States (US).

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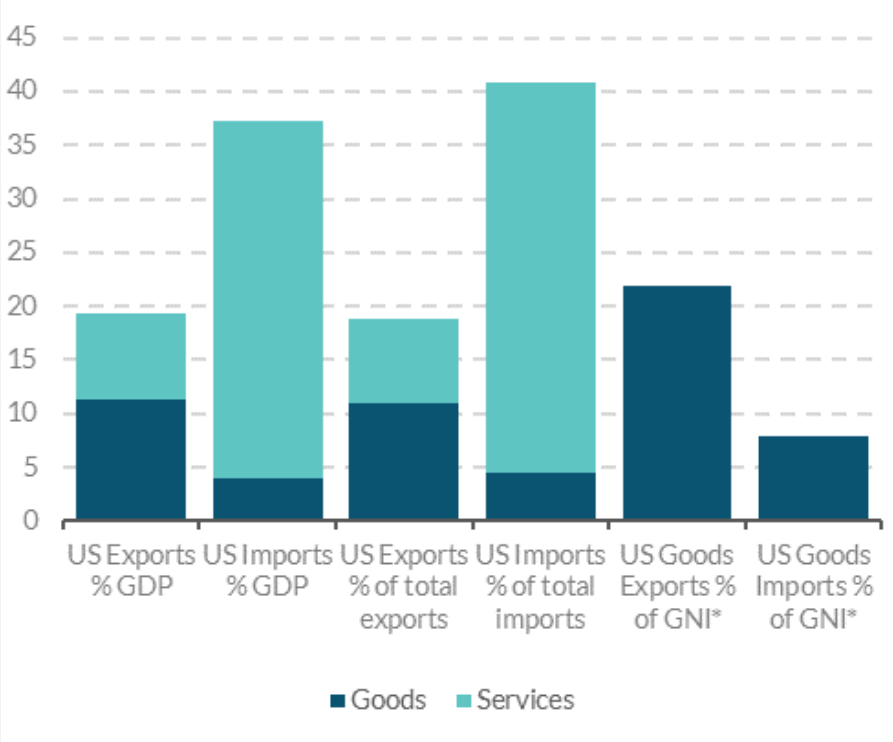
Ireland-US trade and investment linkages

It is useful initially to consider the nature of the economic relationship between Ireland and the US across the interconnected dimensions of trade and investment.[32]

The US is Ireland's largest single bi-lateral trading partner, with total trade values exceeding 50 per cent of Irish GDP (Figure 1). The US accounts for just over 20 per cent of Irish total exports (29 per cent of cross-border goods exports) and just over 40 per cent of Ireland's total imports (16 per cent of cross-border goods imports). Ireland typically has a trade deficit with the US, as imports of services in particular outweighs exports of goods, with the trade balance for the latter product category being positive from an Irish perspective.

Ireland has substantial trade links with the US, with a surplus in goods trade outweighed by a deficit in services trade.

Figure 1
per cent (%)



Source: CSO and Central Bank of Ireland staff calculations.
Notes: Data are for 2022.

This difference across goods and services mainly relates to the nature of production value chains of multi-national enterprises (MNEs) and, in particular, those US companies that have significant parts of their global business resident in Ireland. The majority of Irish imports from the US are intermediate goods and services (66 per cent) and capital goods (27 per

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cent), with a more even split between intermediates / capital goods and final demand for Irish exports to the US (43 per cent vs. 57 per cent). From an Irish perspective, the large imports of intellectual property and R&D services (Figure 2) enable the production of goods and services by companies resident here, primarily for onward export. This includes categories of goods and services that are exported directly from Ireland to the US, with pharmaceuticals having the largest share of that trade at approximately 45 per cent of Irish exports to the US (Figure 2).[33] It also includes output exported from the State to the rest of the world in pharma, medtech, ICT services and ICT manufacturing that arise from MNEs (mostly US-owned).[34] Finally, the import of services from the US may also be used in the manufacturing and export activity done abroad on behalf of Irish resident MNEs, which currently accounts for14 per cent of Irish exports.[35] Overall, the extent of trade with the US in large part reflects the intra-company import of intellectual property and related services, supporting the production of high value-added pharmaceuticals, ICT services and some ICT manufactured goods in Ireland by those US MNEs in a way which maximises the net profits of those companies., Much of this, in turn, is exported along the same intra-company value chain to both the US and the rest of the world.

[32] With respect to investment this *Box* focusses on US investment in Ireland, and does not discuss in-depth the extent of Irish resident investment in the US, which in 2022 accounted for approximately 25 per cent of Irish resident FDI positions abroad.
[33] Data from the US International Trade Commission show that imports from Ireland accounted for 2.9 per cent of the volume of pharmaceutical imports in the US in that year, but 24.7 per cent of the value of those imports. This suggests a high value added content and price for the type of pharmaceutical products manufactured in Ireland that are exported to the US.
[34] Some of those exports (imports) are "indirect" trade exposures with the US, as the products concerned may at some point in their production cycle end up in (originate from) the US. For example, Irish chemicals exports to the pharmaceutical industry in the Netherlands may result in exports from the Netherlands to the US. Calculations from global input-output tables (ICIO) suggest that, while these indirect exposures are economically large in their own right, they are small compared to Ireland's large direct exposures to the US; indirect exports to the US (via one other trading partner) are 6.9 per cent of direct exports, and indirect imports are 4.7 per cent of direct imports.
[35] This is known as goods for processing or contract manufacturing. See https://www.cso.ie/en/media/csoie/methods/internationalaccounts/Contract_Manufacturing_-_rebrand.pdf

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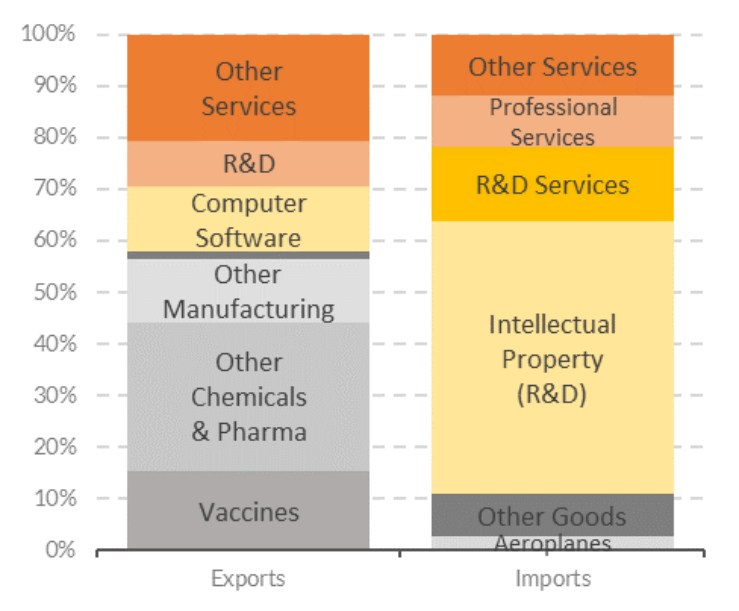
The composition of Ireland's trade with the US is driven mainly by production value chains and the related transfer pricing decisions of MNEs.

Figure 2
per cent (%)



Source: CSO and Central Bank of Ireland staff calculations.
Notes: Data are for 2022.

Consequently, Ireland's trade balance with the US and its composition is intrinsically linked to the nature of foreign direct investment (FDI) in Ireland from the US. The US is the largest source of FDI in Ireland (Figure 3). US companies account for 20 per cent of all foreign MNEs active in Ireland, and they are, on average, larger, with higher value-added and greater capital stock, than foreign MNEs whose parent is not US-based. From a labour market perspective, US companies account for almost 10 per cent of business employment in Ireland (35 per cent of all foreign MNE business employment), with these jobs typically being higher paid and mainly arising in the high value-added sectors of pharma, medtech and ICT. The profitability of US MNEs' Irish operations is often not readily available in officially published statistics, but the rate of return on FDI in Ireland is currently averaging around 15 per cent.[36] Given the dominance of US MNEs in FDI in Ireland, this value may be a reasonable estimate of the rate of return those companies in aggregate achieve from their Irish operations. In 2022, approximately 70 per cent of the stock of FDI on an ultimate investor basis was from the US, and growth in overall FDI has been primarily driven by developments in US FDI over the years.

[36] See Figure 4.9 in CSO International Accounts Q2 2024.

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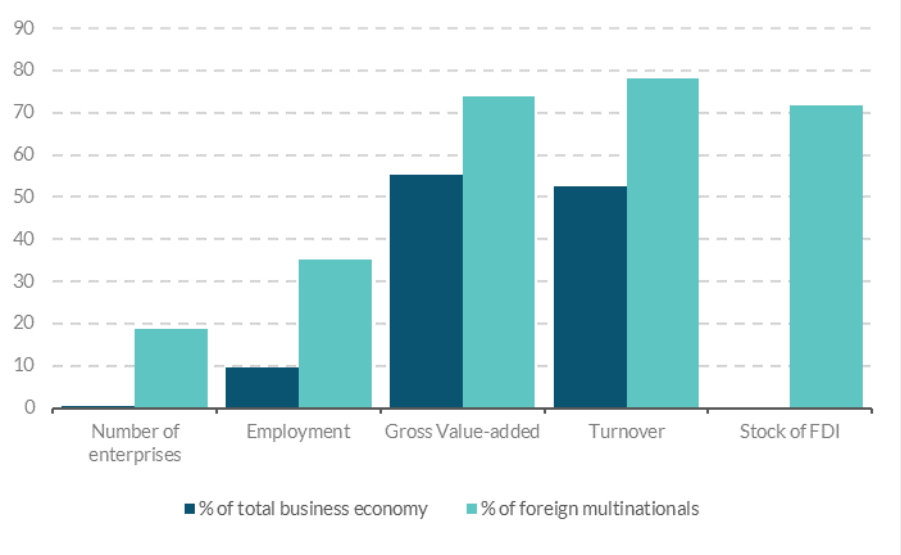
US MNEs account for a large share of activity, employment and investment in the Irish economy.

Figure 3
per cent (%)



Source: CSO and Central Bank of Ireland staff calculations.
Notes: Data are for 2022.

The profitability of US MNEs in Ireland is a function of several factors: the high value-added sectors in which they operate; the production value chain and related transfer pricing arrangements decided by each company; the labour and other operational costs of physical activity in Ireland; and the tax regimes in the US, Ireland and other countries in which those companies trade. At present, the combination of these factors lead to a significant level of profits being recorded in Ireland, which in turn contributes to the large increases in corporation tax receipts of recent years.

Mapping the transmission channels

Given the trade and investment links outlined above, it is appropriate to consider how increased global trade tensions and possible changes to trade and tax arrangements in the US could influence the Irish economy. Of particular interest is (1) the possible impact of higher tariffs on goods trade and (2) a lower corporation tax rate in the US or other policy changes that incentivise relatively more capital investment and MNE corporate assets to reside in the US. An illustrative transmission map (Figure 4) outlines the range of possibilities, with the ultimate outcomes being sensitive to the extent and precise design of any policy changes enacted in the US and how Irish, EU and other authorities respond to any changes in US policy.

Ultimately, higher tariffs or changes in tax regimes that reduce the profitability of operations in Ireland could, to varying degrees, influence

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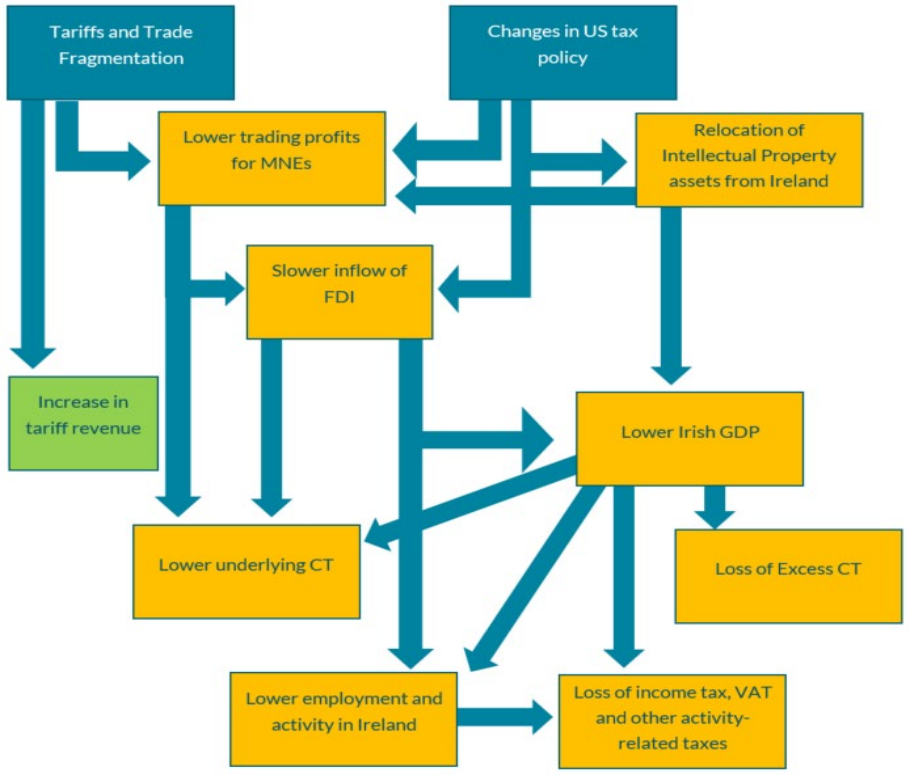
future investment decisions by US MNEs here, employment levels in their Irish operations, and the related tax receipts to the Irish exchequer from their activities in Ireland and globally.

US policy increasing tariffs and/or incentivising corporations to declare more of their taxable profit in the US, depending on nature and scale, could influence profitability, activity, employment and tax receipts in Ireland.

Figure 4



Source: Central Bank of Ireland staff.
Notes: The transmission map is for illustrative purposes only and does not indicate any quantification or scale of impact.

Possible implications for the public finances

As illustrated above, the transmission of tariff and tax policy shocks to the Irish economy will have resonance for the public finances. Indeed it is likely that the most immediate impact of those shocks would be reflected in the headline public finances, with the more medium-term drag from the challenging wider macroeconomic situation only becoming apparent subsequently.

A key vulnerability for the Irish public finances is the extent to which the headline and excess, or windfall, levels of corporation tax (CT) that currently arise may be related to the residency of intellectual property (IP) assets in Ireland that were ultimately generated in the US. Growth in these excess CT receipts have driven the overall rise in CT, and have been a significant part of the rise in total tax receipts in recent years. Receipts from CT are

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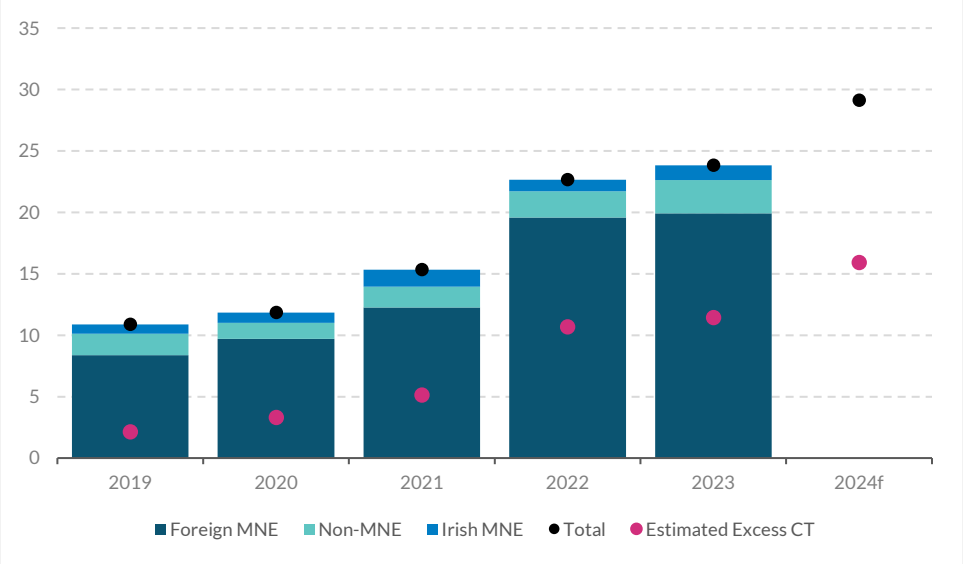
predominantly from foreign-owned MNEs, which are likely in most instances to be US-owned (Figure 5). Changes in the US tax regime, whether that be the headline rate or incentives for capital investment or assets to be resident in the US, may change the incentives for US MNEs to retain such IP assets and the related profit in their Irish operation. As discussed further in the *Public Finances* section of this *Bulletin*, absent other policy changes, the loss of excess CT would result in the Irish General Government Balance swinging significantly into deficit from the surplus currently being recorded.

Growth in headline and excess CT receipts sensitive to developments in foreign-owned MNEs, which in turn are dominated by US companies.

Figure 5
€ billion



Source: Revenue Commissioners and Central Bank of Ireland staff estimates.
Notes: Excess CT estimate is the difference between actual (forecast) CT and the average of a range of estimates for underlying CT. The approaches used to estimate excess CT are discussed in more detail here See the Public Finances section of this *Quarterly Bulletin* for the latest estimates of excess CT.

In addition to the potential immediate effect on excess CT, a combination of tariffs and/or changes in corporation tax regimes would likely, over time, lead to lower levels of economic activity generally, as illustrated in the modelling exercise. In the absence of mitigating policy measures, it could be expected that underlying corporation tax receipts, labour taxes and other tax heads such as VAT would be negatively impacted.

Conclusion

The central forecast in this *Bulletin* foresees stable growth in the domestic economy in the near-to-medium term. A key risk to that relatively benign outlook is the possible realisation of geoeconomic risk and, in particular, an increase in global trade tensions or a fundamental change in US trade and tax policy. Uncertainty around potential outcomes is high, and may only

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gradually become clearer as, and if, specific policy decisions are taken in the US and in other countries.

The profitability of some US MNE Irish operations is likely being influenced by the presence of their IP assets here, which in turn is affected by the corporation tax regimes currently in place. In the near-term, the most immediate effect of a changed corporation tax regime in the US could be a significantly more negative outlook for the public finances in Ireland. An absence of IP assets and related profits in the future may also bring the relative costs of operating in the State along other dimensions into more focus for MNEs (labour, energy, transport, etc.). The impact of such changes could be compounded if the US and other trading partners entered into a tit-for-tat escalation of tariffs.

In other scenarios, however, where cross-border trade becomes less profitable, direct market access through direct investment may become even more attractive, and Ireland may benefit in this respect over the near-to-medium term. Similarly, subject to the degree of tensions between the US and China compared to those between the US and EU, Ireland may benefit in the near-to-medium term from more "friend-shoring" of US investment and trade (Clancy *et al*, 2024). The significant physical investment of US firms in Ireland, particularly in pharmaceuticals, medtech and ICT manufacturing sectors, also presents opportunities to maintain trade and investment connections between the two countries. Nevertheless, the medium-to-long term implications of possible geoeconomic fragmentation, especially as that may alter the relationship between the US and EU, are unlikely to be positive for a small open economy such as Ireland.

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Signed Articles

The articles in this section are in the series of signed articles on monetary and general economic topics introduced in the autumn 1969 issue of the Bank's Bulletin. Any views expressed in these articles are not necessarily those held by the Bank and are the personal responsibility of the author.

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Long-Term Growth Prospects for the Irish Economy

Thomas Conefrey, Enda Keenan, David Staunton and Graeme Walsh [37]

The long-term outlook for the economy will be determined by fundamental factors such as population growth, investment and productivity. In this *Article*, we provide a framework for assessing the economy's long-term growth prospects and evaluate how major structural changes already underway could influence it. Our analysis shows that, as the population ages, the long-term growth rate of the economy is projected to slow by 2050 to below half its historic average growth rate observed over the last half century. The level of inward migration and the length of working lives will affect the extent to which the rate of improvement in living standards can be maintained in light of population ageing. The climate and digital transitions and the effects of trade fragmentation could have a significant impact on the long-run outlook. Sensitivity analysis shows that increases in investment or productivity linked to these transitions could improve long-term growth prospects, but these gains are uncertain and will require concerted policy focus to enable the economy to benefit from the profound changes ahead.

1. Introduction

The near-term outlook for the Irish economy is likely to be shaped by developments including the response of consumer spending to projected improvements in real incomes, the performance of net exports in the context of trade policy uncertainty and the evolving stance of fiscal and monetary policy, as outlined elsewhere in this *Bulletin*. Looking beyond the immediate period of the next three years, it is important to consider and analyse the

[37] Irish Economic Analysis Division. We would like to thank Robert Kelly, Martin O'Brien and Gerard O'Reilly (Central Bank) and Luke Rehill (Department of Finance) for comments on an earlier draft. The views expressed in this Article are those of the authors and do not necessarily reflect those of the Central Bank of Ireland or the European System of Central Banks.

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factors that will determine the prospects for the economy and living standards over an extended horizon.

Over the longer-term, abstracting from transitory shocks, the factors which will determine the economy's growth prospects – and hence the living standards of its residents – include the change in the size of the population and the proportion of the population at work, the rate of change in investment and the capital stock and the efficiency with which these capital and labour resources are combined to increase sustainable output (known as total factor productivity or TFP). These long-run drivers of growth will, in turn, be affected by major structural transitions currently underway related to the ageing of the population, climate change and the transition to net zero, the growth of Artificial Intelligence (AI) and digital technologies and geoeconomic fragmentation.

To assess the implications of projected changes in the key determinants of growth over time in the context of these transitions, we employ a widely used analytical framework known as growth accounting. We first decompose the drivers of growth in the Irish economy over the period 1970 to 2023. This provides the context for assessing the long-term prospects for the economy out to 2050. Estimating the economy's growth rate over such an extended period is an inherently uncertain exercise, especially in the face of major structural transitions. The ultimate impact of these transitions on the labour market, investment, productivity and growth is not yet fully understood and is the subject of ongoing analysis and research. Accordingly, in this *Article*, we carry out sensitivity analysis to demonstrate the potential impact on the economy's long-term growth outlook of alternative assumptions on the working age population, investment and productivity.

Our analysis builds on other work for Ireland using a similar methodological framework. Department of Finance (2023) examine the long-term outlook for the economy out to 2050 using population projections from 2021 from the European Commission. Egan and McQuinn (2024) focus on alternative paths for population growth and investment and demonstrate how future growth is sensitive to assumptions on these key inputs. Fiscal Council (2020) examine the fiscal challenges and risks from 2025 to 2050.

Taking the historic period from 1971 to 2023, our analysis shows that TFP and capital each accounted for about 40 per cent (1.3 percentage points) of the average growth rate of the economy over this period, with labour accounting for the remaining 20 per cent (0.5 percentage points). We estimate a baseline scenario out to 2050 using the CSO's (2024) high migration population variant.

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In this scenario, the potential growth rate of the economy is projected to slow markedly over the coming decade. This is primarily driven by the ageing of the population which sees the working age population peak in 2045 and then decline, even assuming high levels of net inward migration. If net inward migration was lower than this (in line with the forecasts in the CSO's *Low Migration* scenario), this would reduce the annual average growth rate of the economy by around one third from 2030 to 2050. Over time, the age at which workers in Ireland transition into retirement has been increasing slowly. To illustrate the impact on economic growth of longer working lives, we present sensitivity analysis whereby the retirement age is assumed to rise gradually, broadly guided by the parameters of the 2021 Pension Commission recommendations. This would boost labour supply and the potential growth rate of the economy relative to the baseline case, helping to maintain improvements in incomes per head in line with their historical trend.

The transitions linked to AI, geoeconomic fragmentation and climate change will affect the economy's growth path through their impact on the labour market, productivity and investment, amongst other channels. We carry out sensitivity analysis where the investment-to-GNI* ratio is raised above its recent observed level and where the rate of TFP is assumed to be boosted as a result of the adoption of AI and digital technologies.

The baseline and related sensitivity analysis presented in the *Article* should not be interpreted as forecasts of particular outcomes but rather paths for the economy based on a specific set of assumptions. A limitation of the analysis is that it is static in nature and does not consider wider spillovers and important interactions between the main drivers of growth in the economy. In particular, key assumptions such as the labour force participation rate and total factor productivity are taken as exogenous. While this makes the methodology tractable and useful for the type of analysis considered in this paper, in reality, the evolution of these variables are themselves interrelated, but the full extent of these interlinkages are not captured in a growth accounting framework.

Relatedly, although growth accounting can be used to identify the *proximate* causes of growth, it cannot identify the *underlying* causes of growth. *Proximate* causes of growth refer to capital, labour, and technology. *Fundamental* causes of growth are the underlying factors that determine these three inputs, such as institutions, the business environment, geography and culture. Lastly, alternative growth paths estimated using this methodology are highly stylised because they use a *ceteris paribus* assumption and do not take into account the general equilibrium effects of changes to endogenous variables.

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The paper is organised as follows. Section 2 explains the growth accounting methodology and applies the approach to assess the historic performance of the economy from 1970 to 2023. Section 3 describes the key assumptions used to estimate a baseline for the economy out to 2050 and presents the results. In Section 4, sensitivity analysis is carried out to illustrate the impact on the growth outlook of changes in key assumptions related to the working age population, investment and TFP, in the context of the major structural transitions currently underway. Section 5 concludes.

2. Historical Contributions to Growth

In this section, we present the growth accounting (or equivalently, the production function) approach that will be used throughout this article. To provide context for the long-term projections in Section 3, we first apply the method to the historic data to identify the sources of growth in the Irish economy over time (1970-2023).

2.1 Growth accounting methodology

Growth accounting is based on a production function formula that relates output (Y) to capital input (K), labour input (L), and total factor productivity (A):

$$Y = f(A, K, L)$$

This formula can be used to decompose output growth into the contributions from these three inputs, making it a simple and transparent framework for developing long run projections and exploring the sensitivity of growth to changes in assumptions.[38] The specific formula that we use is called the normalised Constant Elasticity of Substitution (CES) production function:[39]

$$Y = \left[\alpha K^{-\beta} + (1-\alpha)(AL)^{-\beta}\right]^{-\frac{1}{\beta}}$$

where Y is the potential sustainable output of the economy, K is capital input, L is labour input, and A is total factor productivity.[40] The parameters of the function are α, the capital share, and β, a substitution parameter.[41] In our framework, capital and labour are assumed to be fully employed, such that the capital stock is fully utilised and there is no labour hoarding.

[38] The growth accounting method originates from Solow (1957) and is one of the most popular tools in for this analysis macroeconomics (Acemoglu 2009).
[39] For simplicity, most growth accounting exercises use a Cobb-Douglas function, which is equivalent to a CES function with a unitary elasticity of substitution.
[40] The particular form of technology that we use is called labour augmenting technology.
[41] We calibrate the parameters of the CES production function using standard values, so we assume a labour share of 0.67 and an elasticity of substitution between capital and labour of 0.5.

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We use the CES production function over the more common Cobb-Douglas production function because of its less restrictive assumption on the substitutability of capital and labour. The CES specification is more consistent with the production function used in the Bank's broader macroeconomic modelling toolkit, specifically in the semi-structural and DSGE models.

2.2 Data and calibration

The production function methodology requires data for four key variables: output, capital input, labour input and TFP.[42]

Output

For the measure of output, we use real GNI* instead of standard measures such as GDP or GVA (Figure 1). The use of GNI* as the measure of output is in line with the approach taken in other recent analyses for Ireland by Fiscal Council (2020) and Department of Finance (2023).[43] GNI* excludes transactions linked to the global activities of MNEs in Ireland and is a better measure of domestic economic activity than GDP. Since a modified measure of economic activity is used as our output variable (GNI*), it is important that modified or appropriately adjusted input series are used.

Capital input

The underlying formula for the capital input (K) is a function of the level of investment (I) and depreciation (δ):

$$K = K_{-1}(1 - \delta) + I$$

where K is the modified capital stock, I is modified investment, and δ is the depreciation rate. To construct the modified capital stock series we follow Timoney (2023) by excluding investment in intangibles and transport equipment for the manufacturing, information and communication, and financial and insurance sectors. This modified capital stock series is more consistent with GNI* than the total capital stock (Figure 2).

[42] The historic data we use comes from the Central Statistics Office and is back dated, where necessary, to 1970 using the European Commission's AMECO database.
[43] Egan and McQuinn (2024) use Net National Product.

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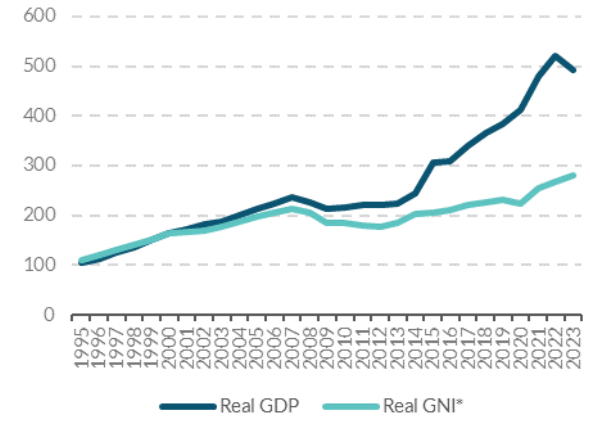
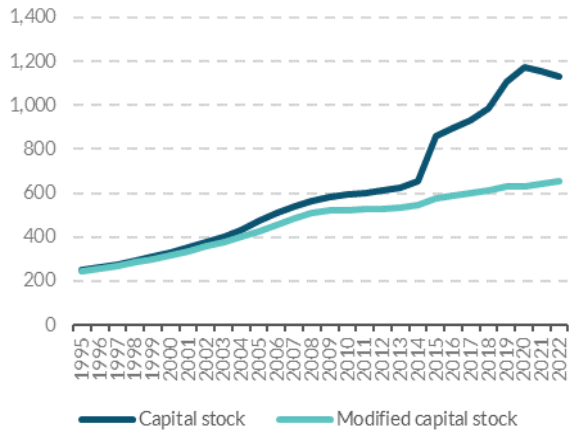
Aggregate measures of activity, 1995-2023

Figure 1
Euro billion, (constant prices 2022)



Modified capital stock, 1995-2023

Figure 2
Euro billion, (constant prices 2022)



Labour input

Labour input is measured as the total number of hours worked in a year (L) and is built up from its components using the following formula:

$$L = (H \times 52) \times N \times P \times (1 - U)$$

where H is the average length of the work week, N is the working age population, P is the labour force participation rate, and U is the unemployment rate. For the baseline scenario, standard definitions of the working age population and labour force participation rate are used based on those aged 15 to 64.

Total factor productivity (TFP)

In the growth accounting framework, TFP is calculated as the residual amount of GNI* that is not explained by the capital and labour inputs. This measure is known as the Solow residual. While TFP represents innovation and advances in technology, its measurement and interpretation need to be treated with caution for several reasons. First, TFP is an unobserved variable and is calculated as a residual. As such, it is a proxy, or indirect, measure of technology. Second, residual TFP has been said to be a measure of what we do not know and could be capturing the effect of elements such as, for example, the misallocation of factor inputs, market-improvements through better competition policy, market integration, specialisation, omitted variables, and measurement error (Hulten, 2001).

2.3 Historical contributions to growth

The results of our historic growth accounting exercise are summarised in Table 1, broken down into different time periods since 1970. Over the full sample

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from 1971 to 2023, the economy grew at an average rate of 3.2 per cent per annum (as measured by real GNI*), with TFP and capital each accounting for about 40 per cent (1.3 percentage points) of this average growth rate, and labour accounting for the remaining 20 per cent (0.5 percentage points).

Table 1: Historical decomposition of potential GNI* growth

Period	GNI*	TFP	Capital	Labour
1971 - 1980	3.6	1.1	2.4	0.1
1981 - 1994	3.0	1.9	0.9	0.1
1995 - 2001	5.1	2.4	1.9	0.8
2002 - 2007	3.8	0.5	2.1	1.3
2008 - 2012	0.3	0.0	0.6	-0.3
2013 - 2019	2.2	0.6	0.7	0.8
2020 - 2023	3.5	1.5	0.4	1.5
1971 - 2023	**3.2**	**1.3**	**1.4**	**0.5**

Source: authors' calculations.

Looking across the different time periods, GNI* growth and the associated input contributions have fluctuated over time during distinct phases of growth and decline in the Irish economy. This includes the period of contraction in the mid 1970s due to the oil price crisis of 1973. This was followed by the pro-cyclical fiscal expansion in the late 1970s, the fiscal crises in the 1980s, the period of recovery and convergence from 1995 to 2001, the construction bubble from 2002 to 2007, the economic and financial crisis (2008-12), the recovery period from around 2013 to 2019, and recently, the pandemic, Russia-Ukraine war and aftermath (2020-23).

There are a number of key results from the growth decomposition in Table 1 that are worth highlighting:

1. From 1970 up to the mid 1990s, the contribution of labour to economic growth was very small (0.1 percentage point), reflecting high levels of unemployment and prolonged net outward migration observed over this period.
2. The contribution of capital grew strongly over the 1995 to 2007 period, especially during the construction bubble, in both absolute and proportional terms, before falling in subsequent years due to weaker investment and the collapse of construction sector output (Figure 3).

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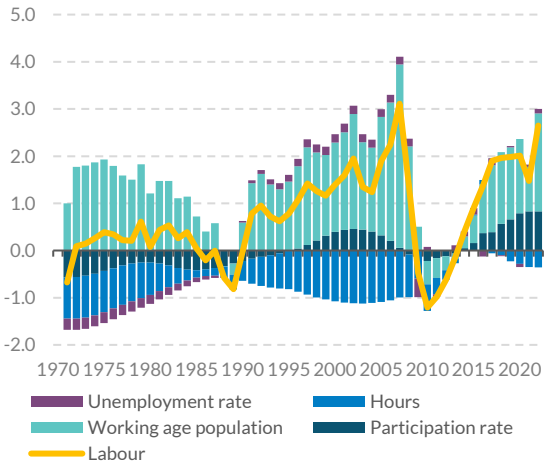
Potential GNI* Growth, 1971-2023

Figure 3
Per cent

Potential Labour Growth, 1971-2023

Figure 4
Per cent



3. Trends in demographics and migration flows have played a key role in shaping the labour input and, in turn, its contribution to output growth in Ireland. The contribution of labour became a significant driver of output growth from 1995 onwards, reflecting the impact of strong population growth and rising levels of net inward migration. Added to this, the effect of investment in higher education and an increasing number of school leavers and college graduates raised labour force participation (Figure 3). Since the 1990s, the increase in the participation rate, particularly the female rate, has made a positive contribution to labour input growth (Figure 4).

4. The contribution of TFP to economic growth increased significantly from the mid 1990s up to the early 2000s. This was a period of rapid export-led growth enabled by greater EU and global integration that saw belated convergence of living standards in Ireland with those in Europe (Honohan and Walsh, 2002). The contribution of TFP to overall growth fell significantly during the mid 2000s as the construction sector became a major driver of growth.

5. The downward trend in the length of the average work week has made a negative contribution to labour input growth over time, but the size of its negative impact has declined in recent years (Figure 4).

Summing up, increases in population driven by high levels of net inward migration, improved educational attainment and labour force participation and the economy's capacity to harness the benefits from enhanced global integration all played a prominent role in raising national output over the last 50 years. Although economic growth has been interrupted by multiple severe

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crises, the same factors have continued to play a central role in explaining Ireland's growth performance over the last 50 years.

3. Baseline Projection (2024 – 2050)

In this section, we use the production function approach described above to construct a baseline projection for GNI*, capital labour and TFP, from 2024 to 2050. The first three years of the projection are based on the forecasts presented in this *Quarterly Bulletin*.[44] For the remaining period from 2027 to 2050, we generate the projections for GNI* using the production function approach and assumptions on capital, labour and TFP. The assumptions underlying this long-run baseline projection are discussed in detail below.

3.1 Labour input assumption

The baseline projection for labour input is built up by projecting forward the individual components of the labour input formula presented in Section 2.2.

Working age population (N)

In the baseline, the working age population (15-64) is assumed to grow from 3.6 million in 2025 to almost 4.2 million in 2050 (Figure 5). This is based on the latest CSO population projections published in July 2024 that incorporate the results of Census 2022. In particular, we use the high net migration (M1) scenario, which includes an underlying assumption of net inward migration of 45,000 persons per annum from 2027.[45] In this scenario, growth in the working-age population is projected to gradually decline from an annual average of 2 per cent per annum in 2025 to zero by the mid-2040s (Figure 5).

[44] Over the 2024 to 2026 period, the production function is used to calculate the Solow residual.
[45] For more details about the CSO's population projections, visit: https://www.cso.ie/en/releasesandpublications/ep/p-plfp/populationandlabourforceprojections2023-2057/.

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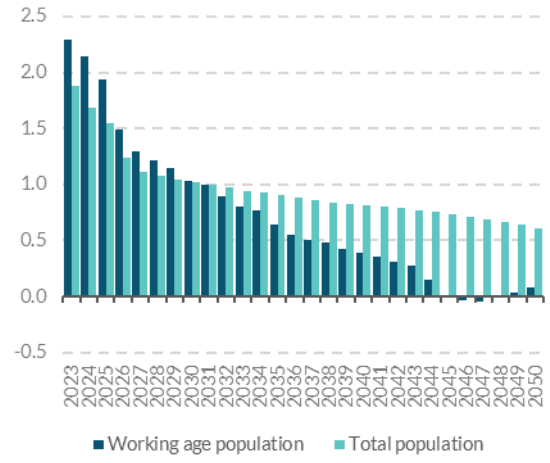
Projected Population Growth, 2023-2050

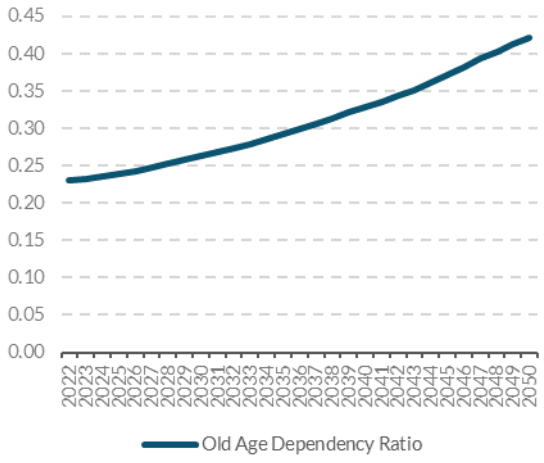
Figure 5
Per cent



Source: PEC19, M1 scenario, Central Statistics Office.

Old Age Dependency Ratio, 2023-2050

Figure 6
Population (65+) / population (15-64)



Source: PEC19, M1 scenario, Central Statistics Office.

Within the total population there are important changes occurring across the age distribution, which mean that the population of Ireland is set to age rapidly from the end of this decade (see Box A). While the working age population (those aged 15 to 64) is projected to increase from 3.5 million persons in 2024 to 4.1 million persons in 2050 – an increase of 17 per cent – the population over 65 years old is projected to more than double from 0.8 million persons in 2024 to 1.7 million persons in 2050. This means that the old age dependency ratio – the population aged over 65 as a proportion of the working-age population – is expected to increase from 24 per cent in 2024 to 42 per cent by 2050 (Figure 6). The slowdown in growth in the working age population means lower available labour supply and, as a result, a lower potential growth rate for the economy.

Average work week (H)

The average working week fell steadily from 44 hours per week in 1970 to 33 hours per week in 2010. For much of the subsequent decade up to 2019, the downward trend in the average working week stabilised. Since the pandemic, hours worked have declined further in a similar manner to that observed in many other European countries (Figure 4).[46] The future path of average hours worked will depend on a number of factors including the sectoral composition of the economy, changes in demographics and worker preferences. A cultural shift towards more flexible work hours could lead to a shorter average working

[46] See Keenan and McIndoe-Calder (2023) "Changes in Average Actual Hours Worked since the Pandemic" Quarterly Bulletin, Box F: QB1 2023

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week overall. For the purpose of this analysis, we make the simplifying assumption of holding the average working week constant at its 2023 level of 31.4 hours from 2027 to 2050 (Figure 8).

Labour force participation rate (P)

Over the period from 1970 to 1998, the labour force participation rate (LFPR) for persons aged 15-64 years declined from 77 to 69 per cent. The participation rate then increased during the period of rapid economic growth during the 2000s reaching 75 per cent in 2007. Following the collapse of the construction bubble in 2008, the participation rate fell to 71 per cent but then recovered gradually. In 2023, the LFPR stood at 76 per cent, up from 73 per cent in 2019 prior to the pandemic.

Underlying these changes in the aggregate LFPR, there are significant differences in the male and female participation rates. The male LFPR declined over time since the end of the construction boom in 2007. The female LFPR also declined in the aftermath of the financial crisis but by much less than the male rate and has increased sharply in recent years by around 6 percentage points. This has brought female labour force participation to its highest ever level in the latest data and has driven the rise in the overall participation rate.

Changes in legislation, educational attainment, social norms, worker preferences and the state of the economy have shaped how the participation rate has evolved over time.[47] Looking ahead, labour force participation could decline as the population ages although there are offsetting forces. Participation tends to be at its highest for those of prime working age (the cohort aged 25-54), lower among under 25s (due to participation in education) and in low single digits for those aged over 75. As the growth in the prime age population slows with ageing, this effect will weigh on participation. A factor pushing in the opposite direction is the evidence from the data showing increases over time in age-specific participation for older workers with high levels of educational attainment.

To project out to 2050, we use CSO labour force assumptions under the M1 scenario out to 2037 for each age cohort. Beyond this point, we assume gradual and continued increases in the LFPR for older age cohorts due to slow-moving birth-year effects. For instance, females born in 1990 have higher educational attainment than females born in 1970 and have a higher attachment to the labour force for a longer period through their careers. Aggregating up the individual age group participation rates based on this

[47] See Boyd et al (2022) "Labour market recovery after a pandemic" for further details on female employment growth in recent years.

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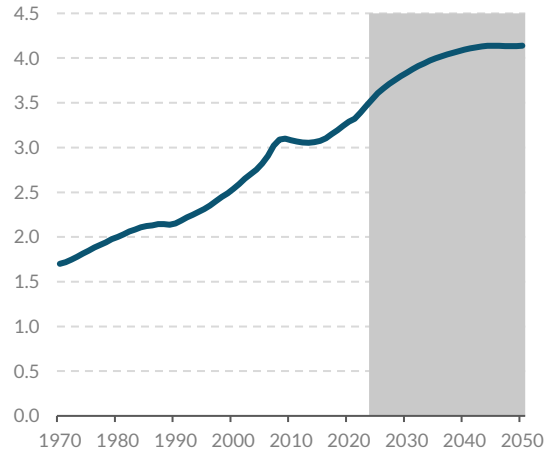
approach, the overall LFPR is assumed to increase steadily from 77.1 per cent in 2037 to 78.3 per cent in 2050 (Figure 9). Combining the assumptions on the working age population and participation implies that labour force and employment growth would slow from about 1.3 per cent in 2027 to close to zero in 2050 (Figure 11 and 12).[48]

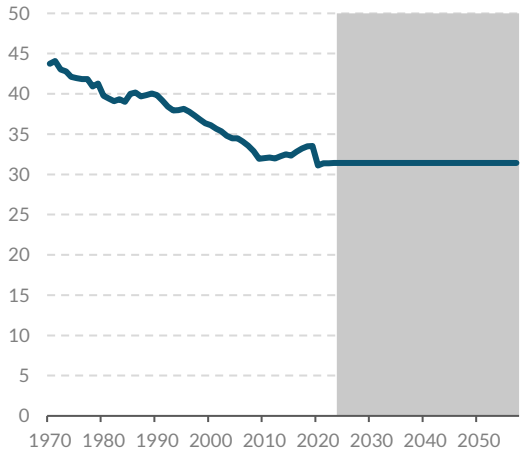
Working age population (15-64)

Figure 7
Persons (million)



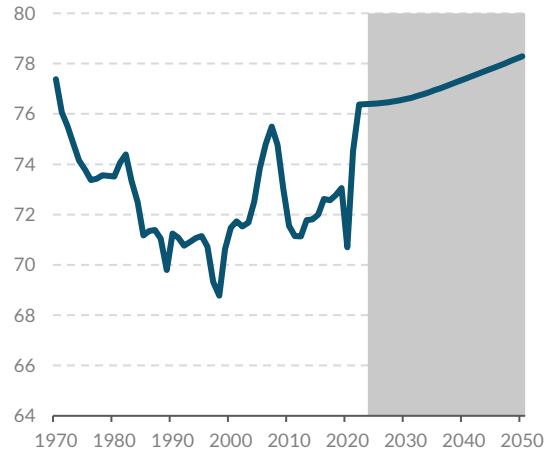
Average Weekly Hours Worked

Figure 8
Average hours per week



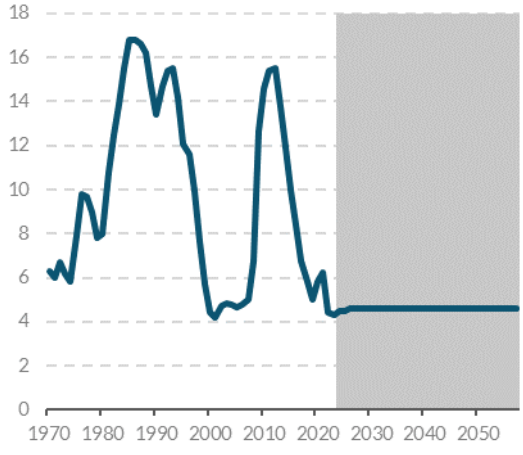
Labour Force Participation Rate

Figure 9
Per cent of working age population (15-64)



Unemployment Rate

Figure 10
Per cent of labour force



[48] In growth accounting exercises, the unemployment rate is typically assumed to converge to its long-run equilibrium or natural rate. Estimating this rate for Ireland is complicated due to the openness of the labour market through migration. For example, during the construction boom in the 2000s, there was a large influx of workers from abroad but this reversed following the financial crisis with successive years of net outward migration from 2009. The highly elastic nature of labour supply makes it difficult to estimate a stable long-run equilibrium unemployment rate. In this analysis, the unemployment rate is assumed to stay within the range 4.5 to 5 per cent from 2027 to 2050.

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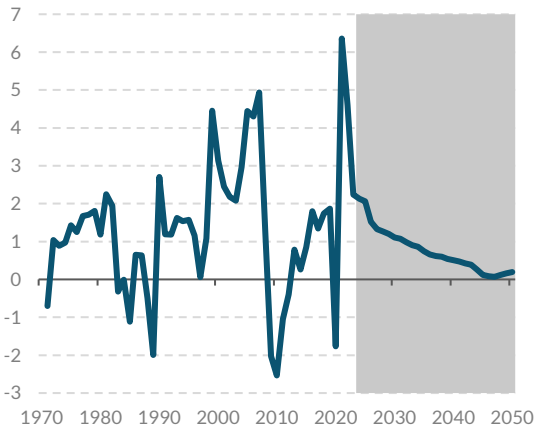
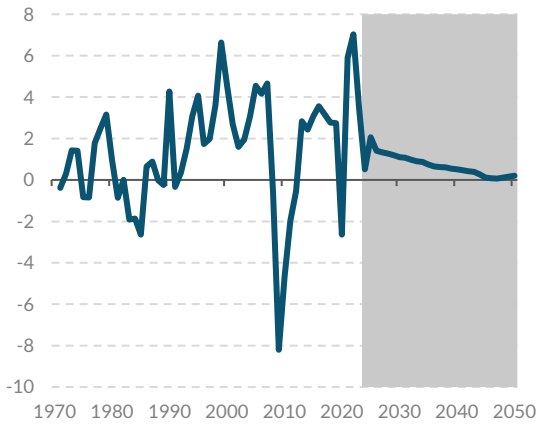
Labour Force Growth

Figure 11
Per cent



Employment Growth

Figure 12
Per cent



3.2 Total factor productivity assumption

TFP has been a key driver of growth in the Irish economy over the long-term (Table 1). As already noted, TFP is not directly observable and relies on an indirect measure called the Solow residual. Forming a baseline assumption for the value of this unobserved variable into the future is therefore a non-trivial exercise. Existing studies for Ireland (Fiscal Council (2020), Department of Finance (2023) and Egan and McQuinn (2024)) take the approach of assuming TFP growth remains fixed at a particular level over the forecast horizon. This level is typically based on recent observed TFP growth or assumed convergence to a particular TFP estimate. To inform the baseline projection in this *Article*, we analyse past trends in Irish TFP growth as well as the TFP growth outlook for Ireland's main trading partners; namely, the US and euro area.

Figure 13 shows that TFP growth for Ireland is a volatile series. Over the sample from 1970 to 2023, TFP grew on average by 2.3 per cent per annum (1.4 percentage point contribution to growth). TFP grew rapidly in the second half of the 1990s, peaking during this period of rapid growth that reflected Ireland's "catch-up" with other advanced economies. TFP growth slowed thereafter and it would be optimistic to assume that growth rates similar to the late 1990s could be achieved again over the projection period. Since 2000, Ireland's TFP growth has measured a more modest 1.2 per cent on average (0.6 percentage point contribution to growth).

Figure 14 shows the average TFP growth rate for a selection of OECD countries over the 2012-2022 period using the Long Term Productivity (BCL) database. Over this decade, TFP growth for the euro area and UK has lagged behind the US. Over the same period, estimated TFP growth in Ireland has

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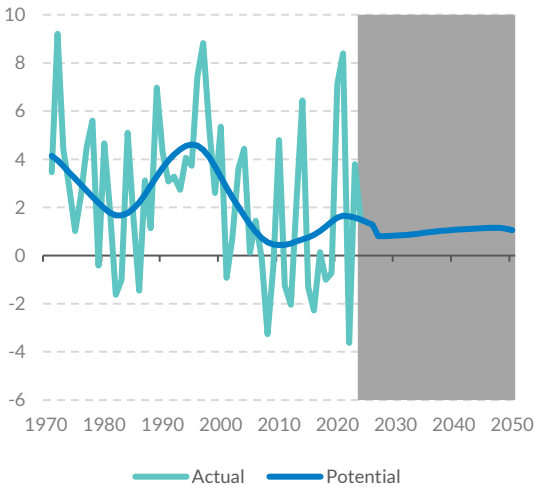
been ahead of our main trading partners, including the US. In the long-run, it is expected that aggregate TFP growth for Ireland would be bound by the TFP growth rate of a frontier economy such as the US. The CBO (2024) has projected US TFP to grow by 1.1 per cent over the long-term out to 2050 while McQuinn and Whelan (2016) have projected a much weaker outlook for euro area, with TFP projected to grow by 0.2 per cent over the period 2014 to 2060.[49]

TFP Growth, Ireland, 1970 – 2050

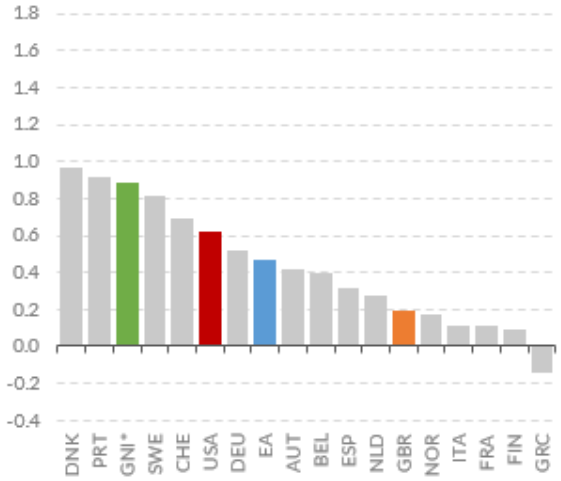
Figure 13
Per cent



Note: Green line shows the annual growth in TFP (outturn and projection). Blue line shows smoothed TFP growth derived from a HP filter applied to the raw series.

TFP Growth, OECD countries, 2012 – 2022

Figure 14
Per cent



Source: Bergeaud, A., Cette, G. and Lecat, R. (2016) and authors' calculations.

Taking into account this historical and cross-country information, our baseline projection for TFP assumes a growth rate (and contribution) of 0.6 per cent per annum from 2027 to 2050. This is equivalent to the average TFP growth rate for Ireland measured over the past 20 years. This projected TFP growth rate lies mid way between the projected estimates for the US and euro area. For comparison with other long-term growth studies for Ireland, Fiscal Council (2020) suggests that Irish TFP growth is somewhere between the range of 0.2 and 1 per cent while Egan and McQuinn (2024) assume a long-term TFP growth rate of 0.6 per cent. The Department of Finance (2023) assume that TFP would gradually decline from 0.8 per cent growth to 0.4 by 2050.

[49] A more recent paper by ECB (2021) estimates average TFP growth for frontier and non-frontier firms in the euro area of 3.4 and 0.6 per cent, respectively, since the GFC.

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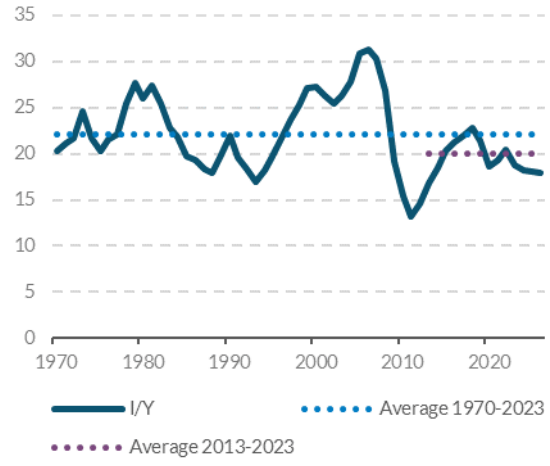
3.3 Capital input assumption

Our baseline projection for the capital stock involves making an assumption about the trajectory of the investment-to-output ratio.[50] Headline investment in Ireland is influenced by the global activities of MNEs, meaning that it is a poor indicator of investment in the domestic economy. To address this, FitzGerald and McQuinn (2024) estimate an underlying investment share for Ireland by relating modified investment to net national product instead of using total investment to headline GDP.[51] They find that the average ratio for Ireland over the 1995 to 2023 period was 25 per cent, which compares to 26 per cent for the rest of the EU. Egan and McQuinn (2024) subsequently use net national product and modified investment in their growth accounting exercise.

Consistent with the data in our production function framework, the investment share that we use is calculated as the ratio of modified investment to GNI* and is presented in Figure 15. In 2024, the investment share is estimated to be 17.9 per cent, which compares to the sample average of 22 per cent over the period from 1970 to 2023. Our baseline projection of the capital stock is based on the investment-to-output ratio gradually increasing from its current level of 17.9 per cent in 2024 to 20 per cent by 2050. This assumption reflects the more recent trend observed since the Global Financial Crisis (i.e. post-2012) and is consistent with an annual growth rate of 2.2 per cent for modified investment from 2027 to 2050 (Figure 16).

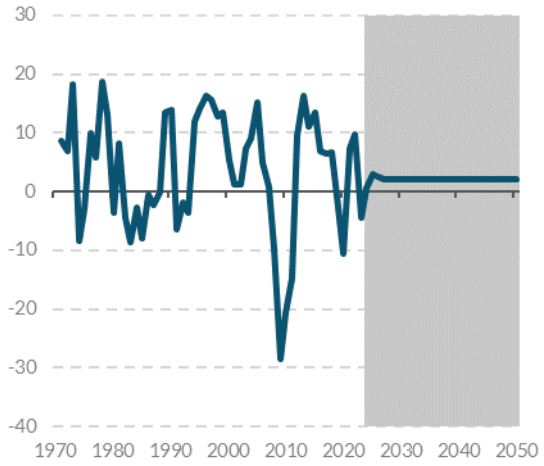
Investment to Output Ratio

Figure 15
Per cent of GNI*



Modified Investment Growth

Figure 16
Per cent



[50] The projection method for the capital input in this *Article* is similar to other recent papers such as Egan and McQuinn (2024) and Department of Finance (2023).
[51] Box D: What is the investment share of output in the Irish economy? (FitzGerald and McQuinn, 2024)

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For comparison, Egan and McQuinn (2024) examine two investment scenarios. In the first, the investment rate rises gradually from 20 percent in 2023 to 25 per cent in 2030 and remains at that level out to 2040. In the second, the rate rises more sharply reaching 30 per cent by 2033. Department of Finance (2023) assume a baseline investment share of 23 per cent based on a historical average from 1995 to 2019.

3.4 Baseline projection – contributions to growth

To generate our baseline projection for GNI*, we use the assumptions described above for TFP, labour and capital as inputs into the production function. A summary of our baseline projection for GNI* growth is shown in Table 2. GNI* growth is estimated to slow from an average of 2.3 per cent from 2024-30 to 1.7 per cent per annum in the 2030s and 1.4 per cent in the decade up to 2050. The main drivers of the projection are TFP and capital with approximately equal contributions to overall growth. The labour contribution – while relatively strong in the short run – representing 36 per cent of GNI* growth, is expected to decline in the long run making only a marginal contribution to growth by 2040.

Table 2: Baseline decomposition of potential GNI* growth

% annual average growth rates

Period	GNI*	TFP	Capital	Labour
2024 – 2030	2.3	0.9	0.6	0.8
2031 – 2040	1.7	0.6	0.7	0.5
2041 – 2050	1.4	0.6	0.7	0.2
2024 - 2050	**1.8**	**0.7**	**0.7**	**0.4**

Source: authors' calculations.

The full dynamics of the baseline projection are shown in Figure 17. The chart shows that the TFP contribution is projected to be stable over time and that the capital contribution increases slightly as the investment-to-output ratio gradually rises towards its historic average. The major offsetting factor is the gradual reduction in the labour contribution to growth. This declines out to 2050 as the growth of the working age population slows down, and then turns slightly negative from 2046.

It is useful to examine of the implications of the projections for overall economic growth for welfare, in this case proxied by GNI* per head, and to

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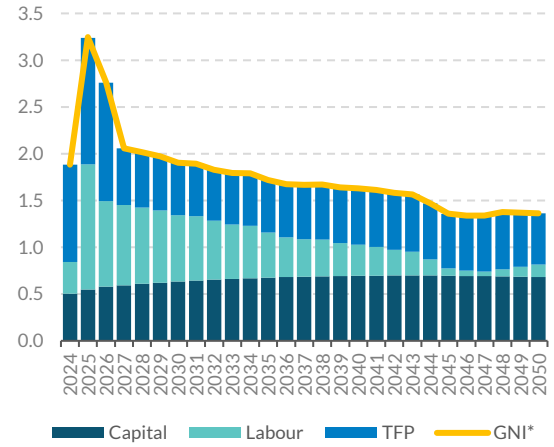
compare this to its long-run trend.[52] Taking GNI* per head as a measure of living standards, this is projected to grow broadly in line with its long-run trend out to 2030, but to fall below the trend estimate thereafter (Figure 18).

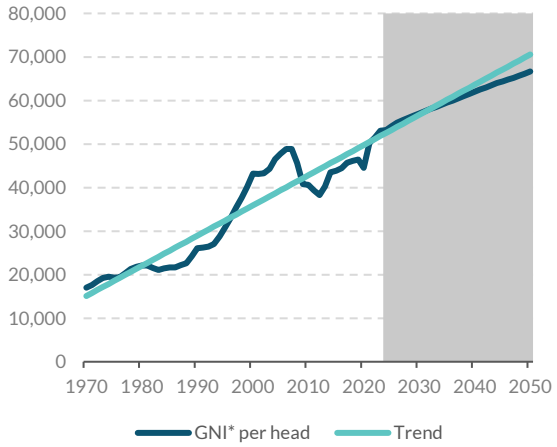
Baseline Projection of GNI* Growth 2024-2050

Figure 17
Per cent



Baseline Projection of GNI* per head 1970-2050

Figure 18
Euro million, (constant prices 2022)



Comparison with other recent long-term projections for Ireland

The baseline projections in this *Article* can be compared to the results from other similar exercises for Ireland over a common projection period for which the results are available, i.e. 2031-2050 (Table 3). The long-run potential growth estimate for this period of 1.6 is slightly above projections by Fiscal Council (2020), Department of Finance (2023), and Egan and McQuinn (2024). All of these recent estimates, including this *Article*, imply that the growth rate of the economy is projected to more than halve by 2050 from its estimated annual average outturn from 1970-2023.

[52] GNI* per head is a measure of welfare consistent with our framework. See Honohan (2021) for an analysis of aggregate welfare measures for Ireland. The long-run trend is estimated over the period 1970-2023.

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Table 3: Summary of Recent Long-Term Growth Projections for Ireland

% annual average growth rates

	Period	Real GNI*	TFP	Capital	Labour
Fiscal Council (2020)	2031-2050	1.0	0.4	0.4	0.2
Department of Finance (2023)	2031-2050	1.3	0.4	0.7	0.2
Egan and McQuinn (2024) *	2031-2050	1.3	0.6	n.a.	n.a.
This Signed Article	**2031-2050**	**1.6**	**0.6**	**0.7**	**0.3**

Note: Egan and McQuinn (2024) use Net National Product.

4. Sensitivity Analysis informed by Medium to Long-Term Transitions

Four key structural transitions already underway will shape the future long-term growth prospects of the Irish economy. These are:

1. Demographic change and population ageing
2. Geoeconomic fragmentation
3. Technological change and the adoption of digitalisation
4. Climate change and the green transition

Each of these transitions will affect the long-term growth potential of the economy through their impact on the labour market, capital and TFP. In this section, we discuss the challenges posed by these four key transitions. We consider sensitivities around the baseline projection informed by the possible transmission channels of these changes to the economy.

4.1 Population growth, migration and retirement

The baseline scenario takes the CSO's high-migration population projection, which envisages a rise in the population of 1.4 million persons (26 per cent) by 2050. Migration is the most uncertain and volatile component of the change in the population. This is evidenced by the experience of Ireland over the last 50 years where prolonged periods of net emigration have been followed by years of sustained and significant net immigration. These large swings in migration flows have been influenced by the relative performance of the Irish economy along with global factors such as, for example, the start of the war in Ukraine. Future migration flows are difficult to forecast and will continue to be influenced by factors such as the performance of the Irish economy in a global context, geopolitical events and climate change.

To illustrate the sensitivity of economic growth to the projected change in the population, we investigate the impact of an alternative assumption involving lower net inward migration than in the baseline. Our baseline assumption is net inward migration of 45,000 per year from 2027 to 2050 corresponding to the CSO's M1 migration scenario. The alternative assumption is based on the

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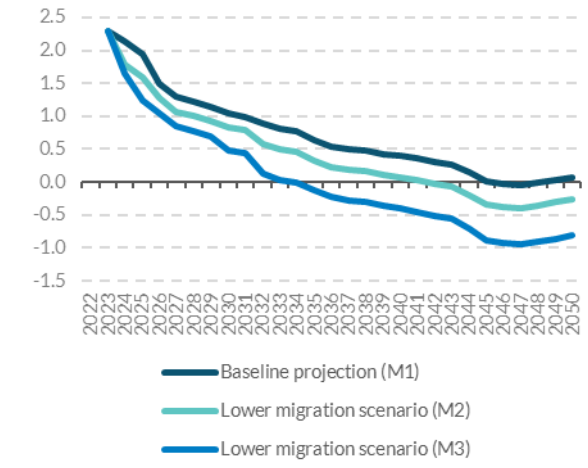
CSO's M3 migration scenario, which assumes net inward migration of 10,000 per year from 2032.[53]

In the baseline scenario, growth in the working age population comes to a halt by the mid-2040s. In the alternative low migration case, this occurs much earlier in 2034 (Figure 19). This demographic effect would reduce the potential labour input and long-term growth of the economy. There is a corresponding rise in the old-age dependency ratio under the alternative M3 scenario, which would exert additional pressure on the government's fiscal position (Figure 20). The CSO also produces an intermediate case with net inward migration of 30,000 per year from 2032 and we include this for comparison (Figures 19 and 20).

Population Growth (15-64), 2023-2050

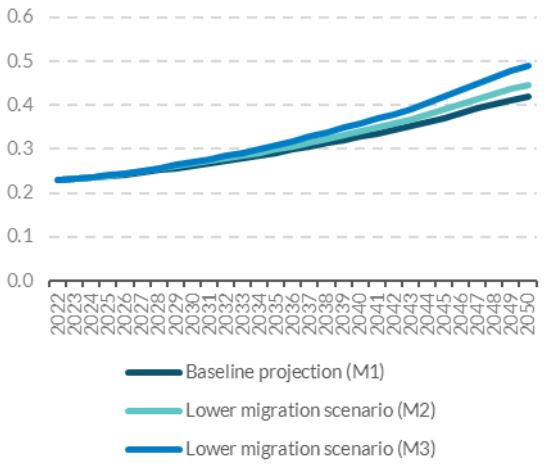
Figure 19
Per cent



Source: PEC19, M1 scenario, Central Statistics Office.

Old Age Dependency Ratio, 2023-2050

Figure 20
Population (65+) / population (15-64)



Source: PEC19, M1 scenario, Central Statistics Office.

Table 4 shows that under the baseline scenario, the contribution of labour gradually declines from 0.8 to 0.2 per cent over the long-run with GNI* growth converging to 1.4 per cent. Under the lower net inward migration assumption (M3), the labour contribution turns negative in the long-run from the early 2030s. This in turn results in lower GNI* growth over the projection horizon. From 3031 to 2040, GNI* growth falls to 1.1 per cent with low migration compared to baseline growth of 1.7 per cent (Table 4).

[53] From 2027 to 2032, net migration is 20,000 per annum in the *low migration* scenario. For a detailed description of the CSO's migration assumptions, see: https://www.cso.ie/en/releasesandpublications/ep/p-plfp/populationandlabourforceprojections2023-2057/migrationassumptions/.

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Table 4: Sensitivity Analysis: GNI* growth and contribution of labour

Period	Baseline Projection (M1)			Lower Migration (M3)	
	GNI*	Labour		GNI*	Labour
2024 – 2030	2.3	0.8		1.7	0.4
2031 – 2040	1.7	0.5		1.1	0.0
2041 - 2050	1.4	0.2		0.7	-0.4

Source: authors' calculations.
Note: TFP and capital are unchanged from the baseline projection.

Box A: Demographic risks to the Irish labour market

Ireland, like many other advanced economies, is facing the challenges associated with an ageing labour force. This demographic change could potentially reduce output levels as a greater number of workers flow into retirement than are replaced.[54] The loss of key skills can be disruptive to sectors and act to increase wage pressures as labour supply is diminished. The fiscal cost of an ageing population would likely place a strain on government finances as declining birth rates and rising life expectancy cause the number of pensioners to increase relative to workers. This *Box* identifies changes in the age profile of the labour market in Ireland with a focus on retirement trends and highlights potential risks to future labour supply growth.

The average age of the labour force in Ireland has increased from 36 years in 1998 to 42 years in 2024 (Figure 1). The trend is higher again for Irish workers with net inward migration of younger workers helping to slow down the rise in the average age of the overall workforce. Net inward migration has been particularly important for fuelling the expansion in the labour force since the pandemic. Non-Irish citizens have accounted for 42 per cent of the increase in the labour force since 2019 and now represent 20 per cent of the overall labour force. Using LFS panel microdata, we estimate that the average age at which an employee transitions to retirement has shown an upward trend to 64.8 years in 2024 up from 61.7 years in 1998 (Figure 2). We limit this analysis to persons with employee status only as retirement age may be set out in the contract of employment, while comparatively there is no set retirement age readily available for self-employed persons.[55,56.] There are

[54] Wider risks are outlined in greater detail in ECB analysis on macroeconomic and fiscal impact of population ageing
[55] The majority of self-employed workers aged 60 years or over are employed in the agriculture sector. The retirement age in this sector is higher than other for a number of reasons such as the nature of work and difficulties in changing ownership of a farm business as it is often linked to the family home.
[56] Mandatory retirement ages for set for certain occupations in the public sector, some of which are below 65 years, which contributes to the average transition age being lower than the state pension age.

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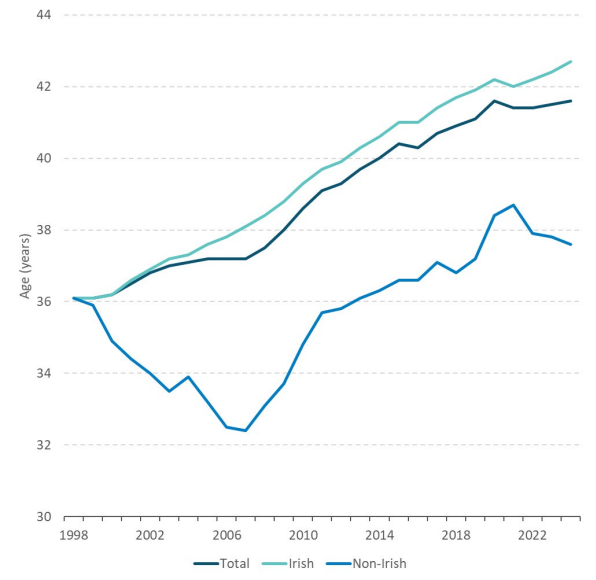
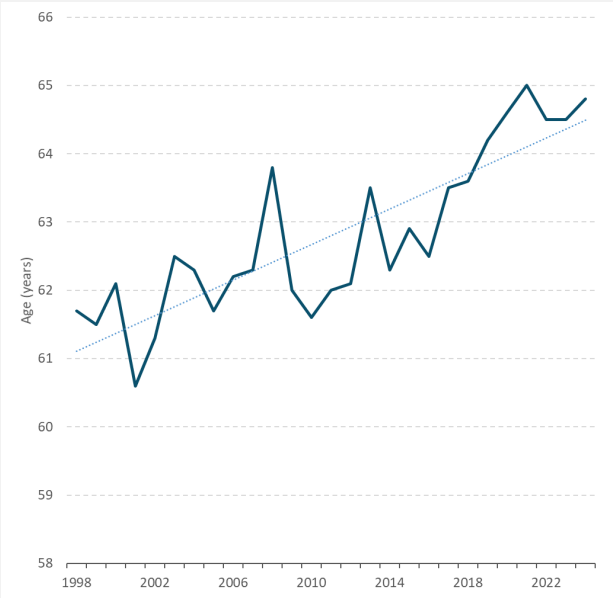
some fluctuations in the trend due to policy measures such as the Croke Park Agreement and increases in the state pension age to 66 years in 2014.[57] At the other end of the age distribution, the average age at which persons transition from education to employee status at the start of their career has increased from 19 years to 21 years. This is due in part to increased educational attainment and changes in the sectoral composition of the workforce.[58]

Figure 1: Average age of labour force by citizenship status



Source: CSO; LFS

Figure 2: Average retirement age for employees



Source: CSO; LFS

Note: LFS respondents are treated as retired when both ILO status is inactive and principal economic status is retired

These ageing trends are evident in each economic sector with average retirement ages rising across all NACE sectors over time.[59] The share of employees aged 60 years or over in recent years is notably higher than the pre-2003 period, increasing from 3 per cent to 7.3 per cent (Figure 3).[60] This places Ireland amongst the middle of the euro area distribution and below the average (9.1 per cent). An ageing society places additional pressure on healthcare, which aside from increased funding will require additional workers to provide adequate services with 9.5 per cent of employees already aged 60 years or over. Since 2020, the health sector has accounted for 1 in every 3 employment permits granted which points to the continued reliance on net inward migration to fill vacancies, many of which appear on the critical skills occupations list. Constraints may also appear in the transport and

[57] Under the Croke Park Agreement (2010-2014) a voluntary early retirement scheme was proposed to public sector staff. See Public Service Agreement for further details
[58] We define labour market entry if a person is ILO inactive with principal economic status (PES) as a student in time t-1, which then changes to employment status in both ILO and PES terms in time t.
[59] Average retirement ages between 2019-2023 ranges from 70 years in Agri to 63.3 years in ICT.
[60] The figure for agriculture in the post-2019 period is 36.4 per cent when including self-employed workers.

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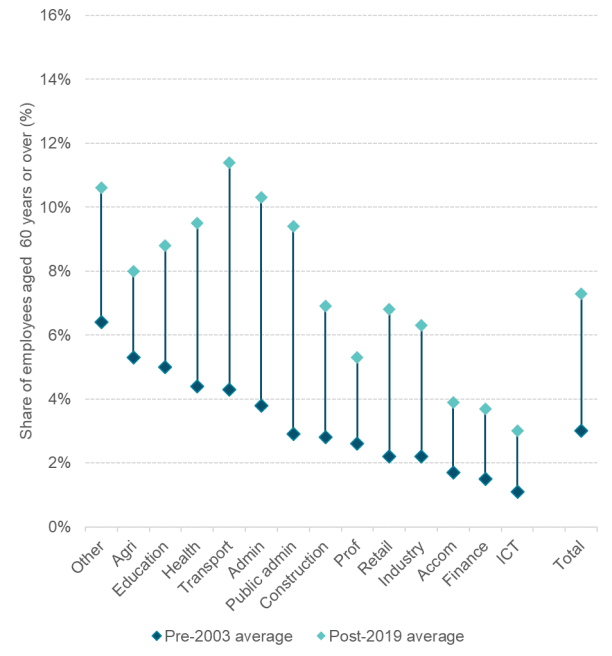
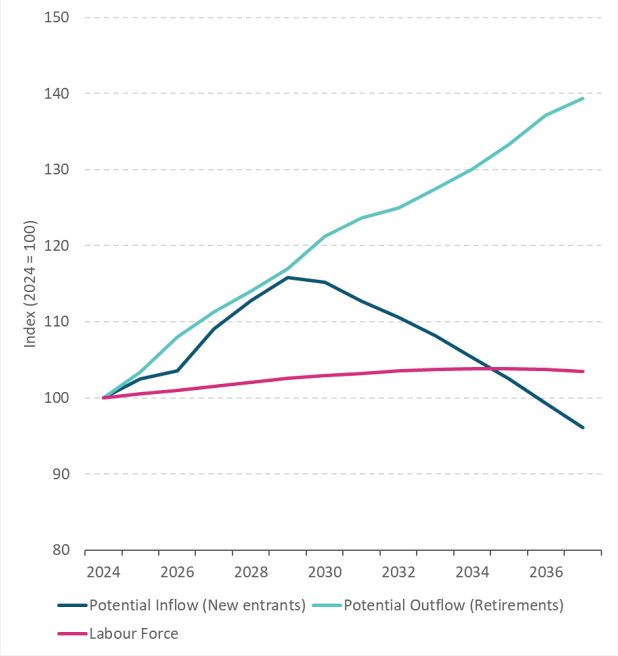
construction sectors over the coming years, which are amongst the sectors with the largest increases in older age cohorts.

Figure 3: Share of employees aged 60 years or over by NACE sector



Source: CSO; LFS

Figure 4: Projected path of domestic labour force inflows and outflows



Source: CSO and author's calculations

Note: Potential inflow is the sum of all persons aged 21 years or under weighted by expected LFPR. Potential outflow is the sum of all persons aged 65 years or over weighted by expected LFPR.

Within the CSO population and labour force projections, the share of persons in the overall labour force aged 60 years or over is expected to increase from 10.1 per cent in 2022 to between 12.9 per cent and 13.7 per cent in 2037 based on various scenarios for net migration. In order to assess the effects of ageing on the domestic labour force in the coming years in the absence of further net migration, we calculate the average participation rate for each age between 15-74 years based on 2024 values. These participation rates are then applied to the population by single year of age from CSO annual population estimates to calculate an expected annual labour force out to 2037 assuming no further policy changes to the state pension age (Figure 4). In the absence of net inward migration, the labour force growth would average just 0.5 per cent out to 2030 despite the potential inflow of younger cohorts peaking in 2029. Labour force growth would then turn negative from 2035 onwards with lower labour supply levels negatively impacting sectoral activity. This highlights the importance of continued net inward migration to increasing labour supply in Ireland.

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Retirement Age Impact on the Labour Force and Growth

Under the baseline projection, the weighted average age of the labour force would continue to increase out to 2050 beyond the current profile outlined in Box A. The annual growth rate in the working age population would converge toward zero with a subsequent negative effect on economic growth through the labour input channel. One way to mitigate these effects is to increase the pension age, which has risen gradually over time (Box A). In Ireland, the state pension aged was increased from 65 years to 66 years in 2014 as part of broader pension reform efforts aimed at addressing long-term fiscal sustainability challenges posed by demographic changes. The pension age has increased in many other European countries to address similar challenges with further increases proposed in some countries in the coming decades in line with changes in life expectancy.

The Pension Commission (2021) proposed a very gradual increase in the pension age by three months each year from 2028 to reach 67 in 2031.[61] This rate of increase would then slow to three months every two years from 2033 to reach 68 in 2039. The gradual implementation was envisaged to reduce the impact of the pension age increase on upcoming pensioners. To examine the sensitivity of the baseline growth outlook to a gradual assumed increase in the length of working lives, we estimate the impact on the labour force of increasing the retirement age to 70 by 2042, guided broadly by the parameters of the Pension Commission recommendations.

To construct this projection, we use the CSO labour force assumptions as in the baseline projection out to 2037. This approach implements the same changes in LFPR driven by birth year and age cohort effects as the baseline scenario. Beyond this point, we gradually increase the LFPR for older age cohorts in line with changes in the retirement age. For instance, the LFPR for persons aged 55-59 years is gradually increased to match the participation rate for persons aged 50-54 years.[62] As the retirement age is pushed out to 70 years, the definitions of both the labour force and the working age population are expanded to 15-69 years under for this sensitivity analysis.

[61] See Chapter 11 of "Report of the Commission on Pensions" (2021) for further details.
[62] The LFPR for persons aged 60-64 years in 2024 is gradually increased out to 2057 to match participation for those currently aged 55-59 years. The same is done to align increase persons aged 65-69 years to match current persons aged 60-64 years.

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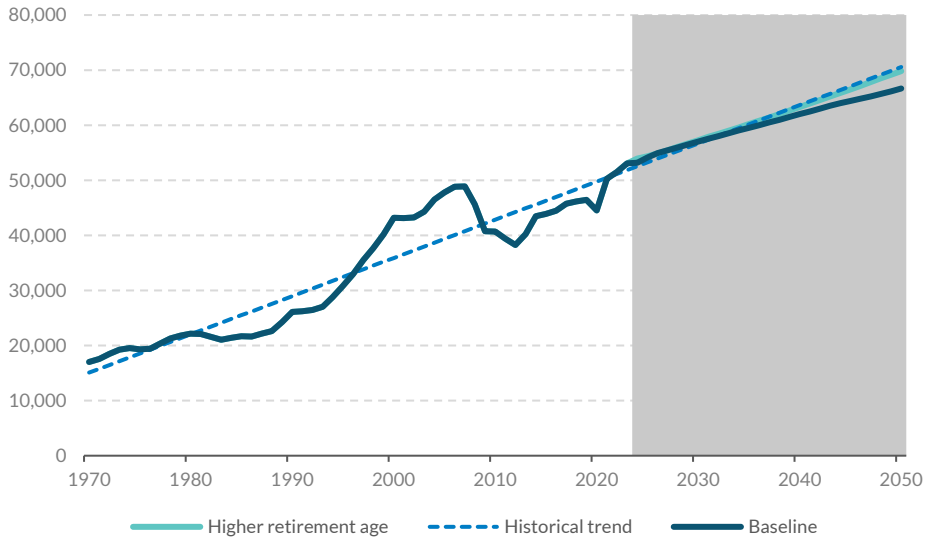
Table 5: GNI* growth and contributions

Period	Baseline Projection (M1)		With Retirement Age Increase	
	GNI*	Labour	GNI*	Labour
2024 – 2030	2.3	0.8	2.3	1.1
2031 – 2040	1.7	0.5	1.9	0.6
2041 – 2050	1.4	0.2	1.7	0.3

GNI* per head Baseline and Higher Retirement Age Sensitivity Analysis, 1970-2050

Figure 21
Euro million, constant prices 2022



These combined changes would see the expanded labour force reach 3.5 million persons by 2050 compared to 3.25 in the baseline. The effect of an increased retirement age yields a higher contribution from labour relative to the baseline of up to 0.3 percentage points (Table 5). The higher contribution from labour would raise the potential growth rate of the economy to 1.7 per cent from 2040-2050, compared to 1.4 per cent in the baseline. This faster pace of growth would sustain GNI* per head broadly in line with its long-run trend out to 2050 (Figure 21).

4.2 Geoeconomic fragmentation and improving economic resilience

Geoeconomic fragmentation refers to a policy-driven shift away from global economic integration towards more inward-looking domestic policies, such as the re-shoring of manufacturing industries and imposing tariffs on imports. This emerging political trend poses a particular risk to the Irish economy, which is a small open economy dependent on the benefits of globalisation. According

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to Aiyar et al. (2023), the cost of geoeconomic fragmentation on global output could range from 0.2 per cent to up to 0.7 per cent of GDP. These estimates can reach up to 12 per cent of GDP for some countries depending on the severity of the scenario.

Geoeconomic fragmentation would represent an external shock to the Irish economy that could manifest through various effects. For example, foreign companies currently based in Ireland could decide to limit the extent of new investment taking place in Ireland or even to reshore some of their activities back to their home country. These risks could affect the potential growth of the Irish economy through each of the inputs to the production function. The most direct channel would be through lower investment, but there would also be a loss in terms of productivity as foreign MNEs typically provide high value-added jobs and can have positive technology spillovers to the rest of the economy. There would also be an adverse effect on the public finances from lower tax receipts. As discussed elsewhere in this *Bulletin*, the introduction of tariffs would reduce trade flows and could eventually lower investment and productivity with negative implications for long-run growth.

In a more benign scenario, Ireland could stand to benefit in some respects, for example if our main trading partners were to adopt friend-shoring policies. Under this kind of scenario, US and European companies could potentially move some production to Ireland. However, in the current context in which the Irish economy is operating at or above capacity there could be costs arising from capacity constraints in the labour, utilities and housing markets. Price pressures through any of these channels would work towards eroding the competitiveness of the Irish economy. Overall, depending on the precise nature and depth of fragmentation, it could have large economic ramifications for the global and Irish economies in the years and decades ahead.

To bolster the resilience of the economy and boost economic growth in Europe in the face of risks from geoeconomic fragmentation and other structural changes, the Draghi Report recommended an increase in investment across the EU, which has fallen to low levels since the financial crisis both in a historical context and in comparison to the US. For this sensitivity analysis, we consider an alternative assumption with a higher rate of investment in Ireland than assumed in the baseline to illustrate the impact on overall long-term growth. This more optimistic investment assumption could arise through a mix of both public and private investment. We assume that investment grows at a higher rate of 3.2 per cent per annum compared to 2.2 per cent in the baseline. Under this assumption, the investment-to-output ratio increases to 25 per cent by 2050 with an average of 21 per cent over the projection period. This compares

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to an average investment-to-GNI* ratio of 18.5 per cent in the baseline. Table 6 for shows that this additional investment would lead to a larger capital contribution to growth and a higher long-term growth rate for GNI*. From 2030, the additional investment would boost growth by around 0.3 percentage points per annum compared to the baseline scenario. The model estimates are linear such that a decline in investment of 1 percentage point would reduce baseline growth by a similar amount.

Table 6: Baseline and Higher Investment Sensitivity Analysis, GNI* growth and contribution of capital

Period	Baseline Projection (M1)			With Higher Investment	
	GNI*	Capital		GNI*	Capital
2024 – 2030	2.3	0.6		2.4	0.6
2031 – 2040	1.7	0.7		1.9	0.8
2041 - 2050	1.4	0.7		1.7	0.9

Source: authors' calculations.

Note: TFP and labour are unchanged from the baseline projection.

4.3 Technological change, digitalisation, and AI

Technological change and digital technologies are constantly influencing society and the economy. The 1990s gave rise to the internet which fundamentally changed how we communicate and do business. Today, the current wave of transformative technologies includes, for example, cloud computing, high-performance computing, artificial intelligence, machine learning and big data. These technologies make it feasible to automate both routine and more complex tasks and to operate more efficiently. However, the digital transformation poses challenges as well as opportunities making it difficult to determine what the overall impact on the economy will look like. On the one hand, digitalisation promises to increase productivity and growth, create jobs, and even lead to completely new sectors. At the same time, the digital transformation is expected to include disruptive processes too, threatening to replace humans in some jobs while complementing them in others.

According to Cazzaniga et al. (2024), about 40 per cent of global employment is exposed to AI, with this estimate rising to 60 per cent for advanced economies due to their prevalence of cognitive-task-orientated jobs. Exposure to AI can, of course, can have a positive impact (e.g. productivity gains) or a negative impact (e.g. job loss). Indices aimed at measuring "AI complementarity

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potential" suggest that about half of the global employment exposed to AI could be negatively affected while the remaining 50 per cent could experience gains in productivity through the adoption of AI. Estimating the overall impact of AI and related technologies on the economy is a difficult exercise and will depend on modelling assumptions, but research by IMF (2024) suggests that the adoption of AI could have a positive medium-run impact on global economic growth in the range of 0.2 to 0.7 percentage points.

Table 7: Baseline and Higher TFP Sensitivity Analysis, GNI* growth and contribution of labour

Period	Baseline Projection			With Higher TFP	
	GNI*	TFP		GNI*	TFP
2024 – 2030	2.3	0.9		2.4	1.0
2031 – 2040	1.7	0.6		2.2	1.0
2041 - 2050	1.4	0.6		1.9	1.0

Source: authors' calculations.
Note: Labour and capital are unchanged from the baseline projection.

In Ireland, the presence of well-established ICT manufacturing and services sectors suggests that there may be opportunities for the economy to harness the benefits of enhanced digitalisation, but realising these gains will not be clear-cut. Older workers, those with lower levels of educational attainment and reduced job mobility are likely to face challenges in response to the changing nature of work triggered by digitalisation.

Motivated by the potential positive effects of the adoption of AI and digitalisation, we consider an alternative assumption where TFP grows at a higher rate than assumed in our baseline. Under this alternative assumption, TFP growth is assumed to grow at 1 per cent compared to 0.6 per cent in the baseline. This would bring TFP growth closer to the annual average observed for Ireland since 2012 and in line with the long-term projection for the US. Under this stylistic alternative assumption and more optimistic TFP growth path, the economy would grow at closer to 2 per cent in the long-run, compared to 1.4 per cent in the baseline (Table 7).

4.4 Climate change and the green transition

Climate change is a major structural issue that is already affecting society and the economy. Together with the transition towards a net-zero economy, there are significant implications for the macroeconomy that are complex and uncertain. The economic analysis of the potential impact of climate change

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focuses on physical and transition risks. Physical impacts of climate change can disrupt economic growth through damage to infrastructure and the capital stock, reduced labour productivity, slower human capital accumulation and diminished human health. Physical impacts are likely to lead to higher economic uncertainty and greater inequality (Lopez et al. (2022)), and raise inflation (Kotz et al. (2023)). The ultimate effects of physical risks on the capital stock and hence potential growth are highly uncertain and among other factors, will depend on the severity of the effects and progress with implementation of climate adaptation measures over the coming years.

Transition risks refer to the potential effects on the macro economy that may arise as it decarbonises and moves towards a net zero position. To mitigate against physical impacts, the transition to a net-zero economy will require increased investment and a reallocation of labour, which could reduce inflation and boost growth. For example, higher investment in renewables should reduce energy prices over the long run as the economy becomes more electrified and the share of renewables in electricity generation increases. However, a delayed transition could lead to more stringent policies being adopted in the future, leading to greater disruptions to the labour market and ultimately raising the cost of transition. This could lead to stranded assets, where there is a sudden/sharp fall in the value of the existing capital stock in 'brown' sectors.

The green transition may reduce productivity growth in the short term, as increased production costs (e.g. due to carbon taxes) coincide with a requirement to invest in technologies that may not increase firms' productive capacity relative to the more carbon intensive methods currently in use. The effect will likely vary across different sectors of the economy. There is evidence that the best-performing firms actually increase their productivity when faced with new environmental regulations, especially when they have access to credit and operate in countries where environmental regulations have existed for some time (Pisani-Ferry and Mahmouz (2023)). Low-performing firms are more likely to struggle to adapt to increased input costs and an accelerated depreciation of their existing capital. In the long-run, economy wide productivity could return to or surpass its pre-transition growth rate so that the economic benefit of climate adaption outweighs the costs (Alestra *et al.* (2020)). There is some evidence of positive productivity spillovers e.g. Dechezlepretre et al (2017) find that knowledge spillovers, as measured by patent citations, are significantly higher for 'green' compared to 'brown' technologies. They suggest that the knowledge spillover effect of low-carbon technologies is comparable to that from information and communications

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technologies (ICT). The effect on overall growth will also depend on the nature of green taxation measures introduced between now and 2050, as well as the extent of Government support through subsidies. The policy mix will also have an effect on long-term growth, with carbon pricing policies associated with more positive productivity outcomes than regulations or subsidies (Gugler et al, 2021).

The impact on Ireland will also depend on the impact of climate change and transition-related policies in other countries i.e. international spillovers could be substantial. For example, this could be related to disruption to trade flows, to higher energy prices or to higher interest rates stemming from the higher demand for 'green' capital goods, along with the impact on international migration.

The Central Bank is in the process of modifying its structural macroeconomic models to incorporate the transmission channels for different types of climate-related risks. To capture the impact of climate risks on the supply side of the economy, this work includes modifying the CES production function to directly contain energy as a factor of production, split into fossil fuels and renewables. As this work progresses, it will allow the models to better account for the complex transmission channels for different types of climate-related risks.

4.5 Summary

Figure 22 presents a summary of the baseline and sensitivity analyses explored in this *Article*. In the baseline projection, GNI* growth is expected to slow over the coming decades with growth projected to be well below its long run historical trend of 3.2 per cent by 2050. Sensitivity analysis assuming higher labour supply (reflecting longer working lives), TFP and investment reflect more optimistic potential outcomes for the long-run outlook, allowing the economy to grow faster than the baseline. The lower migration growth path represents a less benign scenario and would reduce the estimated potential growth rate of the economy significantly.

From a welfare perspective, GNI* per head in the baseline is projected to fall below its long run historical trend by 2032 and remain on a lower path out to 2050 (Figure 23). Assuming a gradual rise in the retirement age and higher investment would enable GNI* per head to grow broadly in line with its historical trend out to 2050. Assuming an increase in TFP growth would put GNI* per head on a permanently higher path when compared to both the historical trend and the baseline scenario. The lower migration assumption would result in a smaller economy and weaker GNI* per head than in the baseline.

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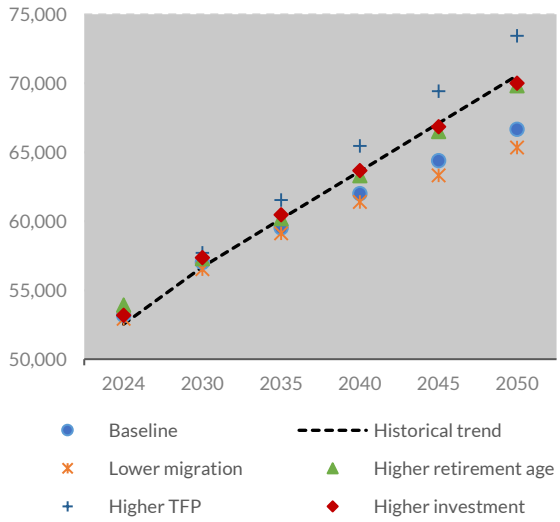
Stylised growth paths for the Irish Economy, 2024-2050

Figure 22
GNI* (average) growth rate, per cent

Figure 23
GNI* per head, euro million (constant 2022 prices)



Source: authors' calculations.

The sensitivity analysis in this *Article* considers the impact on long-term growth of individual changes in assumptions on population growth, investment and TPF. In reality, these fundamental drivers of growth interact with each other such that a change in one would cause spillovers to the others. Both more adverse or benign scenarios than presented in the baseline could emerge as a result of these interactions. For example, an adverse scenario could arise if key infrastructure challenges and the climate transition are not adequately addressed, leading to a lower capital stock. This could limit the extent of net inward migration, as well as the relative willingness of MNEs to expand activity in Ireland in the context of more fragmented global trade. Lower trade and investment would also negatively affect productivity, further weighing on overall growth.

A more benign scenario than presented in the baseline case is also possible if these effects were reversed. This would see well-targeted investment to address infrastructure deficits and the climate transition boosting the capital stock, enabling further growth in labour supply and raising the productivity of the workforce and the economy. These effects could be further enhanced if the economy and labour market successfully embraces the opportunities presented by ongoing technological change. These interactions demonstrate how policy choices have an instrumental role to play in determining the future path for the economy and living standards.

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5. Conclusion

This *Article* considers the long-term growth prospects for the Irish economy out to the middle of the century using a growth accounting framework. Given the uncertainty in assessing the outlook over such an extended period, we carry out sensitivity analysis around the key determinants of future potential growth. Taking the most optimistic official population estimate from the CSO based on continuing high levels of net inward migration, the potential growth rate of the economy is still projected to slow markedly over the coming decades as the population ages and the growth in the working age population slows. The annual average potential growth rate of the economy in this scenario would slow to 1.4 per cent from 2040, less than half the current estimated rate. If inward migration dropped below that assumed in the *high migration* case, the potential growth rate of the economy would slow further.

Along with high levels of inward migration, recent growth in the Irish economy has been boosted by increases in labour force participation. This has in part been driven by increases in participation for older workers, which in turn has benefited from the effects of educational attainment. Under an assumption where the retirement age is increased gradually to 70 by 2042, sensitivity analysis shows that this would raise labour supply and help to slow down the projected moderation in growth that would occur in the absence of this change.

Along with the demographic transition, the economy's growth outlook will be shaped by other major transitions currently underway linked to climate change and the transition to net zero, the growth of digital technologies and geoeconomic fragmentation. The ultimate implications of these changes for long-term growth and whether the effects will be positive or negative are uncertain and are the subject of much ongoing analysis and research in Ireland and abroad. In the case of the digital transition, existing evidence points to the potential for a positive impact on growth. Sensitivity analysis in the *Article* shows that if the Irish economy can harness the benefits of the transition such that productivity growth is raised, this could help to lift long-run potential growth.

Ireland's ratio of investment to output is currently low by historical standards. The eventual overall impact of geoeconomic fragmentation and the transition to net zero on investment and the capital stock is uncertain. Our sensitivity analysis illustrates that raising the investment-to-output ratio by one percentage point could add between 0.3 and 0.4 percentage points to annual growth from 2030, raising incomes per head. A decline of one percentage point would reduce growth by similar amounts.

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Achieving sustainable economic growth that delivers improvements in living standards, while at the same time the economy goes through these major structural transitions, undoubtedly presents government and policymakers with a tough task. Public policy has an important role to play in making the broader economy and labour market fit for purpose in light of the challenges that lie ahead. It is clear that Ireland's infrastructure in housing and other areas has not kept pace with the growth in population.[63] This may be reducing labour supply by discouraging much needed inward migration. In addition to investment, there is an important role for policy in improving the planning, development and delivery of infrastructure at scale.

In relation to the labour market, investment in human capital, skills and life-long learning is instrumental in ensuring that the workforce and the economy as a whole can adjust to, and take advantage of, the opportunities of the climate and digital transitions. Policies that promote the retraining of workers and improve labour mobility are paramount, as recommended by the National Competitiveness Council and OECD, and acknowledged in Ireland's National AI Strategy.[64, 65] Similarly for firms, a focus on investment in research and development and fostering innovation would improve productivity, better enabling firms to adjust to the green transition and digitalisation.

[63] See https://www.centralbank.ie/docs/default-source/publications/quarterly-bulletins/quarterly-bulletin-signed-articles/economic-policy-issues-in-the-irish-housing-market.pdf?sfvrsn=9879661a_12
[64] See National Competitiveness Council, 2023. "Ireland's Competitiveness Challenge 2023 (PDF 2.41MB)" and OECD, 2023. "OECD Employment Outlook 2023: Artificial Intelligence and the Labour Market
[65] See AI - Here for Good. A National Artificial Intelligence Strategy for Ireland. (PDF 6.41MB)

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The evolution of the Eurosystem operational framework and how recent changes may impact banks in Ireland

John Larkin, Elizabeth Frayne and Anne-Marie McKiernan [66]

Abstract

In March 2024, the ECB Governing Council announced important changes to its operational framework for implementing monetary policy. This Article serves to explain what an operational framework is and why it is important for the smooth transmission of monetary policy. It describes the evolution of the Eurosystem operational framework, from inception as a 'classic' corridor system with scarce reserves to a de-facto floor system with abundant reserves, as increasingly the ECB Governing Council used its balance sheet as a policy tool to address various crises it has faced since 2008. The new framework - a demand-driven 'soft' floor system - takes into account various structural changes that have emerged since the Global Financial Crisis (GFC), most notably an increased but uncertain demand for central bank reserves. The ECB is monitoring banks' liquidity management behaviour closely and how money markets are reacting to declining excess liquidity in the system. Irish banks will need to adapt also. In this regard, we highlight certain features of the new framework and their implications for banks based in Ireland. Going forward, it is expected that recourse to Eurosystem standard refinancing operations will be used to meet banks' liquidity needs. However, it is likely that, on aggregate, recourse to Eurosystem standard refinancing operations by banks based in Ireland, as part of their regular liquidity management toolkit, may come later than in some other jurisdictions in the euro area because high levels of excess liquidity may decline in Ireland at a slower pace than elsewhere.

1. Introduction

The ECB's monetary policy stance is implemented through its operational framework. Importantly, while the operational framework implements the

[66] Financial Operations Directorate. We would like to thank Marcos Cachulo in particular for research assistance and Vasileios Madouras, Martin O'Brien, David Cronin, Patrick Haran and Ross Murphy for comments. The views expressed herein are those of the authors and do not necessarily reflect the views of the Central Bank of Ireland or the Eurosystem.

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desired monetary policy stance, it must not interfere with it. The operational framework encompasses the set of tools, procedures and market operations designed to effectively steer short-term money market interest rates in line with the key policy interest rates set by the Governing Council. While decisions on the setting of key policy interest rates are made by the ECB Governing Council, monetary policy is implemented on a de-centralised basis by each national central bank (NCB) of the euro area. In March 2024, the ECB announced some changes to its operational framework, joining peer central banks such as the Bank of England and the Federal Reserve Bank who made similar announcements in the preceding years.

The design of the operational framework is important so as to facilitate the smooth implementation of monetary policy. Short-term money market interest rates are effectively the connecting point between the rates set by the ECB and those set by the banking system and financial markets that influence broader financing conditions in the wider economy for households and businesses. Therefore, effectively controlling these short-term interest rates is important as it facilitates the smooth transmission of monetary policy to the real economy and thereby serves the primary objective of the ECB of maintaining price stability across the euro area over the medium term in line with its statutory mandate.

The purpose of this *Article* is to give an overview of what an operational framework is and explain the evolution of the Eurosystem operational framework. This evolution largely reflects the deployment of the ECB balance sheet to react to various crises since 2008, with the operational framework proving flexible over this time. As the balance sheet is expected to reduce in size considerably over the next few years, it was deemed appropriate by the ECB Governing Council to review the operational framework to ensure an efficient and effective implementation of monetary policy in the future. Furthermore, as excess liquidity in the banking system declines, it will eventually reach a point where money market interest rates are subject to upward pressure.[67] Providing clarity to the market in advance of this happening was considered important by the ECB. In addition, the euro area economy and how the central bank interacts with the financial system has undergone a number of structural changes since the GFC. Therefore, it was viewed as essential to review the operational framework to take account of these significant changes. With the new changes announced in March of this

[67] Excess liquidity is defined here as the sum of balances on the current account and the deposit facility minus the sum of the total minimum reserve requirements and the balance on the marginal lending facility.

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year, the ECB has intensified its monitoring as it assesses banks' funding behaviour and money market reactions as excess liquidity declines within the system. Meanwhile, the Central Bank of Ireland (the Central Bank) closely monitors monetary policy counterparties in Ireland and this *Article* also serves to highlight how the Irish banking system may interact with the newly designed operational framework.

This *Article* has the following structure. Section 2 introduces what an operational framework is and describes its main design features. Section 3 describes the evolution of the Eurosystem operational framework, how it was a classic corridor system at its inception and how it evolved to a de facto supply - driven floor system. Section 4 looks at some of the considerations policy makers would have assessed in reviewing the framework. Section 5 then introduces the new demand-driven soft floor framework, how it is intended to work and touches on its guiding principles. Section 6 looks at the operational framework from the perspective of the Irish banking system and highlights some notable features of it. Section 7 looks at the immediate focus of the Eurosystem in the aftermath of the announced changes from a market functioning and monetary policy transmission perspective. Section 8 concludes.

2. The Main Design Features Of An Operational Framework

The main design features of a monetary policy operational framework include i) the operational target, ii) the policy interest rates and iii) the liquidity regime.[68] The operational target of the Eurosystem is very short-term money market interest rates. Implicitly, since the outset of the monetary union, market participants focused on the euro overnight index average (EONIA), which was derived from interest rates on overnight unsecured lending transactions between banks. In late-2019, there was a transition to a new benchmark, the euro short-term rate (€STR). This accounts for a larger volume of transactions (compared to EONIA), predominantly between banks and non-banks. As such the €STR represents the overnight wholesale unsecured borrowing costs of banks in the euro area.[69]

The Eurosystem has three key policy rates set by the Governing Council in line with its monetary policy stance, the deposit facility rate (DFR), the rate on the main refinancing operation (MROR) and the rate on the marginal lending

[68] See (Bindseil, Monetary Policy Implementation: Theory, past, and present, 2004) and (Bindseil, Monetary Policy Operations and the Financial System, 2014) for a comprehensive overview of monetary policy implementation theory and operational frameworks.
[69] Details of €STR found here.

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facility (MLFR). These are the interest rates the Governing Council sees as appropriate to achieve its inflation target over the medium-term. They represent the price the ECB sets in the supply or remuneration of reserves across the banking sector. The ECB provides liquidity to monetary policy eligible counterparties on a weekly basis through the main refinancing operation (MRO). [70] The MROR is how much it costs for a bank to borrow from the ECB for a period of one week. The deposit facility (DF) is available for banks to place overnight deposits at the relevant NCB. The DFR is the interest rate banks receive when they deposit money with the central bank overnight and is set below the MROR. The marginal lending facility (MLF) is also available to banks who require overnight liquidity. The MLFR is set above the MROR. These three rates act as a corridor of interest rates. The so called 'standing facilities' (MLF and DF) are intended to create an upper and lower bound which, in theory, money market interest rates should not deviate outside of. That is because a bank is unlikely to borrow above the MLF in the market if it can borrow from the ECB at that rate and it is unlikely to lend below the DFR if it can deposit money at the ECB at that rate.

[70] The counterparty framework provides criteria on the basis of which credit institutions, mainly banks, are granted access to Eurosystem monetary policy operations (MPOs). The framework is designed to ensure that a broad range of counterparties are able to participate in MPOs, while protecting the Eurosystem from the risk of a counterparty defaulting. To qualify as a monetary policy eligible counterparty, an institution needs to: (1) be subject to the Eurosystem's minimum reserve requirements (MRRs); (2) be supervised by competent authorities; (3) be financially sound; (4) fulfil the operational requirements of the local NCB to participate in MPOs. All credit operations must be collateralised using eligible collateral.

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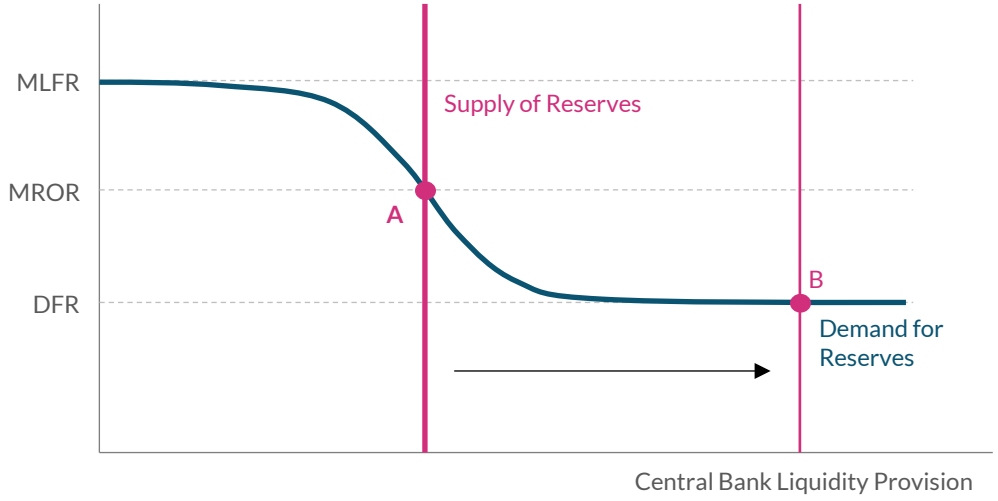
Supply of and Demand for Reserves and the Key Policy Interest Rates

Figure 1

Policy Rates



Source: ECB, Central Bank of Ireland

The level of reserves in the system depends on the choice of liquidity regime. [71] With a structural liquidity deficit and a system of scarce reserves, the central bank acts within a corridor system. This means that short-term money market interest rates will trade around the MROR, as banks need to come to the central bank on a frequent basis to obtain reserves. This is illustrated in Figure 1, where the supply of reserves meets the demand for reserves at point A. The demand curve is steep at this point A, meaning a high degree of accuracy is required in estimating the reserve demand, with small forecast errors resulting in volatility in money market interest rates. As reserves become more abundant, money market interest rates are pushed towards the DFR, and this acts as a floor for very short-term money market rates. Demand-supply dynamics are at play here, with the supply of reserves outstripping the demand for reserves, resulting in banks seeking to offload the excess reserves in the money market. This would put downward pressure on money market interest rates resulting in them drifting to the floor. As illustrated in Figure 1, the

[71] Central bank reserves are the safest and most liquid asset in an economy. Reserves are overnight balances held by commercial banks with the domestic central bank. Central bank reserves include minimum reserve requirements (MRRs) and balances held in excess of MRRs, either in the current account of banks used for compliance with MRRs or via the deposit facility. Together with currency reserves they form the monetary base and are the ultimate settlement asset in the economy. Banks need reserves – even in the absence of MRRs – to meet payment obligations and as part of their liquidity buffers.

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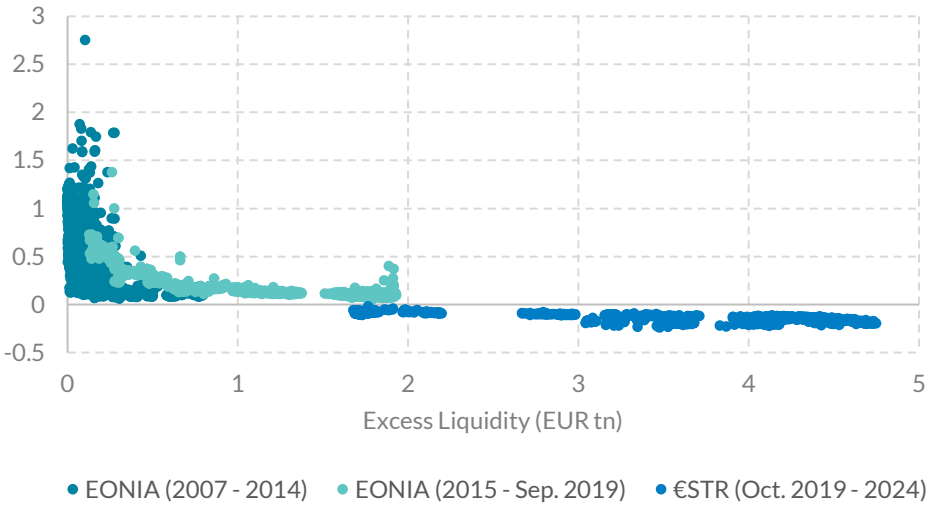
demand curve becomes flat at a certain threshold of reserves in the system (point B). As banks will have surplus liquidity, the only option is to deposit the excess reserves with the relevant NCB. This is evident in the data based on the experience in the Eurosystem. Figure 2 illustrates the relationship between EONIA/€STR and excess liquidity in the Eurosystem since 2007. It is clear that as excess liquidity increased, money market rates declined to the floor.[72]

EONIA/€STR as a Function of Excess Liquidity

Figure 2

Normalised EONIA/€STR



Source: ECB, EMMI, Central Bank of Ireland

Notes: Normalised daily rates computed as (€STR/EONIA – DFR)/(MRO – DFR).

Last observation: 17 September 2024

3. From a Corridor System to a *de facto* Floor

From its inception, the ECB employed a classic 'corridor' type system, with scarce reserves, as described in Section 2. The banking system had a structural liquidity deficit, created in part by the imposition of a minimum reserve requirement, whereby every credit institution is required to hold a certain cash balance on reserve at the relevant NCB.[73] This liquidity deficit ensured that

[72] Since the introduction of €STR there has been a 'leaky floor' whereby €STR has been trading below the DFR. €STR includes a substantial volume of transactions with non-banks whereas EONIA represented transactions only between banks. The DF is only available to monetary policy eligible counterparties and they charge non-banks a fee for liquidity services which is reflected in €STR.

[73] Minimum Reserve Requirements are calculated as 1% of specific liabilities on their balance sheets – mainly customer deposits and debt securities with maturities of up to two years.

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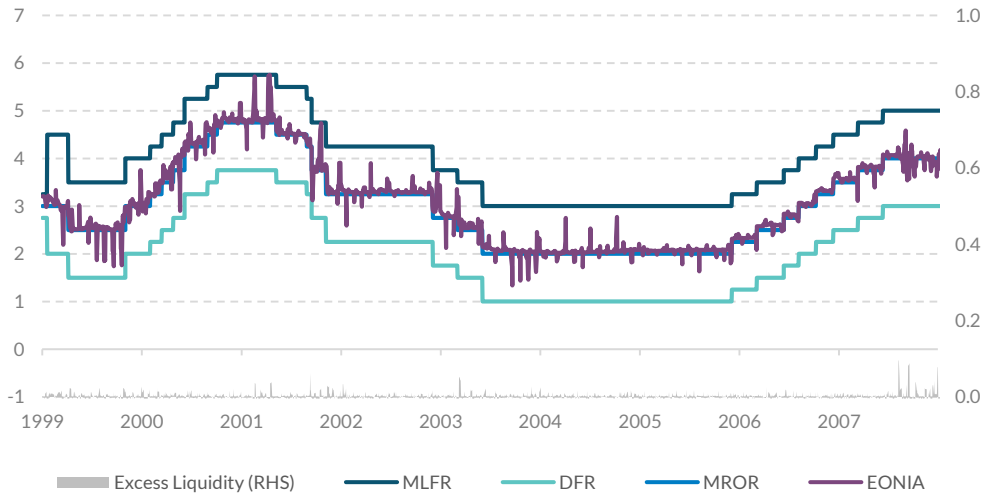
banks on aggregate needed to come to the ECB for liquidity. On a daily basis, the ECB would predict the liquidity needs of the banking system by forecasting liquidity draining autonomous factors (the most prominent being banknotes in circulation and government deposits).[74] On the back of these forecasts, the ECB would supply a fixed amount of liquidity in a weekly variable rate auction-based system to eligible banks. By controlling the quantity of reserves, the ECB could control the price at which they were traded in the market. On this basis, the ECB sought to steer short-term money market interest rates in the centre of the corridor, around the MROR. For banks that did not get the liquidity allocation they needed through the weekly MRO, or for those that discovered that they had an unexpected shortage or surplus of reserves, they could avail of the standing facilities. However, in order to encourage banks to trade with each other, the ECB applied penalty rates to the standing facilities. Before the GFC, the DF paid one percentage point below the MROR, while the MLF cost one percentage point more than the MROR. From 1999 through to 2008, EONIA traded in the middle of the corridor, albeit with some volatility, as illustrated in Figure 3.

ECB Key Interest Rates and Evolution of Excess Liquidity (1999-2008)

Figure 3

Interest Rates (percentage); Excess Liquidity (EUR trillions)



Source: ECB, EMMI, Central Bank of Ireland

Notes: Daily data covering the period ranging from 1999 to end-2007.

[74] Autonomous factors can be classified as net government deposits held with the Eurosystem NCBs, banknotes in circulation, net foreign assets, net assets denominated in euro, and other autonomous factors. See description here.

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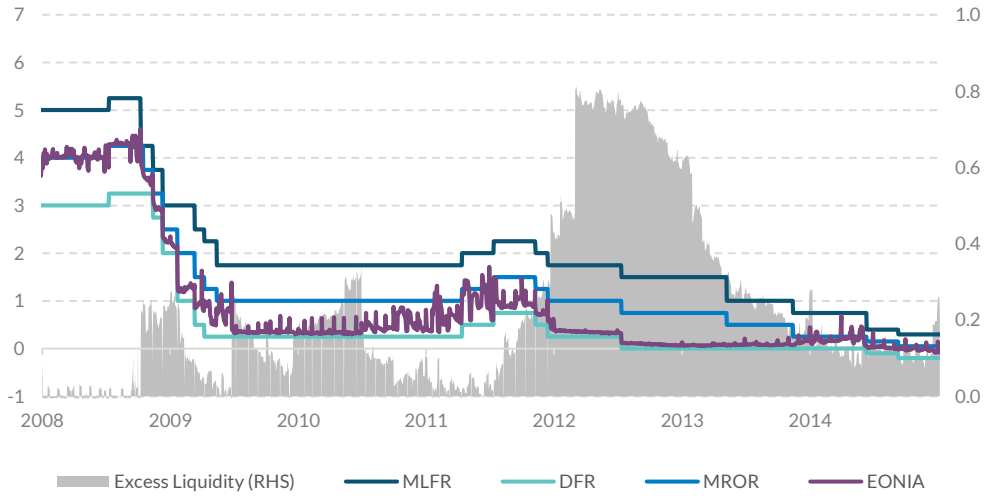
Following the collapse of Lehman brothers and after the 2008 GFC, the interbank market changed radically. The effect of the Lehman Brothers collapse was that banks became wary of lending to each other, resulting in a freezing of inter-bank activity (Allen & Moessner, 2012). In response, in October 2008 the ECB moved to a liquidity-providing system of fixed rate tenders with full allotment (referred to as 'fixed rate full allotment' (FRFA)) via the weekly MRO lending operations. This meant that the liquidity in the system was no longer determined by the ECB but by demand for reserves from the banks, which they received at a fixed rate, subject to having sufficient eligible collateral. As a result, it was difficult to control short-term interest rates in the centre of the corridor due to precautionary borrowing by banks. In the period 2008 to 2014, EONIA moved to the floor at times when excess liquidity increased and drifted upwards back to the centre of the corridor at times, as excess liquidity drained from the system. During this period, to give more confidence to the banking system, the ECB provided longer-term refinancing operations (LTROs) of 6 and 12 month duration, with 3-year very long-term refinancing operations (VLTRO) offered in December 2011 and February 2012. EONIA moved firmly to the floor following the large take-up by banks in these 3-year VLTROs, which increased the level of excess reserves in the system. As VLTRO borrowing was gradually re-paid, excess liquidity declined and EONIA drifted towards the centre of the corridor in 2014 (Figure 4).

ECB Key Interest Rates and Evolution of Excess Liquidity (2008-2015)

Figure 4

Interest Rates (percentage); Excess Liquidity (EUR trillions)



Source: ECB, EMMI, Central Bank of Ireland

Notes: Daily data covering the period ranging from 2008 to end-2014.

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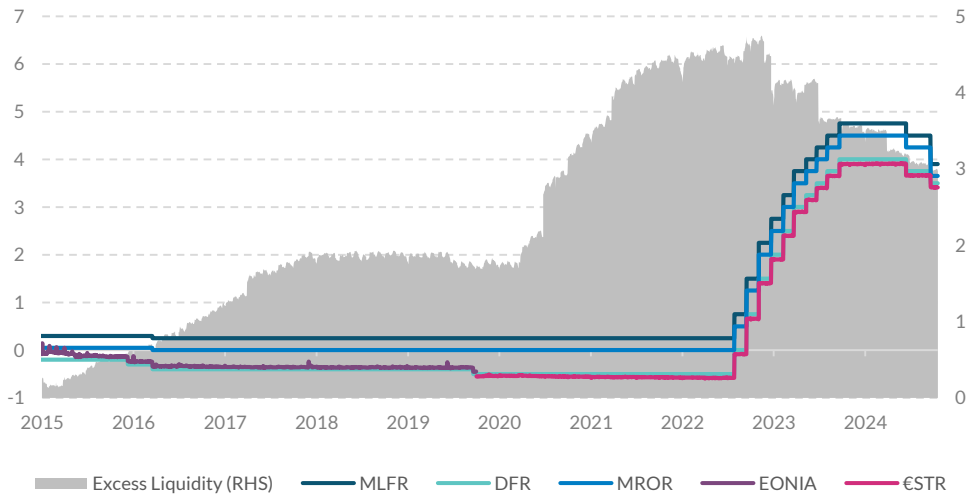
In 2014, with inflation persistently below the ECB's target of below but close to 2% and amid a risk of a prolonged period of deflation, the ECB Governing Council reduced the MROR to zero.[75] With the perceived effective lower bound (ELB) on interest rates reached, it deployed further non-standard monetary policy measures and launched the asset purchase programme (APP)[76]. This resulted in large quantities of liquidity being injected into the banking system, which led to EONIA, which was later replaced by €STR, becoming anchored to the DFR, implying that the Eurosystem was effectively operating in a de facto floor system (Figure 5). The volume of excess liquidity in the system increased substantially after the COVID 19 pandemic with the introduction of the pandemic emergency purchase programme (PEPP) and the third series of targeted longer-term refinancing operations (TLTRO III).

ECB Key Interest Rates and Evolution of Excess Liquidity (2015 – 2024)

Figure 5

Interest Rates (percentage); Excess Liquidity (EUR trillions)



Source: ECB, EMMI, Central Bank of Ireland

Notes: Daily data covering the period ranging from 2015 to present.

Last observation: 16 October 2024

In the years since 2008, the size and composition of the Eurosystem balance sheet changed considerably as the balance sheet was increasingly used as a

[75] The ECB cut the MROR to 0.05% in 2014 and subsequently to 0% in 2016.
[76] The APP comprised of the public sector purchase programme (PSPP) launched in 2015, the asset backed securities purchase programme (ABSPP) launched in 2014, the third covered bond purchase programme (CBPP3) launched in 2014 and the corporate sector purchase programme (CSPP) launched in 2016. (Larkin, Anderson, & Furlong, 2019) examine the impact of the APP on the Irish government bond market.

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policy tool with the deployment of non-standard monetary policy measures such as the asset purchase programmes to mitigate disinflationary pressures. Figure 6 shows the evolution of key items on the asset and liability sides of the Eurosystem balance sheet. The size of the balance sheet peaked in 2022, at close to €9trn, many multiples the size of the pre-crisis balance sheet. From 2015, securities held for monetary policy purposes dominated the asset side of the balance sheet with the excess liquidity generated from the purchase of these securities dominating the liability side. Since 2022, the balance sheet has begun to decline. The initial decline was primarily driven by the repayment of TLTRO III borrowings, while the ending of full reinvestments of APP as of July 2023 and partial reinvestments of PEPP as of July 2024 up to the end of 2024 (with full run-off of PEPP reinvestments thereafter) are also contributing to the gradual decline. Over the next number of years, the balance sheet is expected to decline further, with an expected run-off of the monetary policy portfolios of around €40bn per month as of January 2025 (Schnabel I. , The ECB's balance sheet reduction: an interim assessment, 2024c). Together with the run-down of the bonds held in the monetary policy portfolios, autonomous factor growth will contribute to a reduction of excess liquidity in the system. In the absence of measures to support liquidity provision, excess liquidity would eventually fall to a level that would put upward pressure on money market interest rates.

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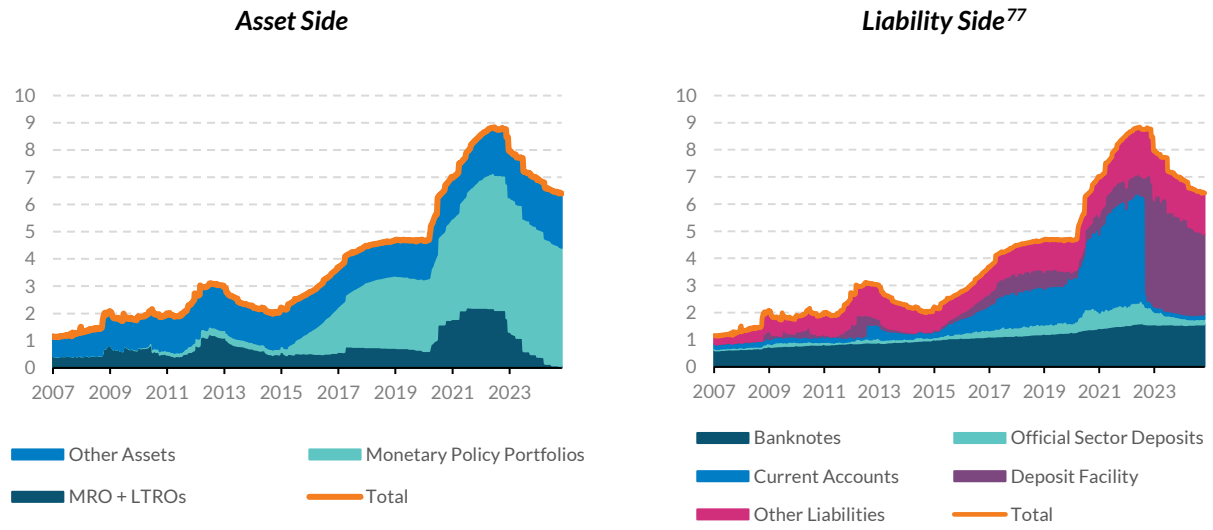
Eurosystem Balance Sheet

Figure 6

(EUR trillion)



Source: ECB, Central Bank of Ireland calculations.

Last observation: 3 November 2024.

Note: Weekly data.

4. Considerations in Reviewing the Operational Framework

There were a number of changes to the environment that central banks operate in that were relevant when reviewing the operational framework. In the pre-crisis framework, the Eurosystem was successful at predicting the liquidity needs of the banking system on a daily basis. However, that would not necessarily be the case if it were to return to a corridor-type system with a structural liquidity deficit. This is because the demand for reserves from the banking system has changed materially over the intervening years (Åberg, et al., 2021) . Structural changes have had an impact on the demand for central bank reserves, the most important being the introduction of regulatory requirements since the GFC, in particular the Liquidity Coverage ratio (LCR). The LCR has led to an increase in the demand for safe assets. It requires banks to hold liquidity buffers, with central bank reserves being the highest form of high quality liquid assets (HQLA). Banks can perform 'liquidity transformation', in that they can use non-HQLA collateral to borrow from the Eurosystem and

[77] The sharp drop in current account holdings in 2022 reflected a migration of banks' reserve balances into the DF to avail of positive remuneration since excess reserves (above the MRR) on the current account are remunerated at 0% when the DFR is positive.

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transform that into HQLA that can be used to meet LCR requirements. This may lead to additional demand for central bank reserves as banks seek to fulfil their LCR requirements. Banks can also meet their LCR requirements by holding other forms of HQLA, such as highly rated, liquid fixed income securities. There are some factors which could influence banks' desire to hold reserves instead of other forms of HQLA such as risk tolerance and the shape of the yield curve. Therefore, it is difficult to predict how banks will choose to fill their LCR requirements in the future and to what degree central bank reserves will play a role in this.

Other factors may have led to an increased demand for central bank reserves. The increased level of certain autonomous factors, most notably banknotes in circulation, has naturally increased the demand for reserves. The volatility of autonomous factors has also increased over the years, making them more challenging to forecast. However, it is the extent of demand for reserves beyond the autonomous factors that has introduced the greatest degree of uncertainty. For instance, the level of precautionary demand for liquidity buffers from banks is unknown and would likely change, should a crisis emerge. Innovations in payment systems and the potential creation of the digital euro also create uncertainties in relation to the demand for reserves. All of this increases the difficulty of accurately predicting the liquidity needs of the banking system, if the Eurosystem were to return to steering money market rates in a classic corridor type system with a structural liquidity deficit. In such a framework the likelihood of increased volatility in short term interest rates would be higher, relative to the case before 2008, and this could impede the smooth transmission of monetary policy.

Another important consideration is the financial market footprint of the Eurosystem. There is a trade-off between interest rate controllability and the central bank footprint in financial markets. From 2015 to 2023, the Eurosystem balance sheet expanded considerably as it reflected purchases of large volumes of sovereign bonds, supranational bonds, covered bonds, corporate bonds and asset-backed securities and targeted longer-term refinancing operations (TLTROs).[78] This level of footprint would be undesirable

[78] These policies were motivated by their direct impact on bond markets and credit dynamics. In line with the ECB's 2021 monetary strategy statement, from a stance perspective, the activation of such non-standard policies is only relevant in the neighbourhood of the ELB on policy interest rates. Away from the ELB, by contrast, the short-term policy interest rate is the primary instrument to steer the monetary policy stance. The ECB's Monetary Policy Strategy Statement was published in July 2021 as the culmination of the Monetary Policy Strategy Review.

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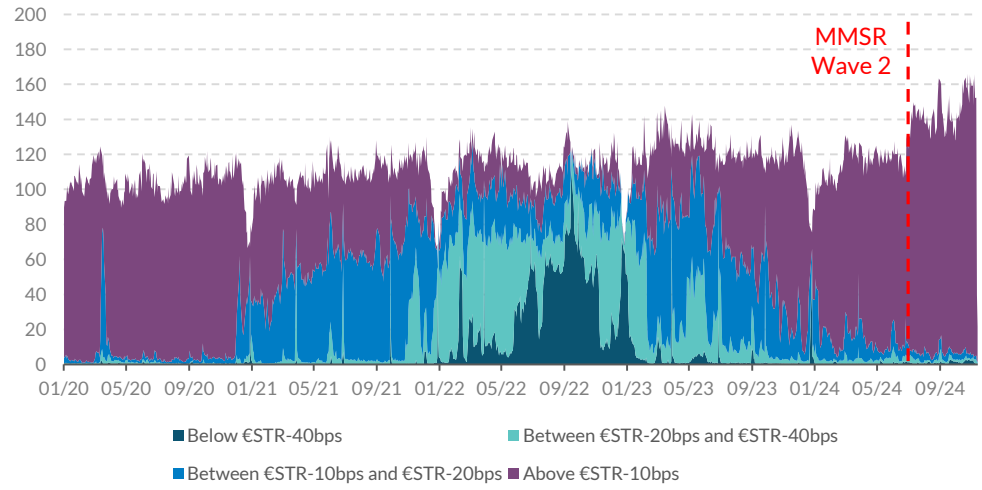
in normal times as the purchase of long-dated securities exerts downward pressure on term and credit risk premia, thereby flattening the yield curve. Furthermore, a large bond portfolio can lead to scarcity in certain bonds, which puts downward pressure on repo rates, thereby impacting monetary policy transmission and market functioning (Schnabel I. , The benefits and costs of asset purchases, 2024b). This was particularly notable between 2021 and 2023 for repos against German government bonds, given their widespread demand, as illustrated in Figure 7. A large bond portfolio in normal times would also reduce the capacity of the central bank to undertake monetary policy easing in times of stress and should the ELB on interest rates be reached. Finally, ECB activities in the market are required to comply with the Treaty principle of 'an open market economy with free competition, favouring an efficient allocation of resources'. The Open Market Economy principle implies avoiding unnecessary presence in markets so that prices and quantities are determined by competitive forces in an open market. This suggests that, in ensuring a sufficient control of very short-term money market interest rates, the Eurosystem should not demonstrate an over-proportional market footprint beyond what is needed to steer rates.

Repo Activity against German Government Bonds

Figure 7

(EUR billions)



Source: MMSR, ECB, Central Bank of Ireland

Notes: Specialness of repo market is displayed as volumes per rate bucket. Red dashed line marks the start of the reporting from the banks included in the second wave of reporting agents. Daily data reported by the reporting agents to the MMSR dataset.

Last observation: 8 November 2024

How liquidity would be provided in the new framework was another important consideration, in particular the weight that might be assigned to asset

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purchases and refinancing operations. This is a significant aspect for the euro area given that the economy is bank-based with the consequent heavy reliance on banks to transmit monetary policy. In this context, the excess liquidity generated from asset purchases tends to be concentrated in certain euro area jurisdictions and in certain banks. More specifically, about 40% of banks, in terms of total assets, are holding all the excess liquidity generated from asset purchases, with the highest share being held in Germany (Schnabel I. , 2024a). This raises the risk of fragmentation of money market rates at a country level, impairing the transmission of monetary policy. If excess liquidity is concentrated in certain jurisdictions then banks in the countries with less excess liquidity could on average pay substantially higher borrowing rates than banks where the excess liquidity is concentrated. Furthermore, banks in certain jurisdictions would be reliant on liquidity generated through asset purchases being redistributed through various channels.[79] Baldo et al (2017) illustrate that this redistribution was not effective in the initial phase of the APP. In contrast, by supplying reserves primarily by means of refinancing operations, liquidity could be distributed more evenly around the euro area banking system in a demand-driven system, which would mitigate those fragmentation risks that can arise when liquidity is provided via asset purchases.

5. A New Operational Framework

The new operational framework to steer short-term interest rates was announced by the ECB on 13 March 2024 marking the conclusion of a comprehensive review process that started in December 2022. The new operational framework has been tailored to the distinctive features of the euro area economy and will help financial markets and banks adapt to the ongoing changes in the liquidity environment as the Eurosystem balance sheet normalises and excess liquidity in the euro area banking system declines gradually. It is built on the experience gained from implementing monetary policy since the inception of the euro and is founded on six core principles. These principles will guide monetary policy implementation going forward and are outlined in Table 1.

[79] Notable redistribution channels include the repo markets and via senior unsecured bank bond and covered bond issuance, as discussed in (Hudepohl, et al., 2024)

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Table 1: Principles Guiding Monetary Policy Implementation

Principle	Description
Effectiveness	The main objective of the operational framework is to ensure the effective implementation of the monetary policy stance in line with the provisions of the EU Treaty.
Robustness	The operational framework needs to be robust to different monetary policy configurations as well as different financial and liquidity environments, and consistent with the use of the monetary policy instruments set out in the ECB's monetary policy strategy.
Flexibility	The euro area banking sector is large and diverse in terms of banks' size, business models and geographical locations. An elastic supply of central bank reserves based on banks' needs is therefore best suited to effectively channel liquidity across the entire banking system throughout the euro area and to contribute to flexibly absorbing liquidity shocks.
Efficiency	An efficient operational framework implements the desired monetary policy stance and does not interfere with it, respecting the proportionality principle and taking into account net side effects, including financial stability risks.
Open market economy	The design of the operational framework should be consistent with the smooth and orderly functioning of markets – including money markets, which are more closely linked to the implementation of monetary policy.
Secondary objective	The operational framework shall facilitate the ECB's pursuit of its secondary objective of supporting the general economic policies in the European Union – in particular the transition to a green economy – without prejudice to the ECB's primary objective of price stability.

Source: European Central Bank, Governing Council statement of 13 March 2024.

In accordance with the aforementioned core principles, as set out in the Governing Council statement, the new operational framework is built around the following set of key parameters and features:

- The Governing Council will continue to steer the monetary policy stance through the DFR. Short-term money market interest rates are expected to move in the vicinity of the DFR with tolerance for some volatility as long as it does not blur the signal about the intended monetary policy stance.
- The Eurosystem will provide liquidity through a broad mix of instruments, including short-term credit operations (i.e. MROs) and three-month longer-term refinancing operations (LTROs) as well as – at a later stage – structural longer-term credit operations and a structural portfolio of securities.

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- MROs and three-month LTROs will continue to be conducted through fixed-rate tender procedures with full allotment. They are intended to play a central role in meeting banks' liquidity needs and their use by counterparties is an integral part of a smooth implementation of monetary policy.
- With effect from 18 September 2024 the MROR has been adjusted such that the spread between the MROR and the DFR has been reduced to 15 basis points (from the previous spread of 50 basis points). This narrower spread will incentivise bidding in the weekly operations, so that short-term money market rates are likely to move in the vicinity of the DFR, while the potential scope for volatility in short-term money market rates will be limited. Accordingly, it will leave room for money market activity and provide incentives for banks to seek market-based funding solutions. The MLFR was also adjusted with effect from 18 September 2024 such that the spread between the MLFR and the MROR remains unchanged at 25 basis points.
- New structural longer-term refinancing operations and a structural portfolio of securities will be introduced at a later stage, once the Eurosystem balance sheet begins to grow durably again, taking into account legacy bond holdings. These operations will make a substantial contribution to covering the banking sector's structural liquidity needs arising from autonomous factors and MRRs. The structural refinancing operations and the structural portfolio of securities will be calibrated in accordance with the core principles and to avoid interference with the monetary policy stance. In line with its monetary policy decisions, the ECB expects the portfolios acquired under the APP and the PEPP to continue to run off the balance sheet.
- The reserve ratio for determining banks' MRRs remains unchanged at 1%. The remuneration of minimum reserves remains unchanged at 0%.
- A broad collateral framework will be maintained for refinancing operations.

The new operational framework can be described as a demand-driven "soft" floor system and is a hybrid system designed to meet the liquidity requirements of the euro area. The new operational framework takes into account the significant changes in the financial system and monetary policy in recent years, including the tendency of banks to maintain precautionary liquidity buffers to meet regulatory liquidity requirements, as discussed in Section 4.

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The transition to the new demand-driven operational framework will be gradual. The changes to the operational framework will not become apparent until the current ample excess liquidity has declined sufficiently in line with the normalisation of the Eurosystem balance sheet. The DFR remains the anchor for very short-term money market interest rates.

The euro area banking sector is large and heterogeneous along key aspects, such as its size, business models and geographic distribution. Therefore, an elastic supply of central bank reserves according to banks' needs is important to ensure that liquidity is channelled in an effective manner to the different parts of the banking system in all the euro area countries. This is why the MROs will continue to be run on a FRFA procedure, thereby elastically providing as much liquidity as demanded by the banks at the MROR. This FRFA procedure, together with the acceptance of a broad collateral framework, will allow banks to absorb liquidity shocks. It also facilitates monetary policy implementation in the euro area at a time when the demand for central bank reserves is less stable and predictable, while providing insurance against the risk of frictions in the circulation of liquidity across and within jurisdictions.

The Eurosystem provides credit only against adequate collateral.[80] Therefore, the availability of eligible collateral is also an effective constraint on banks' recourse to central bank credit. The maintenance of a broad collateral framework is therefore a key design feature of the demand-driven soft floor system for the euro area banking system and can be seen as complementary to the FRFA procedures in the aim of providing liquidity elastically to meet the demands of banks. The Eurosystem collateral framework is relatively unique among the central banks' collateral frameworks not only because it is broad in terms of scope (eligible assets), but also because it is uniform in terms of its undifferentiated use across all credit operations. The composition of mobilised collateral can vary according to bank business models, and can be heterogeneous across jurisdictions. In a hypothetical scenario whereby the eligible collateral would be restricted to only HQLA assets, this could impose material constraints on a large share of banks. The broad collateral framework allows banks to engage in liquidity transformation whereby they can borrow central bank reserves (the most liquid form of HQLA) against non-HQLA collateral. The spread of 15 basis points between the DFR and the MROR is intended to deter the risk of excessive liquidity transformation by banks while preserving incentives for money market activity.

[80] See (Bindseil, Corsi, Sahel, & Visser, 2017) for background information on the collateral framework.

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A structural portfolio is different from a monetary policy portfolio and serves a different purpose. The monetary policy portfolios under the APP and the PEPP served the purpose of easing the monetary policy stance at a time when interest rates were constrained by the ELB. The PEPP served a dual purpose, also supporting monetary policy transmission. The purpose of a structural portfolio is to provide liquidity on a durable basis to satisfy the structural demand for reserves from banks. The structural operations are, therefore, intended to implement, and not to steer, the monetary policy stance. Thus, the composition of the structural portfolio may also be different from that of monetary policy portfolios. Without prejudice to the ECB's primary mandate of price stability, the design of the operational framework will aim to incorporate climate change-related considerations into the structural monetary policy operations.

6. The new Operational Framework and Irish Banks

The Irish banking system will adapt to the new operational framework, in line with other banks in the euro area. In Ireland, there are 43 licenced banks, of which a subset are monetary policy eligible counterparties and thus can avail of refinancing operations. There are features of the Irish banking system that are notable in the context of the new operational framework and some features of the new framework that are notable for the Irish banking system. It is likely that, on aggregate, the new operational framework will materially impact Irish banks later than banks in some other euro area jurisdictions. Furthermore, how liquidity will be provided is an important dimension of the new framework. In particular, the central role envisaged for refinancing operations in the new operational framework, where reserves are directly channelled to the borrower as opposed to liquidity provision via asset purchases, means that the framework is less susceptible to redistribution effects, which is an important consideration for Irish banks.

Excess liquidity in Ireland is currently elevated and has been for some time, increasing sharply from 2019 until 2022 (Figure 8). In this period TLTRO-III participation by banks in Ireland had a positive but temporary impact on excess liquidity. In late 2022, the outstanding borrowings under TLTRO-III by banks domiciled in Ireland peaked at around €24bn, contributing to excess reserves reaching a high of around €100bn (Figure 8). By early 2023, TLTRO borrowings were largely repaid. Excess liquidity has remained relatively steady since then

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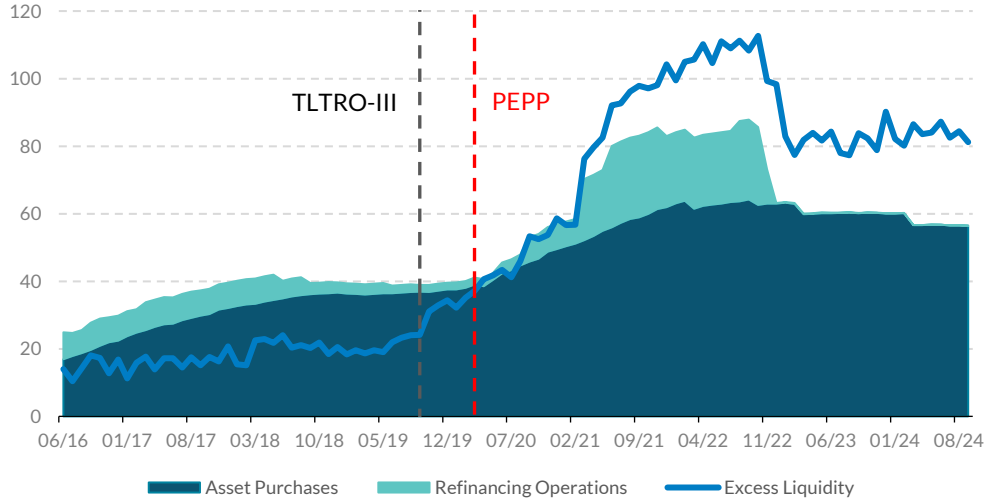
at around €80bn.[81] The Irish banking system also experienced a period of consolidation over the past number of years. Two established retail banks in Ireland ceased operating in the jurisdiction, which resulted in a further flow of bank deposits to the remaining retail banks. While excess liquidity in the Irish banking system increased over the past 5 years, this consolidation has contributed to a concentration of the excess liquidity in those remaining retail banks.

Non-Standard Measures and Excess Liquidity in Ireland

Figure 8

(EUR billions)



Source: ECB, Central Bank of Ireland

Notes: Asset purchases includes the Asset Purchase Programme (APP) and the pandemic emergency programme (PEPP); refinancing operations relate to bank participation in the MRO, LTROs, PELTRO TLTROs; monthly data

Last observation: September 2024

Looking ahead, it is likely that, on aggregate, recourse to Eurosystem refinancing operations by banks based in Ireland, as part of their regular liquidity management, may come later than in some other jurisdictions in the euro area. The reason for this is that excess liquidity may decline in Ireland at a slower pace than elsewhere. The build-up in excess liquidity in the Irish retail banks was not as directly linked to asset purchases due to their business models as was the case elsewhere in the euro area. For instance, during the

[81] Banks participating in TLTRO III could avail of a positive spread arbitrage by placing these borrowed funds on the deposit facility (as long as the eligible lending targets were met). As such, the motive behind Irish bank participation in these operations differed from previous crisis periods. This was evident in the decision by Irish banks to repay early their TLTRO-III borrowings once the terms became less favourable, resulting in a subsequent sharp drop in excess reserves

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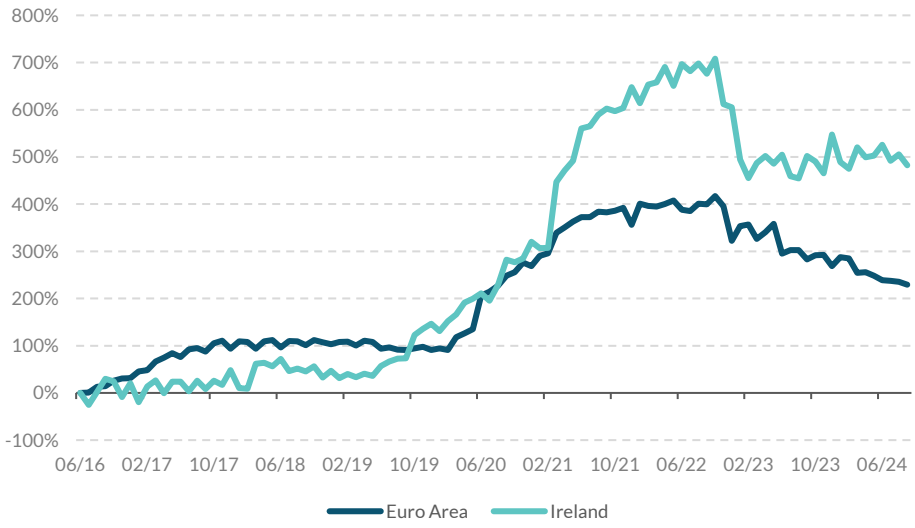
APP phase up to 2018, there was some excess liquidity in Ireland, although it remained relatively steady below €20bn (Figure 8). It is likely that asset purchases have had some impact on excess reserves in Ireland; however, it appears this direct impact was somewhat limited, based on evidence from that period. As illustrated in Figure 8, there was a steady increase in assets purchased under APP in that period up to 2018, but excess liquidity remained relatively steady. Therefore, it can be expected that as the assets mature off the Eurosystem balance sheet, excess liquidity in Ireland will not decline at the same pace, ceteris paribus. This dynamic has been evident in the data to date (Figure 9). Since the repayment of TLTRO in 2022, excess liquidity in Ireland has remained relatively steady, despite excess liquidity in the euro area steadily declining as the assets purchased under the purchase programmes mature and TLTRO borrowing was repaid.

Excess Liquidity in Ireland and in the Euro Area

Figure 9
Excess Liquidity (cumulative growth)



Source: ECB (ILM, BSI), Central Bank of Ireland

Note: monthly data, rebased as of June 2016

Last observation: September 2024

The decision for refinancing operations to be at the centre of liquidity provision is relevant for Irish banks in the new framework's steady state. The impact of asset purchases on excess liquidity in Ireland is less direct than refinancing operations. As discussed in Section 4, reserves created under the asset purchase programmes tend to largely end up on the balance sheets of institutions primarily based in core jurisdictions. However, there has been some indirect transfer of reserves to the Irish banks. The business models of

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Irish retail banks, whereby they predominantly rely on households and corporates for deposit funding, as opposed to market funding (liability side), and for making loans (asset side) means that they largely remain out of reach of the direct liquidity redistribution induced by asset purchases. Therefore, the direct impact of asset purchases on the reserve level of the domestic banks is seen to be less strong, especially when compared to refinancing operations which have a direct impact on reserves, as explained previously. Refinancing operations could be seen as a more impactful form of monetary policy instrument to satisfy the aggregate liquidity needs of the Irish banking system in the steady state as opposed to asset purchases, as long as banks have sufficient quantities of eligible collateral. In this context, the confirmation that a broad collateral framework will be maintained for refinancing operations, coupled with FRFA procedures for standard refinancing operations (MRO, 3-month LTRO), are also important features of the operational framework for Irish banks. It will be crucial that Irish monetary policy counterparties view access to Eurosystem standard refinancing operations as an option in their regular diversified funding toolkit should a liquidity need arise, taking account, inter alia, of considerations such as pricing relative to other funding sources and ease of access.

7. Looking Ahead

The changes to the operational framework announced in March 2024 can be seen as the first step in a process. The Eurosystem is now entering a phase of learning as it undergoes a period of balance sheet contraction to a degree that it has never experienced. The amount of liquidity in the system will gradually reduce over time and banks and market participants will need to adjust their behaviour. Excess liquidity remains elevated in the Eurosystem. As such, money market rates are expected to trade close to the DFR for some time but it will be important to monitor possible volatility and directional trends as excess liquidity declines and to better understand the transmission of monetary policy.

The next two years will be important for the Eurosystem as it monitors money market developments and the extent of participation of banks in standard refinancing operations, including how this varies across jurisdictions and banks' business models. Recourse to the MRO has remained limited up to now, despite the narrowing of the MROR/DFR spread in September 2024 because of the still elevated excess liquidity and the relative attractiveness of market-based funding options (Figure 10). It is expected that as excess liquidity declines in the system, gradually more banks will borrow from the Eurosystem

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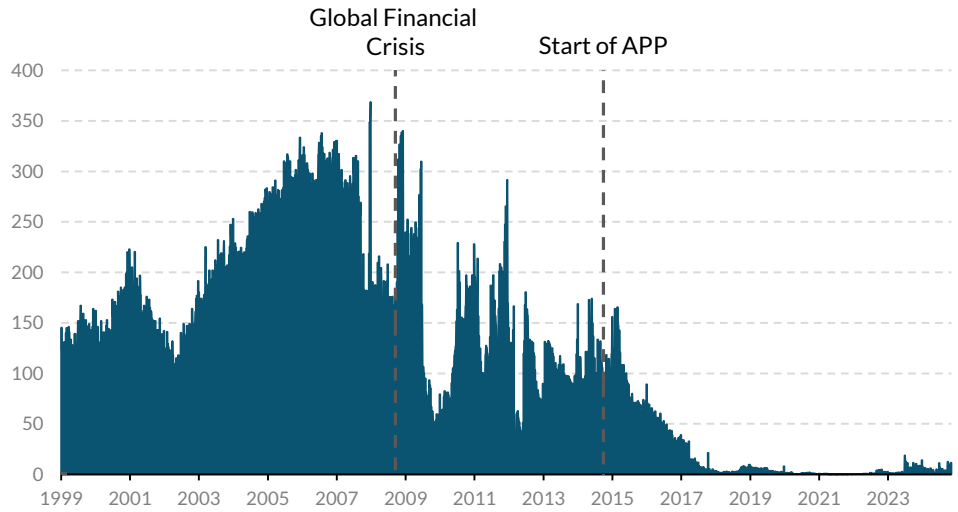
in the MRO in line with the concept of a demand-driven soft floor system. This should be supported by the fact that a large share of Eurosystem banks, representing roughly 25% of MRRs, are not active in repo markets, which limits their funding options (Schnabel I. , The ECB's balance sheet reduction: an interim assessment, 2024c). The reduced MROR/DFR spread to 15bps incentivises this participation to a greater degree than when the spread was 50bps, while it also seeks to limit rate volatility. With regard to participation in the MRO, the types of collateral pledged by participating banks will also be monitored to give a sense of the degree of liquidity transformation. Furthermore, a picture will gradually emerge as to the degree of demand for reserves and how that differs across jurisdictions and business models of banks.

Participation by banks in the Eurosystem's Main Refinancing Operation

Figure 10

(EUR billions)



Source: ECB, Central Bank of Ireland

Note: weekly data.

Last observation: 3 November 2024

It will be important to monitor any evidence of emerging fragmentation as the normalisation of the Eurosystem balance sheet progresses, particularly as the distribution of the volume of excess liquidity varies across jurisdictions in the euro area. If pockets of liquidity shortages were to emerge among euro area banks it may result in volatility in money market rates, impacting the smooth transmission of monetary policy. Daskalova et al (2024) highlight the role that repo markets can play in the redistribution of liquidity, noting a pick-up of liquidity motivated repo transactions since early 2023. There is also evidence

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that as excess liquidity has declined there has been a redistribution of excess liquidity across jurisdictions. Hudepohl et al (2024) highlight that as banks repaid TLTRO borrowings, many replaced such funding with covered and senior unsecured bond issuance. Other banks in the euro area purchased these bonds, which resulted in sizable cross-border flows, which is shown in changes to TARGET balances across euro area jurisdictions. In addition, the share of central bank reserves in banks' HQLA has reduced, falling from 78% in 2022 to 56% in October 2024, while at the same time aggregate LCR levels remained stable at 160% (Schnabel, 2024). These developments will be monitored closely as the ECB and NCBs better understand the demand for reserves in the steady state.

Regarding money market developments, recently repo rates in the euro area have begun to drift higher and towards and above the DFR. This largely reflects higher collateral availability amid the repayment of TLTRO III borrowings, elevated net issuance of government securities and declining Eurosystem monetary policy portfolio holdings. At the same time, the spread between the DFR and €STR has remained relatively sticky given the underlying characteristics of the overnight unsecured rate, whereby the majority of transactions reflect deposits from non-banks without access to the central bank balance sheet. The spread between repo rates and €STR will need to be monitored closely as excess liquidity declines in order to ensure a smooth transmission of the monetary policy stance.

The new design features of the operational framework aim to increase the attractiveness of the MRO and thereby increase its use in banks' normal liquidity management, while retaining a diversified funding mix. However, should there be any perceived stigma attached to MRO usage, then that could impair the effectiveness of the new operational framework, by leading to a lower level of reserves in the system, putting upward pressure on money market rates or increasing their volatility. Key to avoiding stigma would be widespread use of refinancing operations by banks in the euro area as the Eurosystem balance sheet normalises.

Conclusion

The Eurosystem monetary policy operational framework to steer short-term interest rates has gone through a number of successive phases since the start of monetary union in 1999. It started with a classic corridor system based on scarce reserves which evolved subsequently into a corridor with FRFA procedures. It then transitioned to a de facto supply-driven floor system with the provision of abundant excess reserves to the banking system. The next

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phase is the transition to the demand-driven soft floor framework announced earlier this year which is designed as a hybrid system that provides reserves elastically to meet the demands of the banking system and through a mix of instruments, including both short-term refinancing operations and structural operations. The new operational framework allows for an effective control of short-term interest rates, while leaving room to learn and adapt in an environment where the demand for reserves is uncertain and the starting point is still an environment of ample excess liquidity, albeit that excess liquidity is reducing. The broad collateral framework and the fact that refinancing operations are at the centre of liquidity provision as opposed to asset purchases are features that are particularly notable for Irish banks.

Increased market-based funding activity and signs that reserves are being redistributed across borders and banks suggest that banks have begun to adapt to an environment with less excess liquidity (Schnabel I. , The ECB's balance sheet reduction: an interim assessment, 2024c). As excess liquidity declines, it is expected that banks will source liquidity through Eurosystem standard refinancing operations, as these are an integral part of the smooth implementation of monetary policy in the demand-driven soft floor system. The impact of the decline in excess liquidity on financial markets and the banking system, including the impact on Irish banks, will continue to be monitored closely. However, excess liquidity in Ireland is elevated and it is expected that it will decline at a slower pace than some other euro area jurisdictions, ceteris paribus. As such, recourse to standard refinancing operations on aggregate may occur later than elsewhere. Based on the experience that is gained, the Governing Council will review the key parameters of the operational framework in 2026 and stands ready to adjust the design and parameters of the framework at an earlier stage, if necessary, to ensure that the implementation of monetary policy remains in line with the established core principles.

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