Ireland: Economic strength to help heading into uncertain 2023

NTMA Investor Presentation

December 2022

Gníomhaireacht Bainistíochta an Chisteáin Náisiúnta
National Treasury Management Agency

Index

Summary

Irish economic resilience clear in labour market and tax data

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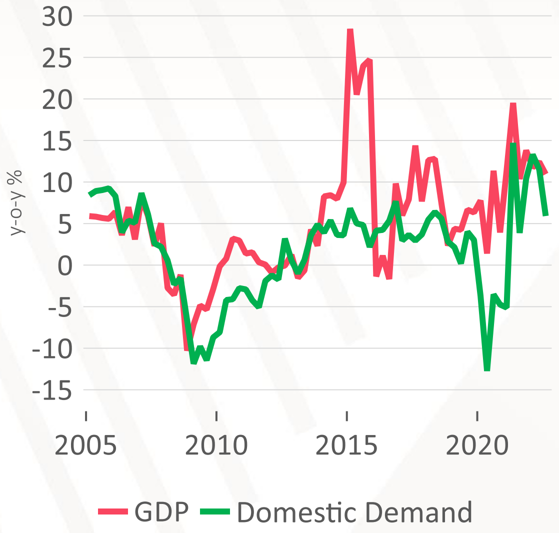
Domestic economic recovery evident

Energy crisis/inflation/monetary policy likely to impact growth in Q4 and 2023

Domestic demand* gives better picture of recent economics swings

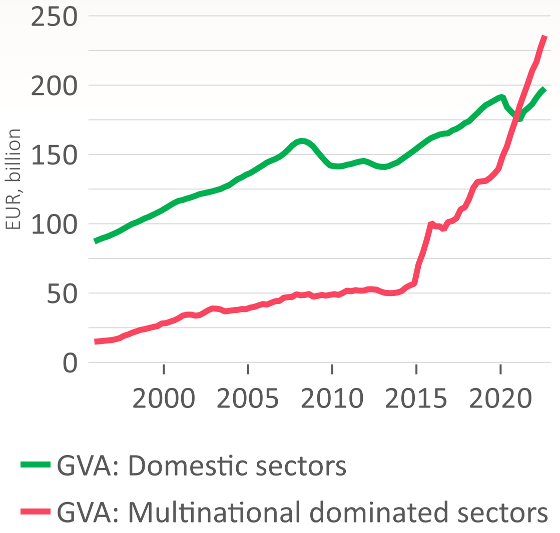


Source: CSO

Unemployment is low – labour market back close to full employment

Source: CSO

Value added from ICT & pharma has given Ireland resilience



Source: CSO

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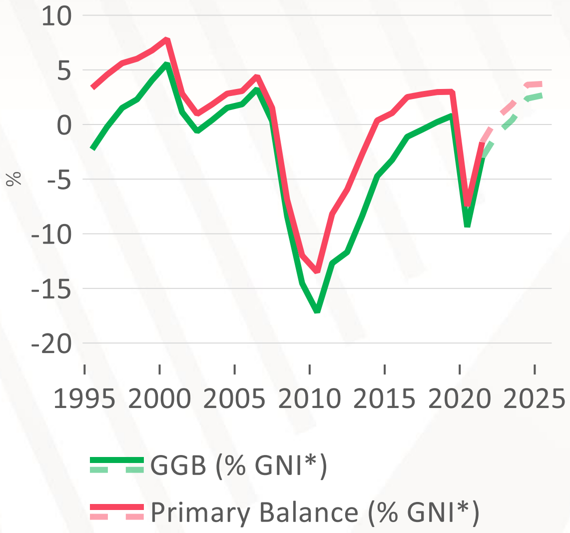
** Domestic demand series accounts for multinational activity and known as modified final domestic demand (excludes inventories)*

Note: Unemployment rate series shown uses the Covid adjusted unemployment rate between March 2020 and Feb 2022 and the standard unemployment rate elsewhere.

Government set for surplus this year

Debt to GNI* to fall again in 2022

Forecasted 2022 GG surplus after revenue strength



Source: CSO, Irish Department of Finance forecasts

Debt position is better than pre-pandemic

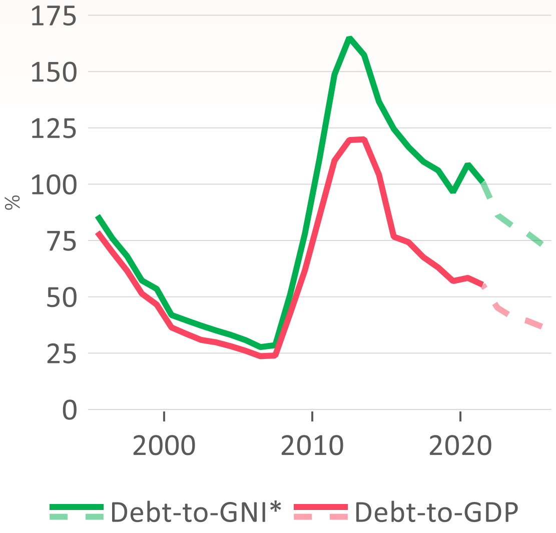
Debt-to-GNI*
(86% 2022f; 95% in 2019)

Debt-to-GG Revenue
(200% 2022f; 232% in 2019)

Average interest rate
(1.4% 2022f, from 2.2% in 2019)

Debt-to-GDP^
(45% 2022f, from 57% in 2019)

Debt to GNI* to fall below 90% in 2022 after strong economic recovery



Source: NTMA, CSO, Irish Department of Finance forecasts

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^ Debt to GDP is not an appropriate metric to use for Ireland

Medium term economic challenges

Recovery amid energy price shocks, global slowdown and broadening inflation

Growth

Strength in 2022 but energy crisis/inflation/tight monetary policy to impact growth in future quarters

Labour market strength gives comfort but some signs of full employment

Fiscal

Surplus for 2022 as economic strength buoys revenues. Uncertain period ahead but in solid fiscal position

Spending on cost-of-living measures announced in Budget 2023

Inflation

High inflation in Ireland similar to any other developed economy

Inflation and rate hikes will slow growth momentum but Ireland enters uncertain phase in full employment

2023 funding range between €7bn to €11bn

Fiscal strength means lower range than previous years

Cash

Improving fiscal position alongside NTMA's strategy of prefunding means Ireland has a strong cash position

This affords the NTMA a large degree of flexibility

>10 years

Weighted average maturity of debt one of longest in Europe

NTMA issuance in 2022 of €7bn at WAM of 14.7 years and average interest rate of 1.08%

AA-

Ireland rated in the AA- category with nearly all major rating agencies

Fitch and DBRS upgraded their rating for Ireland to AA space. Moody's upgraded to A1 (positive outlook)

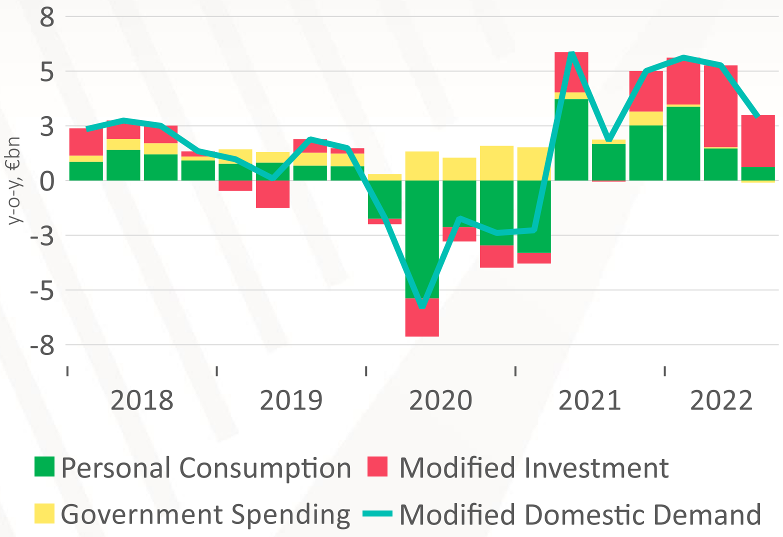
Macro

Economic strength in 2022 but signs of slowing into 2023

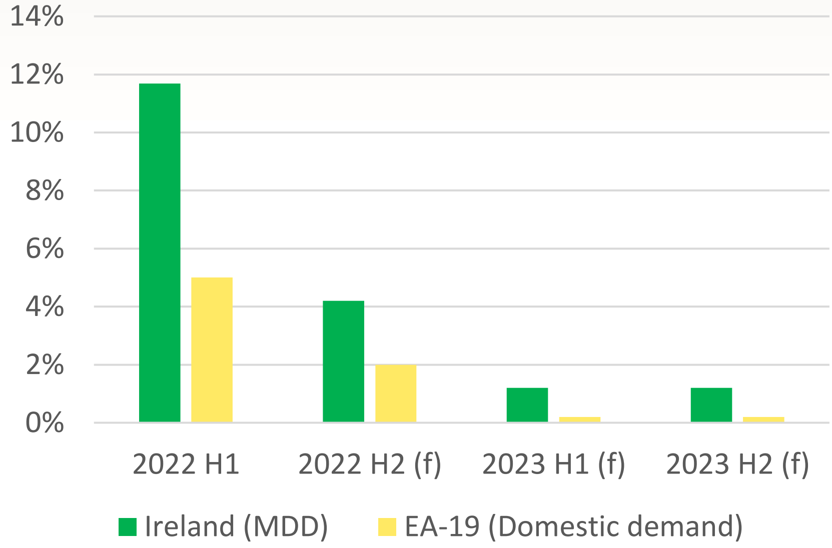
Ireland performed relatively well in 2022

Q3 MDD data show a contraction as personal consumption slows down

Government forecasts growth could be 7.7% in 2022 but there is a notable slowdown in Q3



Irish MDD strong in H1 2022 (4.7% q-o-q in Q2 important) and forecast to better euro area looking ahead



Source: CSO

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Note: MFDD for Ireland is modified for multinational activity by Ireland's Central Statistics Office (CSO). MDD = Consumption + Government (current) spending + Modified Investment.

Momentum going into 2023 has slowed

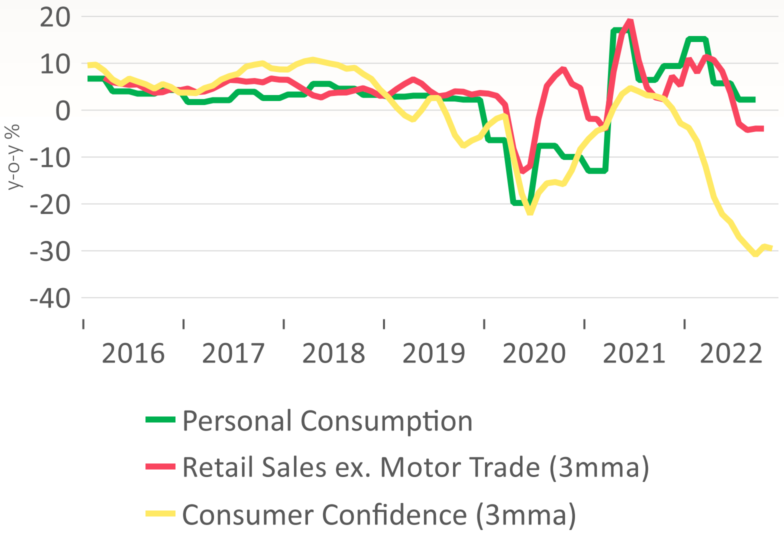
Q3 MDD data show a contraction as personal consumption slows down

Modified investment makes up majority of recent MDD growth while personal consumption's contribution softening

	Annual Growth Q3 vs Q3 2021	Quarterly Growth Q3 vs Q2 2022
GDP	10.9	2.3
MDD	5.9	-1.1
Consumption	2.2	0.3
Gov't Spending	-0.9	-0.3
Mod. Investment	22.0	-4.6
Employee Compensation	7.4	1.0

Source: CSO

Measures of consumption show a notable slowdown while consumer sentiment has plunged



Source: CSO, DG ECFIN

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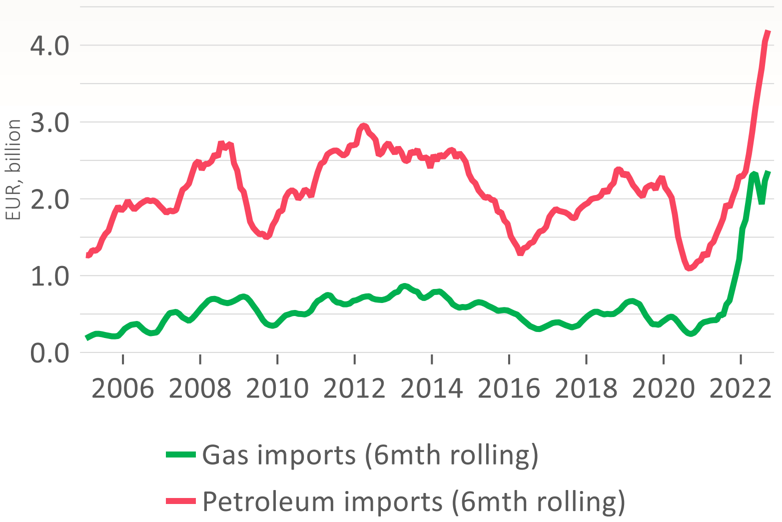
Note: MFDD for Ireland is modified for multinational activity by Ireland's Central Statistics Office (CSO). MDD = Consumption + Government (current) spending + Modified Investment.

External environment in 2023 uncertain

Central banks pushing rates higher as global slowdown expected

	2022	2023
EA Monetary Policy	Purchases ended; Rate normalisation	Rate normalisation + start of QT?
EU Fiscal Policy	Expansionary	Expansionary
US Monetary Policy	Move to 5% policy rate expected	Policy rate flat or mild easing expected
US growth	Decelerating growth	Low growth
Energy prices	Highly volatile	Elevated
UK growth	Decelerating growth	Low growth or recession
Euro Growth	Decelerating growth, energy supply/costs	Low growth or recession, energy supply/costs
Global Inflation	Elevated in 2022	Elevated but likely to fall back

Ireland price taker on Oil/Gas: €9bn (c. 4.5% of MDD) spent on fuel imports YTD, 2.5x same period in 2021

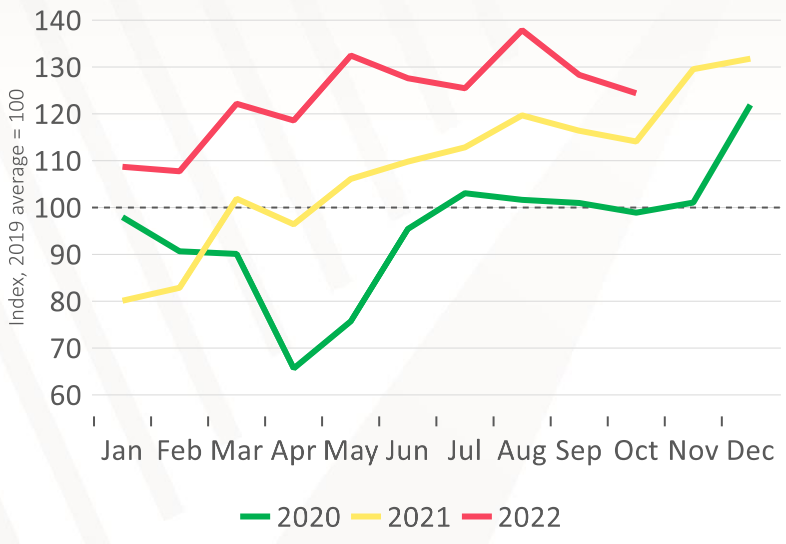


Source: CSO

Nominal spending up, real spending flat

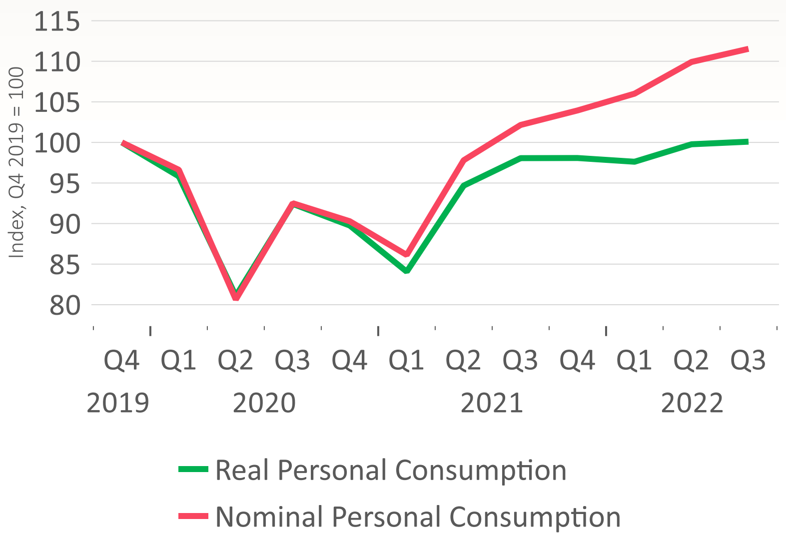
Inflation is now clearly eating into real consumption

Card spending data* show a strong start in 2022 but has levelled off (nominal data)



Source: Central Bank of Ireland

High-inflation environment hitting real consumption as divergence between real and nominal spending widens



Source: CSO

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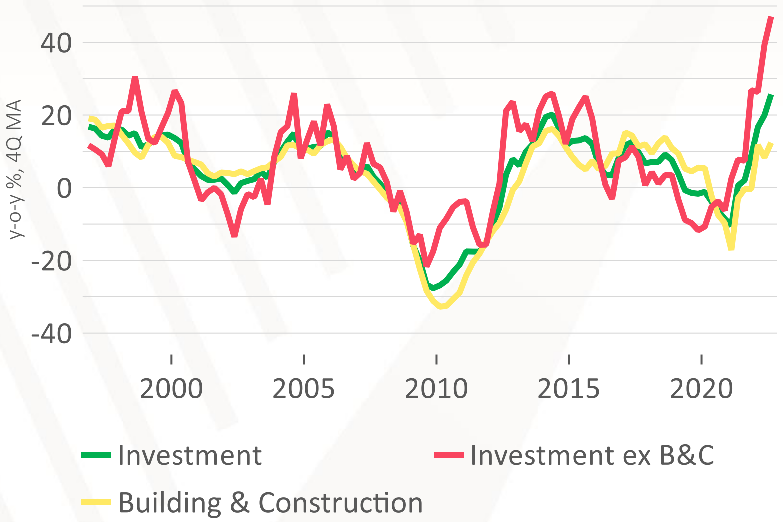
** CBI spending data is nominal data and not seasonally adjusted. Chart shows data from 2020 indexed to 2019, where the 2019 average = 100.*

Investment strength coming out of Covid

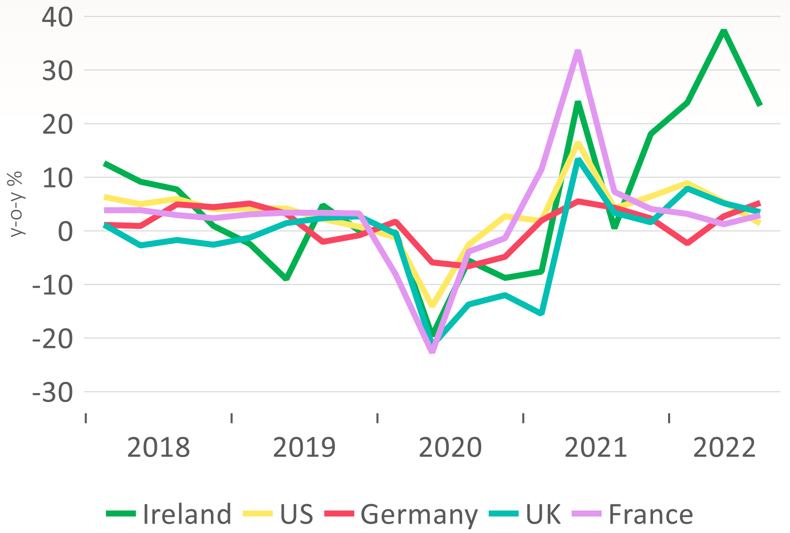
Modified investment well up on pre-pandemic but likely bolstered by one-off factors

Computer hardware investment, data centres and new dwelling construction driving modified investment



Source: CSO

Modified investment has given comparative strength to Irish economy in recent quarters; but Q3 was weaker



Source: CSO, BEA, DESTATIS, ONS, INSEE

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Note: Ireland metric is modified investment, which strips out multinational activity

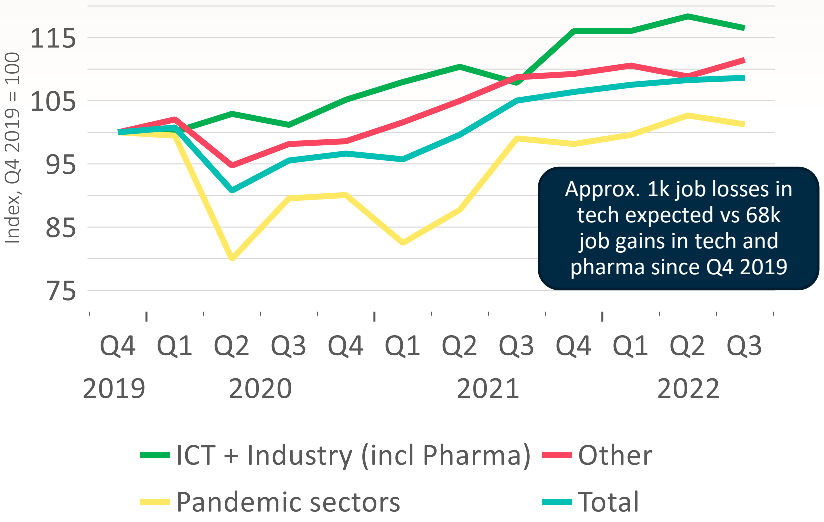
Labour market strength will help weather 2023

Unemployment rate well below pre-pandemic levels

Unemployment rate at 4.4% in November – full employment position achieved

Source: CSO

Employment growth exceptional for MNC firms during pandemic, concerns on tech job cuts but minor in scale so far



Source: CSO

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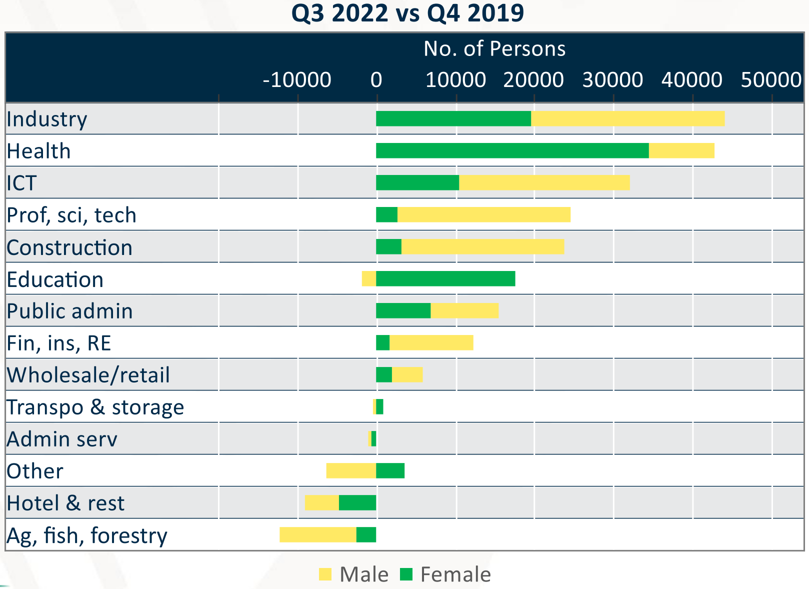
Note: Unemployment rate series shown uses the Covid adjusted unemployment rate between March 2020 and Feb 2022 and the standard unemployment rate elsewhere.

Nearly all sectors back above 2019 level

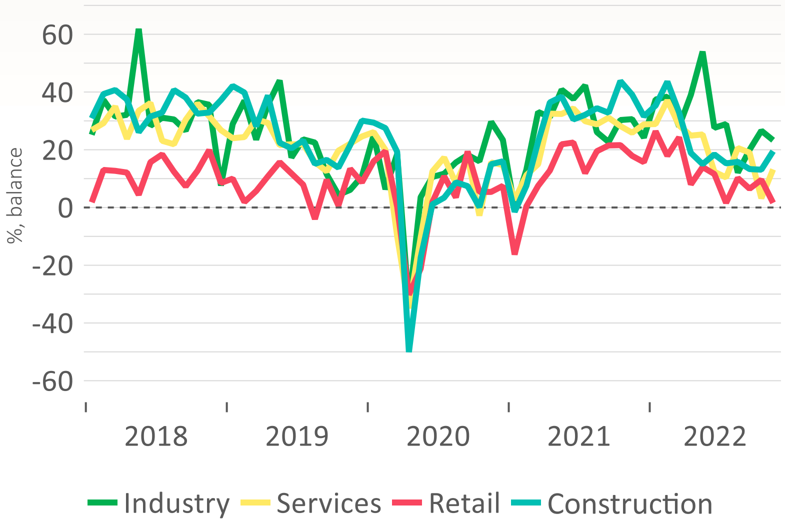
But business expectations on employment softening

Job gains broad-based, with female employment up 10.4% compared to pre-pandemic, vs 7.1% for males



Source: CSO

Employment expectations remain positive on balance but edging down over last several months

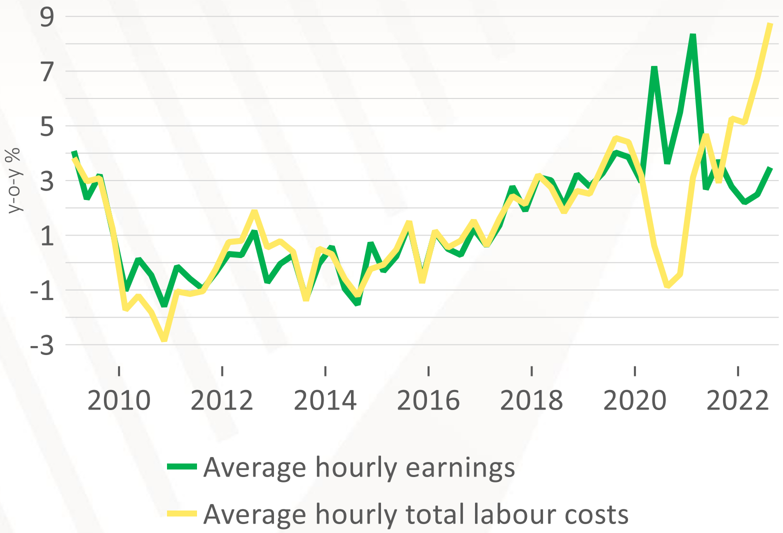


Source: DG ECFIN

Nearly all sectors back above 2019 level

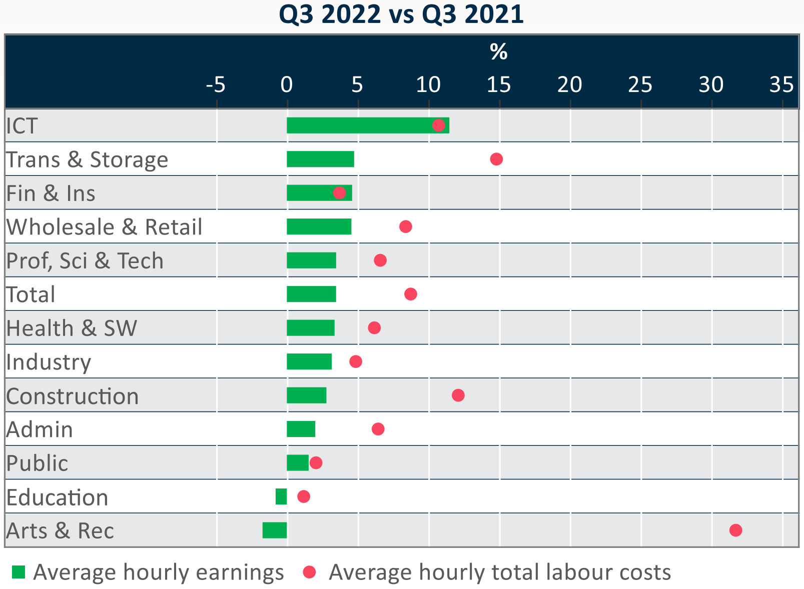
Next quarters critical for wage-price spiral concerns

Total labour costs up strongly in Q3 2022, but on a two year rate of change basis running at under 3% p.a. growth



Source: CSO

Labour costs* vary by sector—sectors which saw PRSI paused during Covid seeing bounce back at its reintroduction



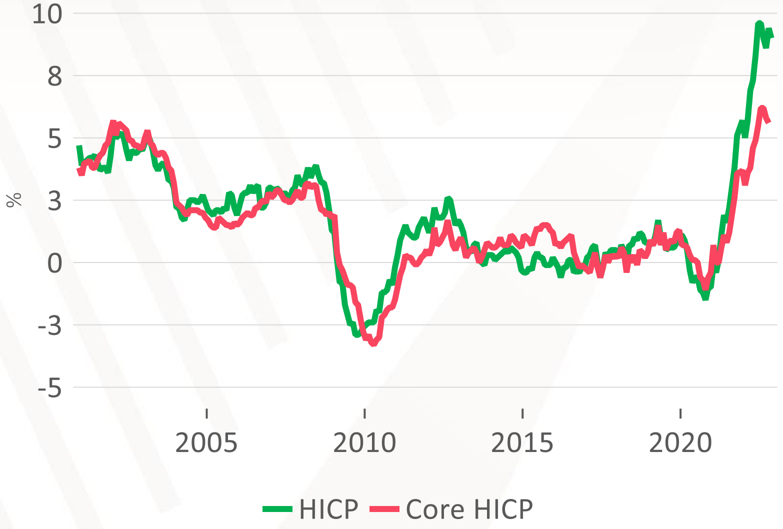
Source: CSO

** Chart excludes Accommodation and Food Service because it's average hourly total labour costs figure (+117% y-o-y) distorts the chart. For info, average hourly earnings in this sector were second fastest at +5.2% y-o-y.*

Inflation at 9.0% in Ireland

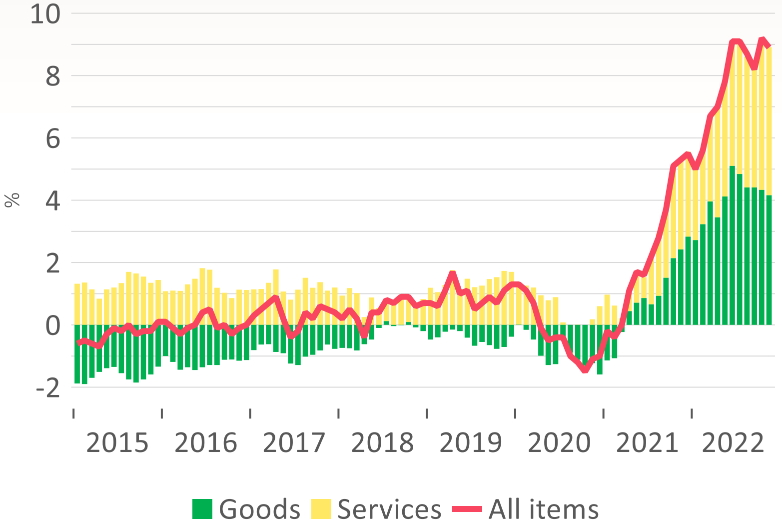
Energy and pandemic constraints are big drivers but core inflation also elevated

Energy prices driving headline inflation but core measure also elevated



Source: Eurostat

Goods inflation impacted by energy prices – services inflation could be stickier



Source: CSO

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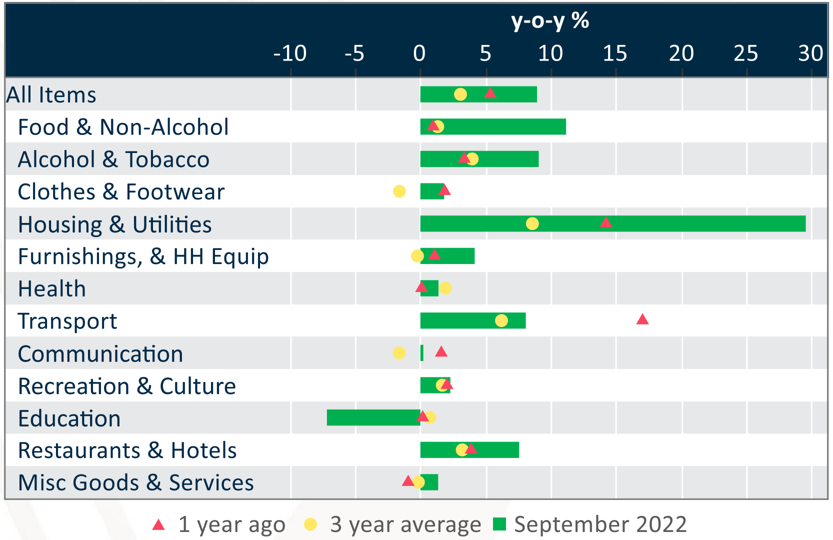
Inflationary pressure broad across index

Re-opening and energy impacts evident in inflation index

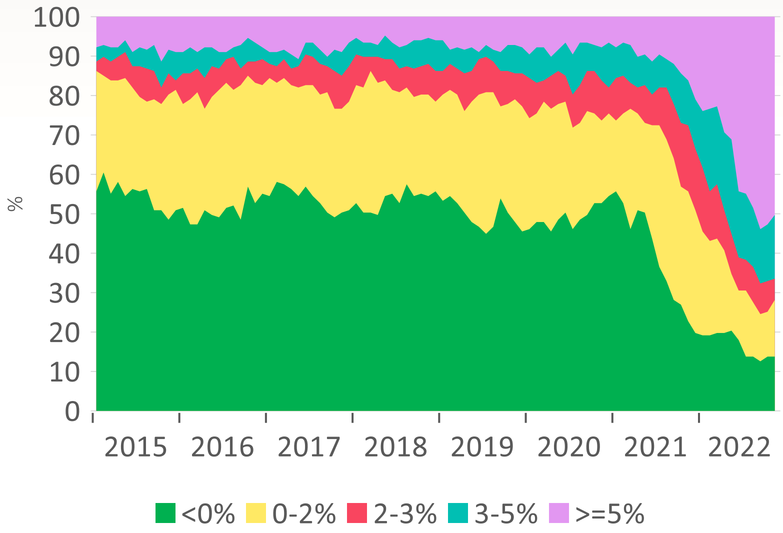
Biggest pick-up in inflation concentrated in energy and Covid-hit sectors

HICP inflation by COICOP divisions



Source: CSO

Inflation is broadening: >50% of products in CPI basket are seeing >5% annual inflation



Source: CSO

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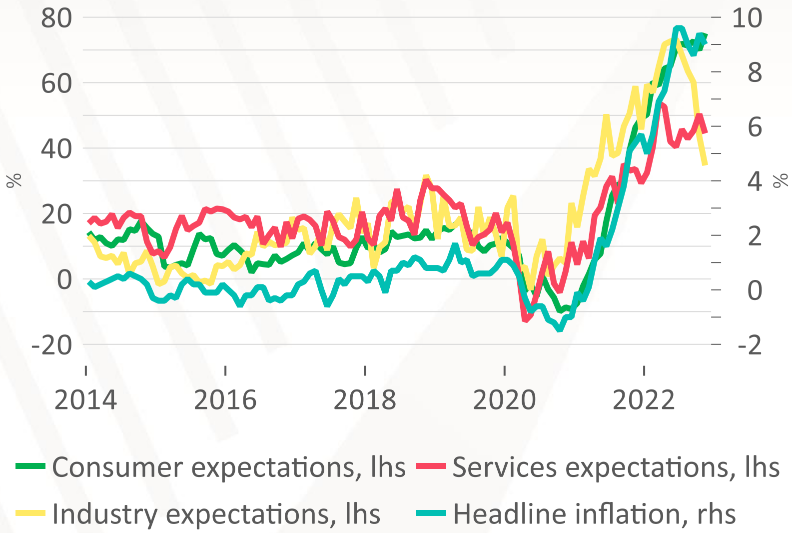
Note: RHS shows distribution of annual inflation rates across all CPI items (unweighted).

Sustained inflation an obvious risk

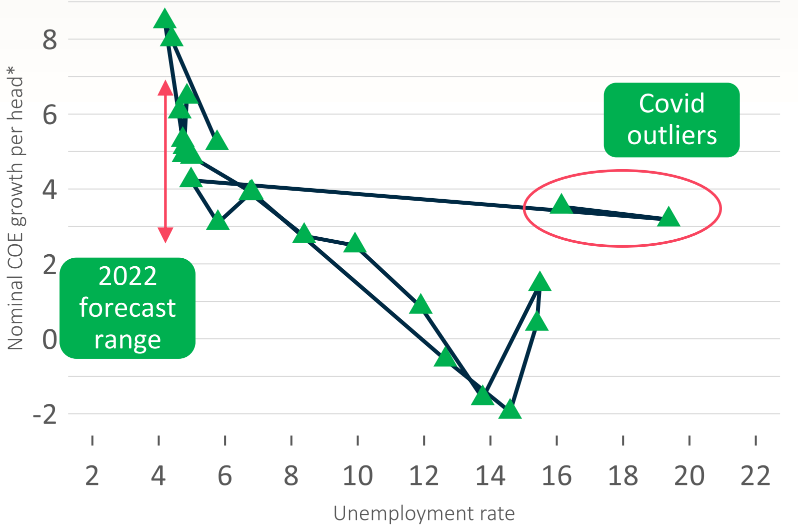
Phillips curve historically has held in Ireland

Inflation expectations picking up for consumers and businesses, industry dropping back



Source: DG ECFIN, Eurostat

Philips curve has held in Ireland in recent past and unemployment is below 5%



Source: CSO, Eurostat

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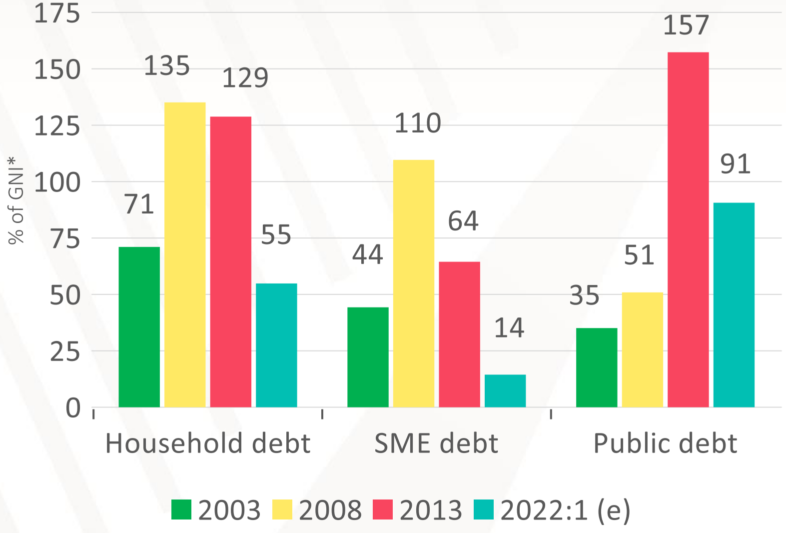
* *Excludes agriculture incomes*

Households balance sheets improved

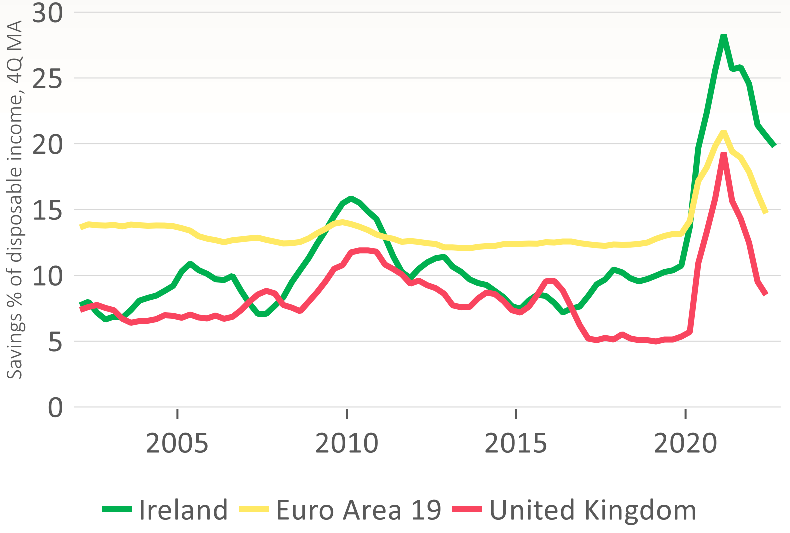
Debt levels much lower coming into pandemic + new Covid savings

Legacy of 2008-12 financial crisis and Covid is on Government not private balance sheets



Source: Central Bank of Ireland, Eurostat, CSO

Gross HH saving rates have jumped in Ireland more than in most countries due to forced savings/income supports



Source: CSO, CSO, ONS, Eurostat

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Note: Gross Savings as calculated by the CSO has tended to be a volatile series, some caution is warranted when interpreting this data

OECD’s BEPS process may impact FDI offering

Ireland signed up to agreement; implementation has been delayed to 2024 at earliest

Pillar One: proposal to re-allocate taxing rights on non-routine profits

- Over 130 countries have signed on for the BEPS 2.0 two-pillar set of reforms.
- The first pillar focuses on proposals that would re-allocate some taxing rights between jurisdictions where companies reside and the markets where user/consumers are based.
- Under such a proposal, a proportion of profits would be re-allocated from small countries to large countries.
- Pillar 1 will reduce Ireland’s corporation tax base. Some estimates place the hit at up to €2bn per annum by the middle of the decade.
- Ireland has always been fully supportive of Pillar One despite the implied cost to the Exchequer.

Pillar Two: 15% minimum effective global tax rate

- Countries will introduce a minimum effective tax rate with the aim of reducing incentives to shift profits.
- Where income is not taxed to the minimum level, there will be a ‘top-up’ to achieve the minimum rate of tax.
- Ireland had reservations on the minimum tax rate proposal but signed up after further clarity was given.
- The minimum rate is greater than the 12.5% rate that Ireland levies and thus some of Ireland’s comparative advantage in attracting FDI will be lost.
- Ireland can lean on other positives; educated and young workforce, English speaking, EU access, and ease of doing business
- At 15% corporate tax rate, Ireland’s rate remains one of the lowest in the EU.

Fiscal

Surplus expected on back of strong revenue growth

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Ireland set for surplus in 2022

Recovery in fiscal position in just three years – thanks to strong revenues

Response

GG Deficit was large in 2020 at €19bn but fell to €7.1bn in 2021 (3.1% of GNI*).

Small GG surplus of 1-2% of GNI* in 2022 likely

Revenues

Ireland's economic structure has meant revenues have rebounded strongly.

Strength of both Corporate and Income tax revenues from multinational sectors has helped buoy government finances

Debt

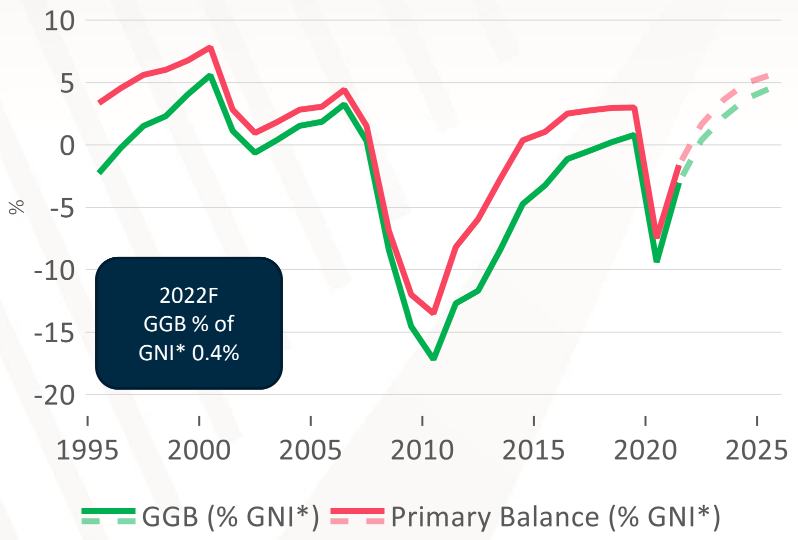
Debt ratios increased due to Covid with modest jump in 2021 for debt to GNI*

End-2021 ratio at 101%. Ratio will fall below pre-pandemic levels by end-2022 (c. 86%)

Ireland set for surplus in 2022

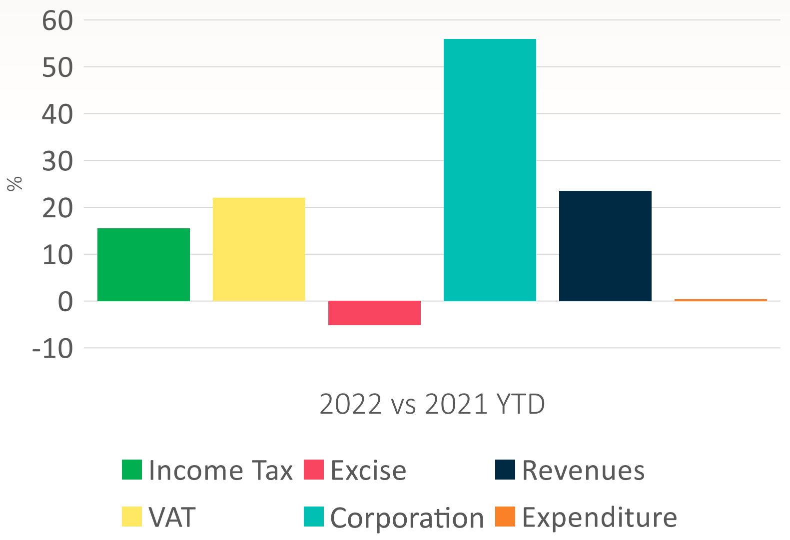
Robust revenues mean surplus is forecasted a year ahead of schedule

Gen. Govt. surplus expected in 2022, 1-2% of GNI*



Source: CSO, Irish Department of Finance forecasts

Revenues strong in 2022; income tax and VAT important but corporate tax exceptionally strong^ (end-November)



Source: Irish Department of Finance

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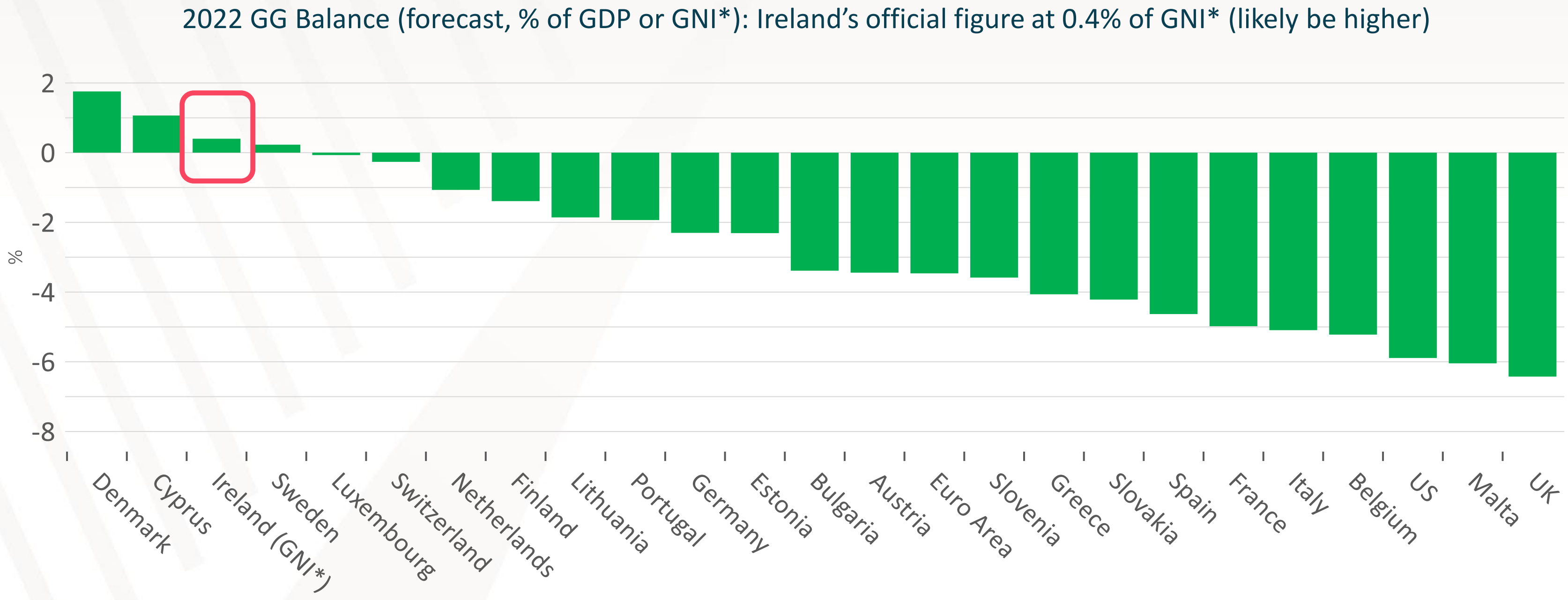
^CT receipts unusually large for 2022 to date, but expected to grow by c. 40-50% for year-end (vs 2021)

LHS chart: Underlying GG and primary balance numbers used (excludes banking recapitalisations during GFC)

Surplus compares well to others in EA

Recovery in fiscal position evident



Source: DG ECFIN, Irish Department of Finance

Note: Irish forecast per Department of Finance Budget 2023 and as a percent of modified GNI. Forecasts for other countries taken from European Commission Autumn 2022 Forecasts

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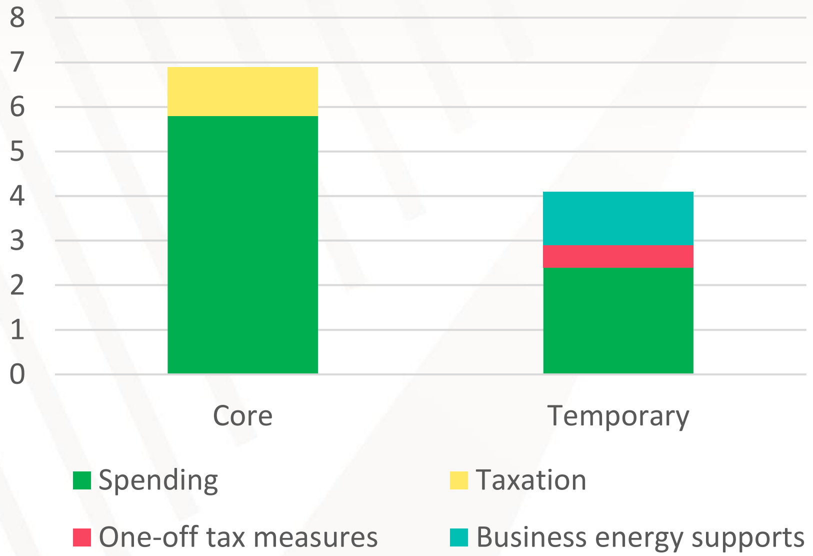
Budget 2023 announces €11bn in measures

Mix of permanent measures and one-offs equate to 4.2% of GNI*

Permanent budget measures amounted to €6.9bn and one-off cost of living measures amounting to €4.1bn



Source: Irish Department of Finance

- The one-off measures include:
  - Households will receive €600 in electricity credits.
  - Double child benefit payment in Q4
  - Other lump sum welfare payments
  - Businesses receive up to €10K a month for energy bills.
- The permanent measures include:
  - Tax band for highest income rate of 40% rising from €36.8K to €40K (€1.2bn cost).
  - Increases to pension and unemployment payments.
  - 25% cut to childcare costs & college fees will be reduced.
  - GG expenditure to increase by 4.8% in 2022. "Core" expenditure, which excludes Covid spending, will increase by 9.1% (& 6.3% for 2023). In both years this exceeds the Government's 5% spending rule*. The Government plans to revert to its 5% rule in 2024.

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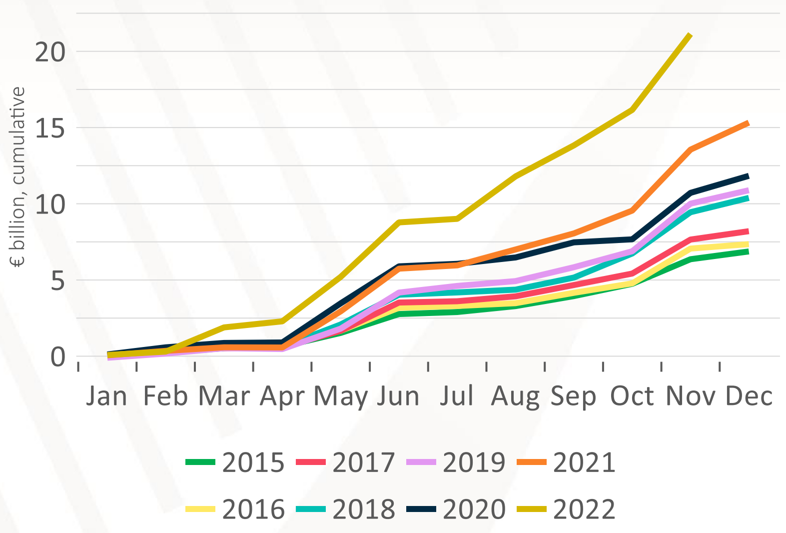
** The Government's 5% spending rule aims to tie expenditure growth to the estimated sustainable nominal growth rate of the Irish economy, which is 5%.*

Corporate tax receipts growing strongly

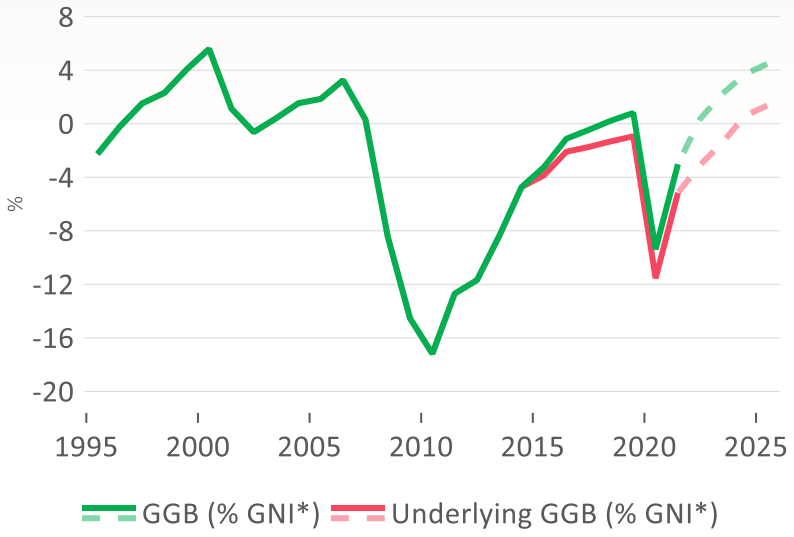
New measure of underlying GGB which excludes “windfall corporate tax” published

Corporation tracking for €23bn in 2022, nearly double 2020 level



Source: Irish Department of Finance

Underlying GGB measure suggests Ireland would reach surplus by 2024



Source: CSO, Irish Department of Finance forecasts

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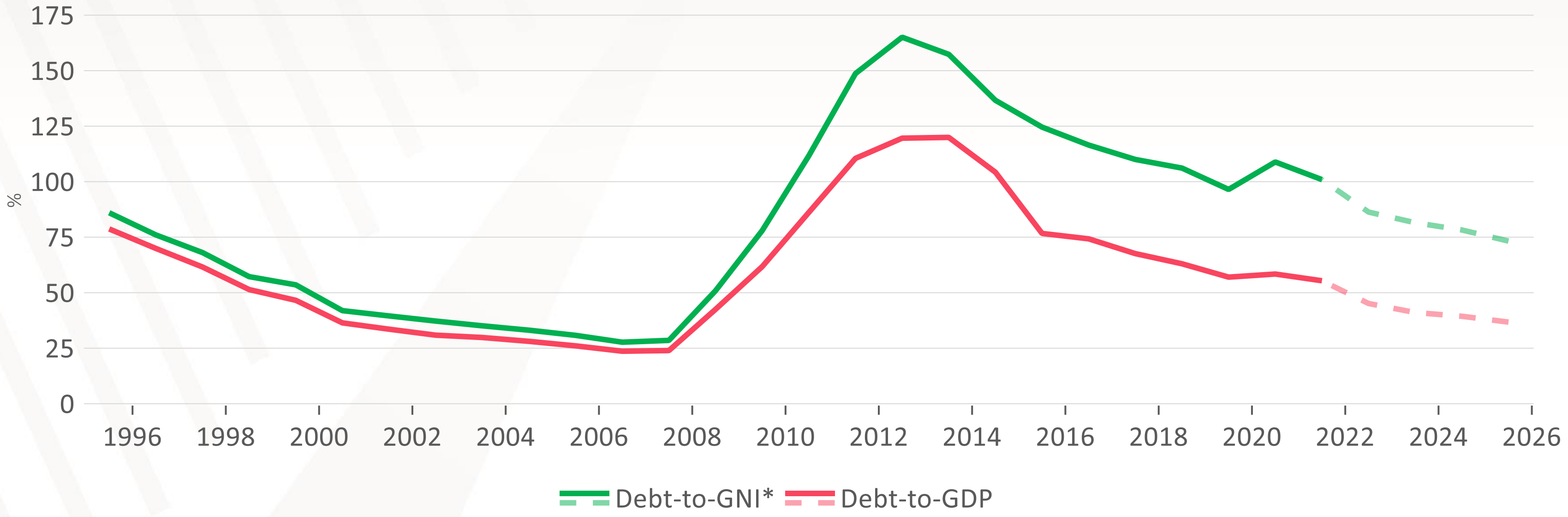
Note: The Department of Finance’s underlying general government balance is the GGB excluding the Government’s estimated windfall corporation tax receipts (windfall estimated at €9bn for 2022).

GG debt to GNI* to fall below 90% in 2022

Debt 101% of GNI* in 2021 and expected to fall as growth and fiscal position both help



Source: NTMA, CSO, Irish Department of Finance forecasts

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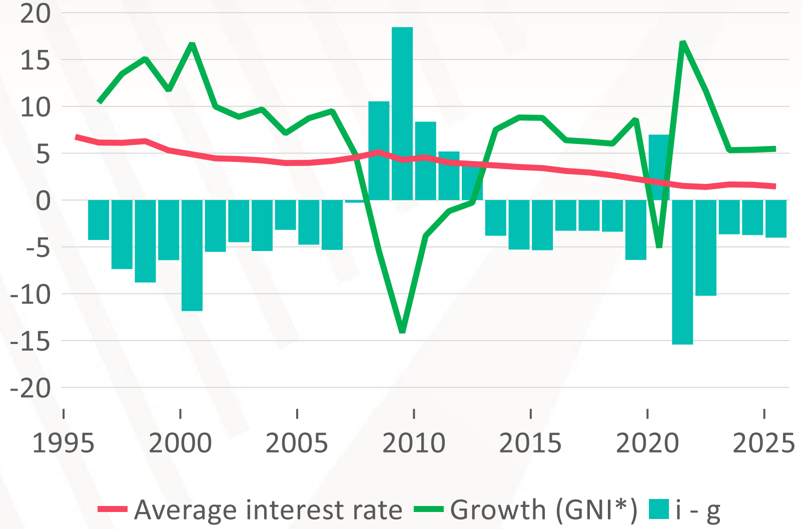
The “i-g” snowball effect in Ireland’s favour

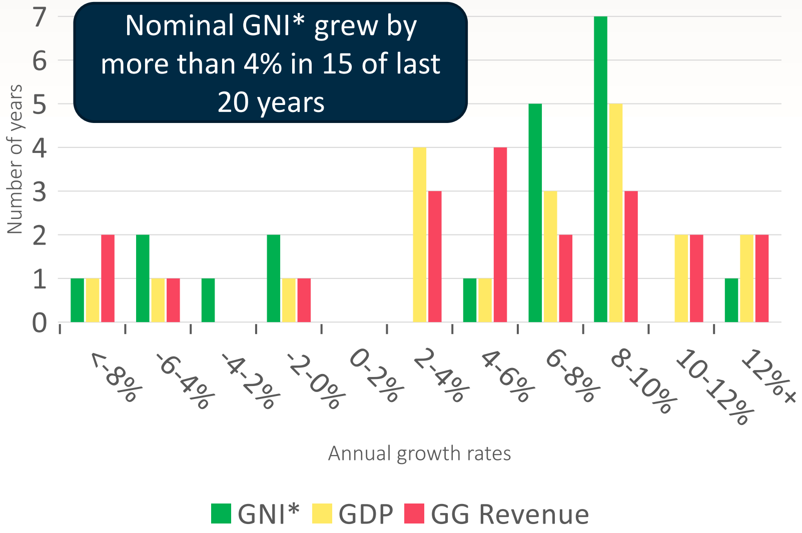
Low interest rates coupled with high nominal growth underpins debt dynamics

With low rates locked in, Ireland’s “hurdle rate” for a positive snowball effect is low



Source: CSO, Irish Department of Finance forecasts, NTMA analysis

Histogram of Ireland’s recent growth history (2002-2021)



Source: CSO, NTMA analysis

Alternative Debt Metrics

Need to assess other metrics apart from debt to GDP when analysing debt sustainability

2022

	GG debt to GDP %	GG debt to GG revenue %	GG interest to GG revenue %
Greece	171	340	4.8
Italy	145	295	8.1
Portugal	116	264	4.9
Spain	114	259	5.0
France	112	211	3.4
Belgium	106	217	3.0
UK	103	256	8.2
EA 19	94	199	3.4
Cyprus	90	217	3.7
Ireland	**45 (86 GNI*)**	**200**	**3.2**
EU 27	86	185	3.3
Austria	78	161	2.3
Slovenia	70	162	2.6
Germany	67	143	1.3
Slovakia	60	146	2.5
Netherlands	50	115	1.3

Source: DG ECFIN, Irish Department of Finance

NTMA Funding

Funding range of €7bn to €11bn in 2023

Continued flexibility in strategy due to cash balances and long average life

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2023 funding range between €7bn to €11bn

Fiscal strength means lower range than previous years

Cash

Improving fiscal position alongside NTMA's strategy of prefunding means Ireland has a strong cash position

This affords the NTMA a large degree of flexibility

>10 years

Weighted average maturity of debt one of longest in Europe

NTMA issuance in 2022 of €7bn at WAM of 14.7 years and average interest rate of 1.08%

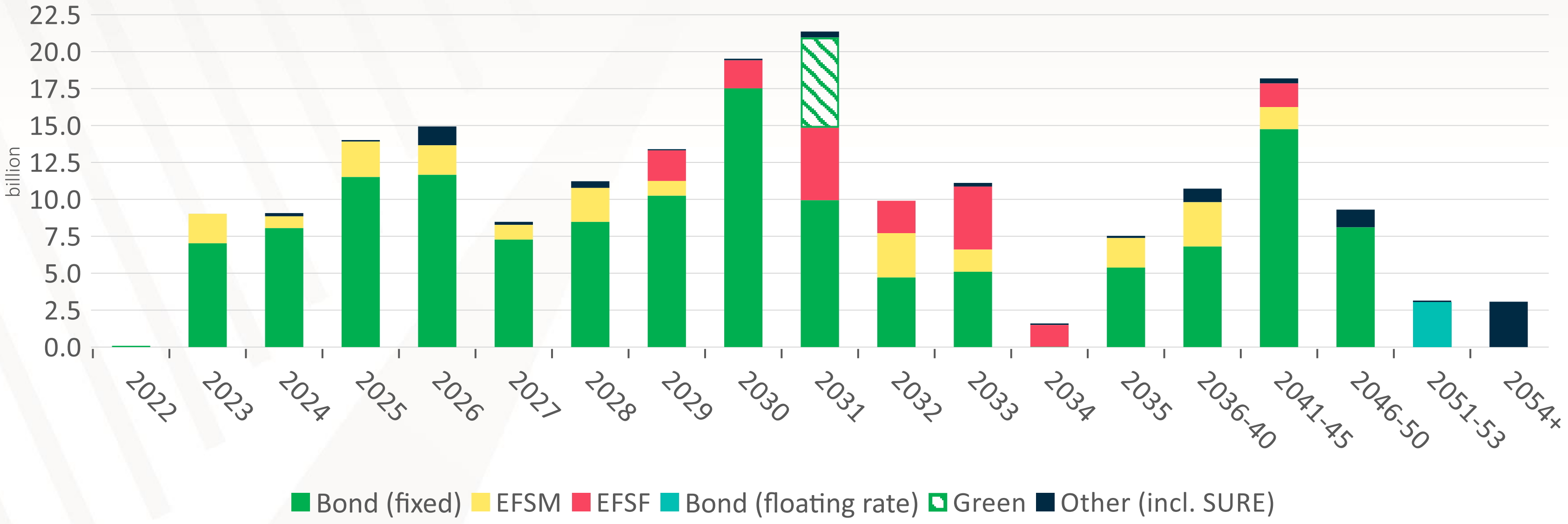
AA-

Ireland rated in the AA- category with nearly all major rating agencies

Fitch and DBRS upgraded their rating for Ireland to AA space. Moody's upgraded to A1 (positive outlook)

High level of flexibility in NTMA issuance plans

Helped by smoother maturity profile



Source: NTMA

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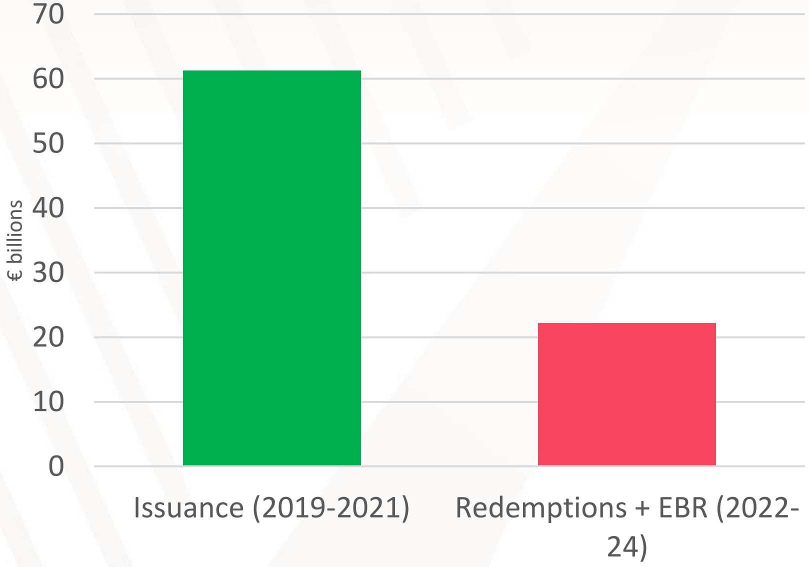
National Treasury Management Agency

Lower supply expected in coming years

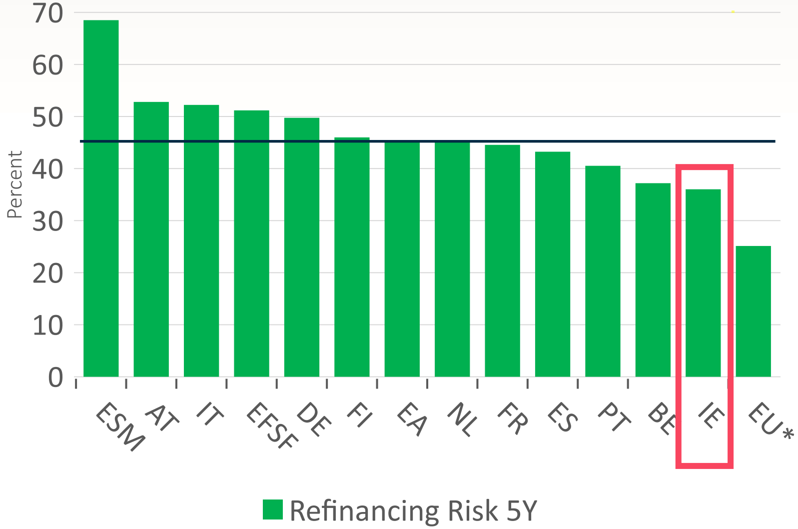
Ireland has low redemptions compared to rest of Europe

Current borrowing requirements suggest NTMA issuance won't match recent past in coming years (€bns)



Source: NTMA, Budget 2023 forecasts

Ireland's refinancing risk is low - only a third of debt is set to mature in the next five years



Source: ESDM

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National Treasury Management Agency

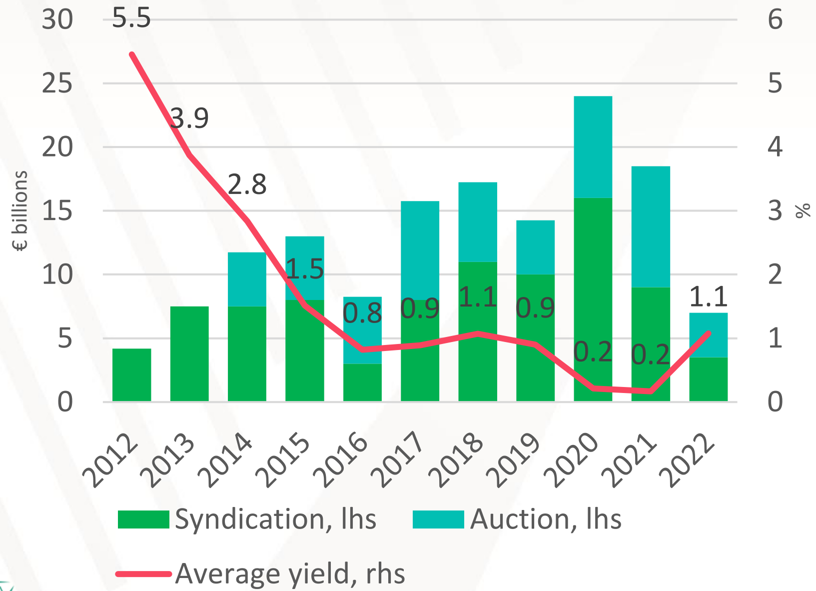
Refinancing rate defined as debt maturing within five years divided by total debt outstanding

** EU as an Issuer*

Borrowing costs anchored

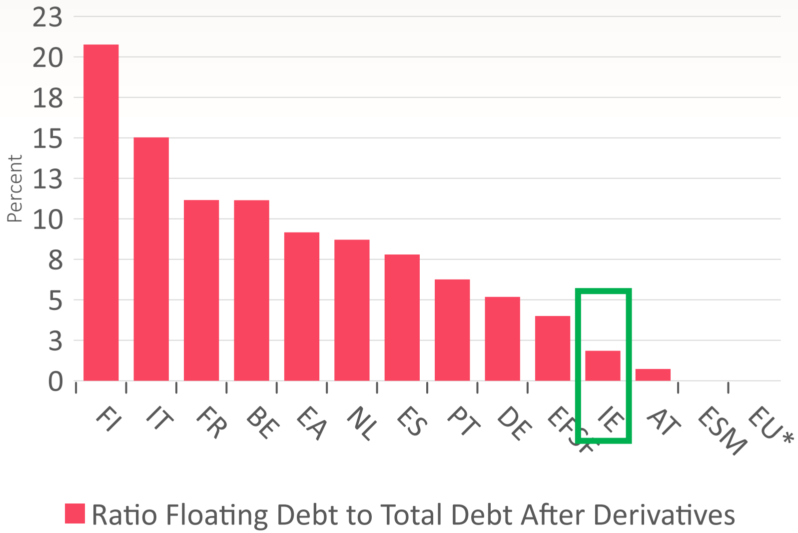
Ultra low rate era may be over but Ireland used the period well

NTMA issued €42.5bn MLT debt 2020/21 at 12.8 yr. weighted maturity and avg. rate 0.19%



Source: NTMA

Vast majority of Irish debt is fixed rate at average cost of 1.5%



Source: ESDM

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National Treasury Management Agency

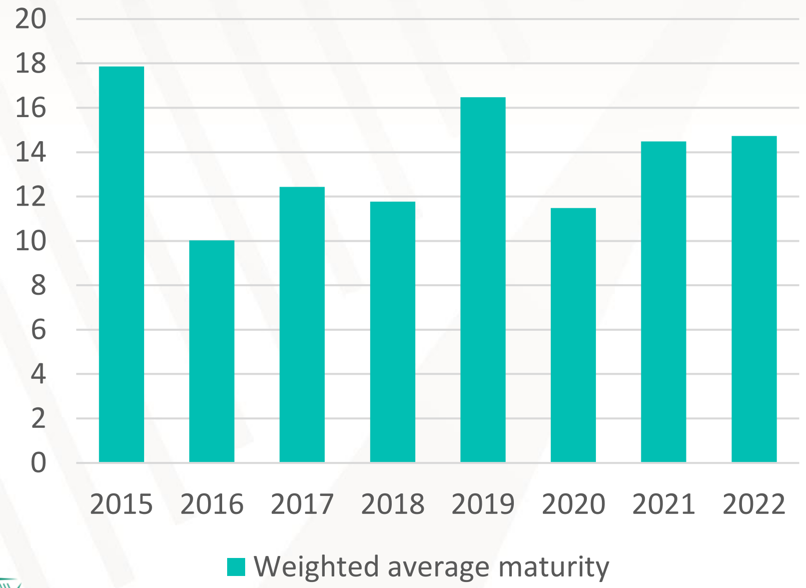
Note only auctions and syndication

** EU as an Issuer*

NTMA has lengthened weighted maturity

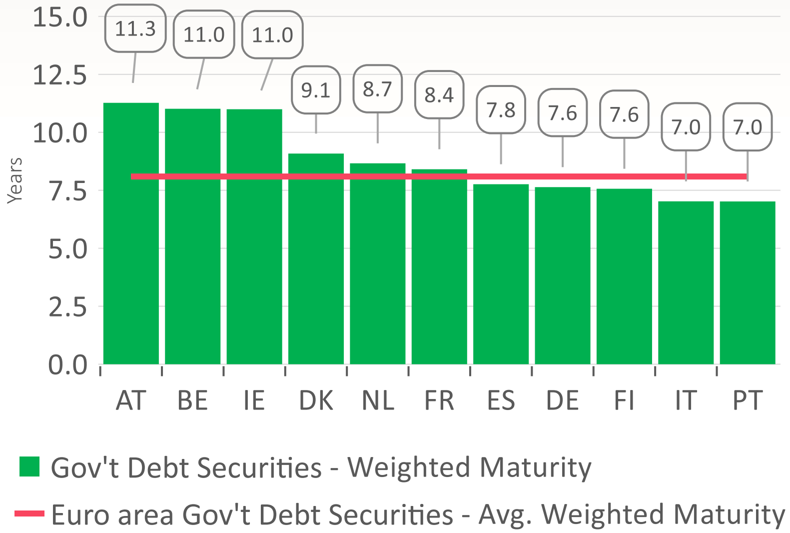
Debt management strategy took advantage of QE to extend debt profile since 2015

Benchmark issuance has extended the maturity of Government debt …



Source: NTMA

…Ireland (in years) compares favourably to other EU countries



Source: ECB

Note: Weighted maturity for Ireland includes Fixed rate benchmark bonds, FRNs, Amortising Bonds, Notes issued under EMTN programme, T-Bills and ECP Data. It excludes programme loans and retail.

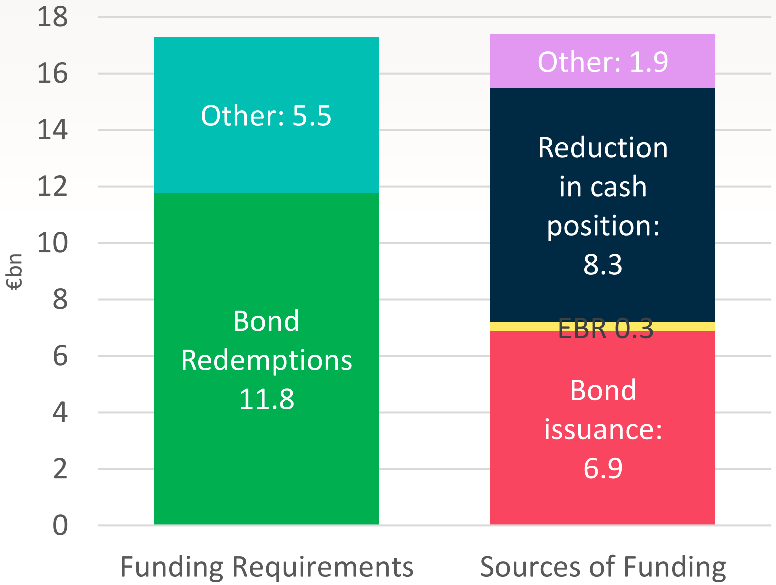
Funding needs and sources for 2022

Lower borrowing results in cash balance running down

- There were two bond redemptions in 2022. They total €11.8bn. There were further buybacks of FRNs from the Central Bank of Ireland (included in other funding requirements).

- The Exchequer Borrowing Requirement (EBR) for 2022 was expected to be a surplus of €0.3bn (this is shown in the chart). But EBR is likely higher given strong revenues in Q4.

- The NTMA is likely to continue to hold significant cash into 2023. The balance at year-end will be above €20bn.



Source: NTMA

Rounding may affect totals

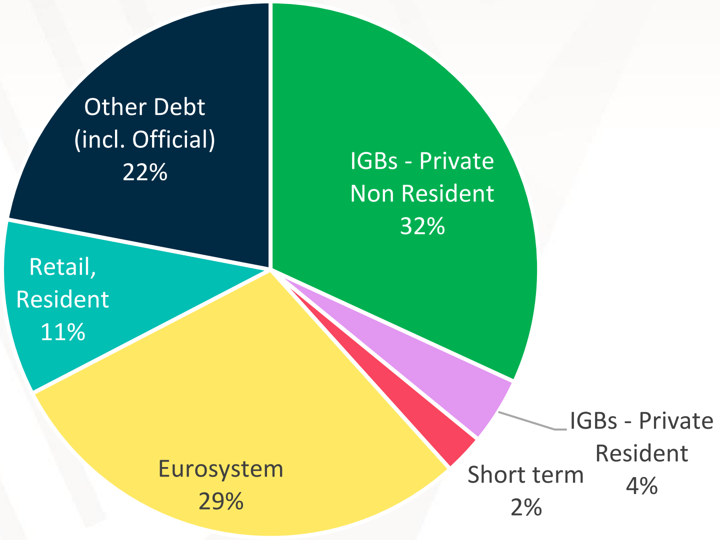
1. *On 28 September 2022, the NTMA announced there would be no bond issuance in Q4 2022 meaning total nominal issuance for the year is €7bn; the cash proceeds , including from the non-competitive auctions, are shown in the chart.*
2. *Other funding needs includes provision for the potential bond/FRN purchases and general contingencies.*
3. *Other funding sources mostly comprises of net State Savings (retail) and other medium/long-term borrowing.*
4. *EBR is the Department of Finance's Budget 2023 estimate of the Exchequer Borrowing Requirement*

Gníomhaireacht Bainistíochta an Chisteáin Náisiúnta
National Treasury Management Agency

Diverse holders of Irish debt

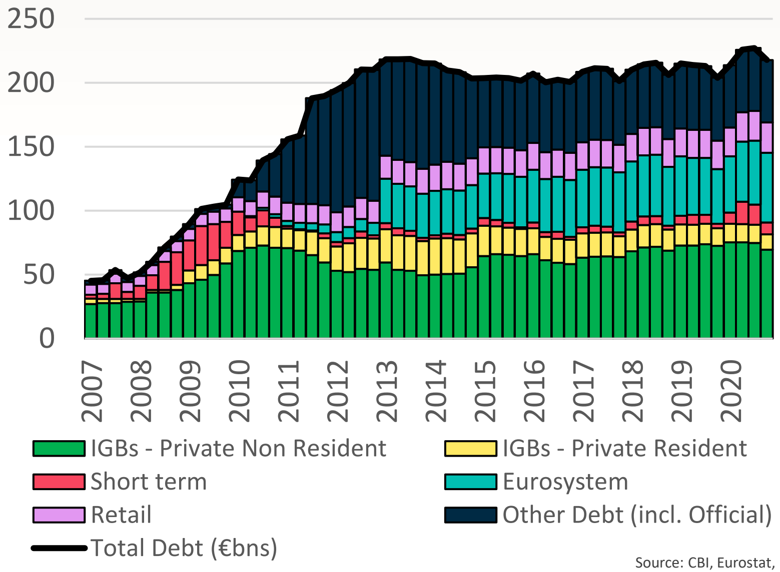
Sticky sources account for c. 60%

Ireland roughly split 85/15 on non-resident versus resident holdings (end-2021)



Source: CBI, Eurostat, ECB

“Sticky” sources - official loans, Eurosystem, retail - make up c. 60% of Irish debt



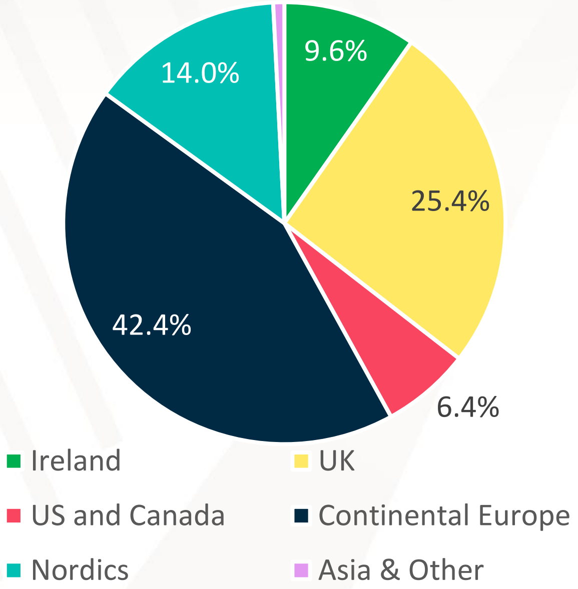
Source: CBI, Eurostat, ECB

IGBs excludes those held by Eurosystem. Eurosystem holdings include SMP, PSPP, PEPP and CBI holdings of FRNs. Figures do not include ANFA. Other debt has included IMF, EFSF, EFSM, Bilateral as well as IBRC-related liabilities over time. Retail includes State Savings and other currency and deposits. The CSO series has been altered to exclude the impact of IBRC.

Investor base

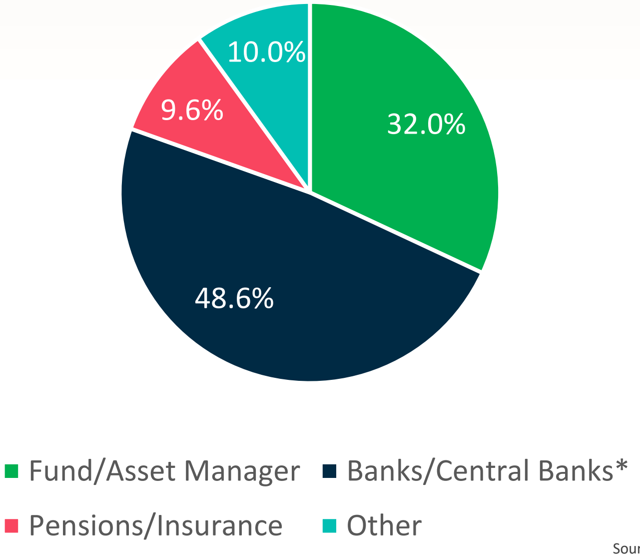
Demand for Government bonds is wide and varied

Country breakdown:
Average over last five syndications



Source: NTMA

Investor breakdown:
Average over last five syndications



Source: NTMA

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** Does not include ECB. ECB does not participate on primary market under its various asset purchasing programmes*

Credit Ratings for Ireland

Four upgrades in 2022 so far; Ireland rated in “AA” category by majority

Rating Agency	Long-term	Short-term	Outlook/ Trend	Date of last change	Date of next review
Standard & Poor's	AA-	A-1+	Positive	Nov 2019	H1 2023
Fitch Ratings	AA-	F1+	Stable	Jan 2022	H1 2023
Moody's	A1	P-1	Positive	May 2022	H1 2023
DBRS Morningstar	AA(low)	R-1 (middle)	Stable	Jan 2022	H1 2023
R&I	AA-	a-1	Stable	Feb 2022	H1 2023
KBRA	AA-	K1+	Stable	Jan. 2020	H1 2023
Scope	AA-	S-1+	Stable	May 2021	H1 2023

Commission's ruling on Apple annulled

Further appeal by EC means case continues

- In 2016, the European Commission ruled that Ireland illegally provided State aid of up to €13bn, plus interest to Apple. This figure was based on the tax foregone as a result of a historic provision in Ireland's tax code. The Irish Government closed this provision on December 31st 2014.

- Apple appealed the ruling, as did the Irish Government. **The General Court granted the appeal in July 2020, annulling the EC's ruling.**

- This case had nothing to do with Ireland's corporate tax rate. It related to whether Ireland gave unfair advantage to Apple with its tax dealings. **The General Court has judged no such advantage occurred.**

- The Commission has decided to appeal to a higher court: the European Court of Justice. This process could still be lengthy. Pending the outcome of the second appeal, the €13bn plus EU interest will remain in an escrow fund.

- **The NTMA has not included these funds in any of its issuance plans in the past or currently.** The funds are seen as separate and will be returned to Apple if the General Court's decision is upheld.

ESG

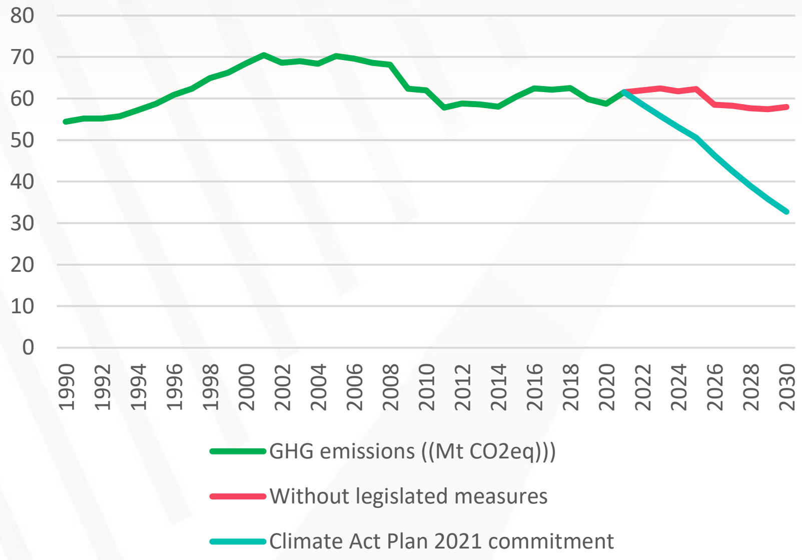
Issuance & government policy
demonstrate Ireland's green commitment

Gníomhaireacht Bainistíochta an Chisteáin Náisiúnta
National Treasury Management Agency

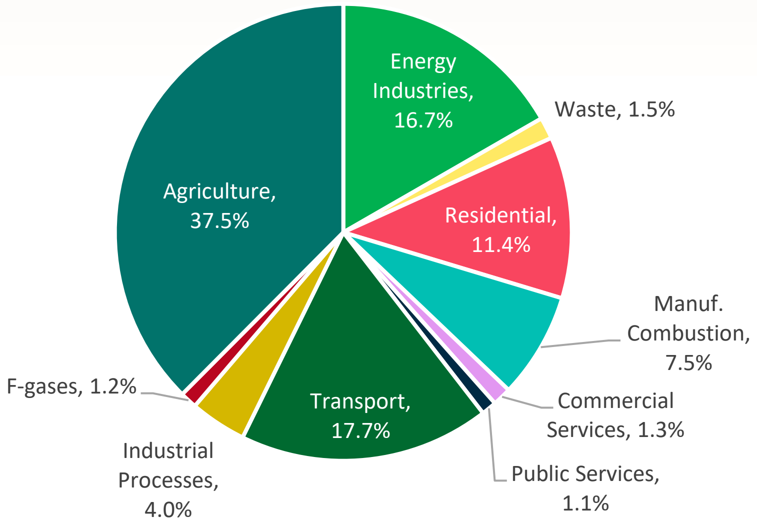
Ireland’s Greenhouse Gas emissions

State of Play – emissions rose in 2021 after fall in Covid year

Ireland’s emissions fell post financial crisis – but significant progress needs to made by end of decade



Emissions from agriculture make up a significant portion of the total In Ireland (c. 10% in EU and US)



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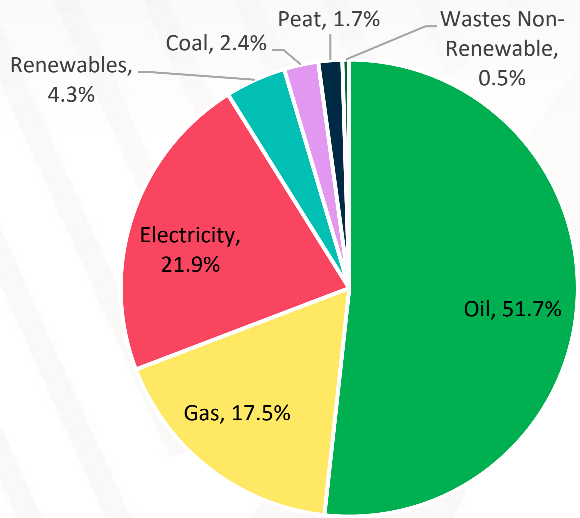
Source: Environment Protection Agency (Ireland) , Climate Action Plan 2021

Note: Metric used is million tonnes carbon dioxide equivalent (Mt CO2eq)

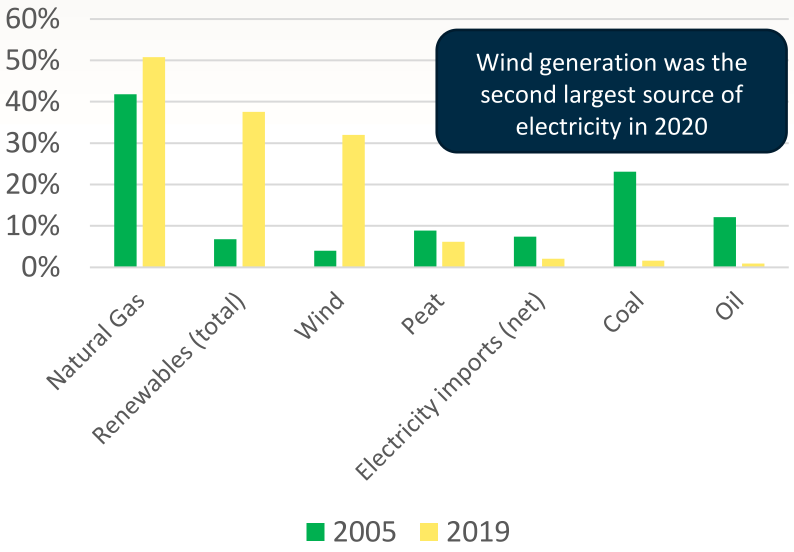
Ireland Energy: Fossil fuels prevalent

Irelands energy mix is reliant on fossil fuels but renewables share to increase by 2030

Oil accounts for the largest share of Irelands energy mix. Transport accounted for 63% of oil use in 2021



Electricity production has become more renewables based but still far from Climate Action Plan aims of 80% by 2030



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National Treasury Management Agency

Source: SEAI, Climate Action Plan 2021, EU Renewable Energy Directive

Waste (non-renewables) accounted for 0% (2005) and <1% (2019) of electricity production

Climate Action Legislation

The Climate Action & Low Carbon Development Act 2021 aims for Net Zero by 2050

Climate Action & Low Carbon Act:

- Carbon Budgeting: The Act embeds the process of carbon budgeting into law. It requires Government to adopt a series of economy-wide-five-year carbon budgets.
- 51% reduction: First carbon budgets will aim for a reduction of 51% of emissions by 2030.
- Climate Action Strategy: A national plan will be prepared every five years and actions for each sector will be update annually.
- All of Government approach: Local authorities are required to prepare a Climate Action Plan and public bodies obliged to conduct their functions in line with the national plan.

Climate Action Plan Goals:

- Target of 5GW of offshore and up to 8GW of onshore wind energy by 2030. Aim for 80% of electricity to be generated by renewable sources by 2030.
- Enable 500,000 sustainable travel journeys per day. Increase biofuel use in transport, bus and rail replacements to be low or zero carbon emissions. Increase proportion of kms driven by electric cars to 40-45%.
- Commitment to retrofit 500,000 homes by 2030 and install 680,000 renewable energy heat sources in new and existing residential buildings.

Sector	% Reduction by 2030 relative to 2018	GHG emissions 2030 Ceiling
Electricity	75%	3 MtCO2eq
Transport	50%	6 MtCO2eq
Buildings (Commercial and Public)	45%	1 MtCO2eq
Buildings (Residential)	40%	4 MtCO2eq
Industry	25%	4 MtCO2eq
Agriculture	25%	17.25 MtCO2eq
Other*	50%	1 MtCO2eq

**F-gases, Petroleum Refining and Waste*

Irish Sovereign Green Bonds (ISGB)

Cumulative €7.34bn allocated to green projects following fourth year

- €6.85bn nominal outstanding (€7.34bn cash equivalent)
- There was full allocation of remaining proceeds from ISGBs on hand at year end 2021
- Issuance through both syndicated sales and auctions
- Pipeline for eligible green expenditure remains strong
- Launched 2018 and based on ICMA Green Bond Principles – Use of proceeds model
- Governed by a Working Group of government departments chaired by the Department of Finance
- Compliance reviews by Sustainalytics
- Four annual allocation reports and three annual impact reports now published

Irish Sovereign Green Bond Impact Report 2020: Highlights*

- **Environmentally Sustainable Management of Living Natural Resources and Land Use**

  Number of hectares of forest planted: 2,434

  Number of Landfill Remediation projects being funded: 76
- **Renewable Energy**

  Number of companies (including public sector organisations) benefitting from SEAI Research & Innovation programmes as lead, partner or active collaborators : 19

  SEAI Research & Innovation awards: 11
- **Sustainable water and wastewater management**

  Water savings (litres of water per day) : 227.6 million

  New & upgraded water and wastewater treatment plants: 5

  Length of water main laid (total) : 178km

**For a more detailed break-down please see the forthcoming ISGB 2020 Impact Report*

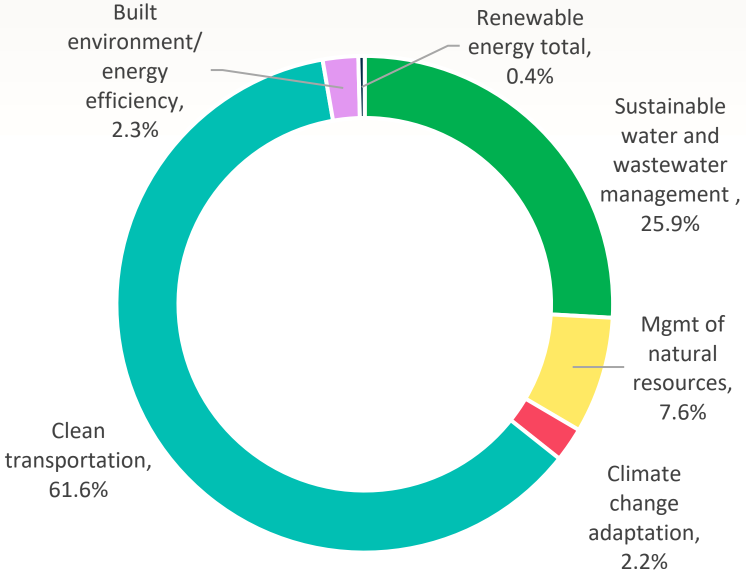
Irish Sovereign Green Bonds (ISGB)

Irish Sovereign Green Bond Impact Report 2020 & Allocation Report 2021: sample impacts

Some highlights from the report*

- **Built Environment/ Energy Efficiency**
  - Energy saving (GigaWattHours) : 156
  - Number of homes renovated : 19,086
  - EV home charger grants provided: 2,523
- **Clean Transportation**
  - Number of public transport passenger journeys: 137.7 million
  - Greenway users: 725,191**
  - Take-up of Grant Schemes/ Tax foregone provided (number of vehicles) : 24,122
- **Climate Change Adaptation**
  - 16 major Flood relief projects at planning, development or construction phase.
  - 8,296 properties protected on completion

Allocation in 2021 of ISGB funding has focused on Water/Waste management and transportation



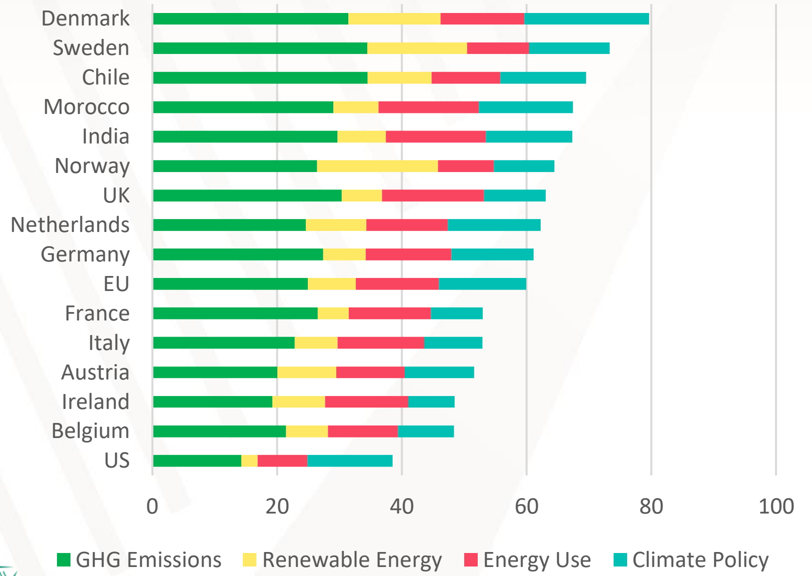
*For a more detailed break-down please see the Irish Sovereign Green Bond Allocation Report 2021

** Raw count from 3 longest Greenways- Waterford, Old Rail Trail, Royal Canal Greenway

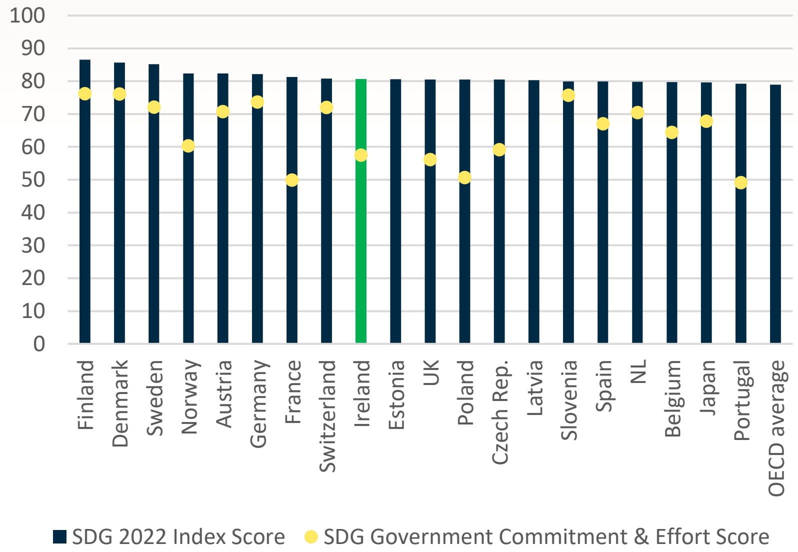
On the "E" of ESG, Ireland is currently behind

But we are viewed strongly on progress and commitment to SDG policy

Ireland ranks behind leaders like Denmark in current environmental metrics



Ireland ranked 9th globally on progress towards achieving the Sustainable Development Goals



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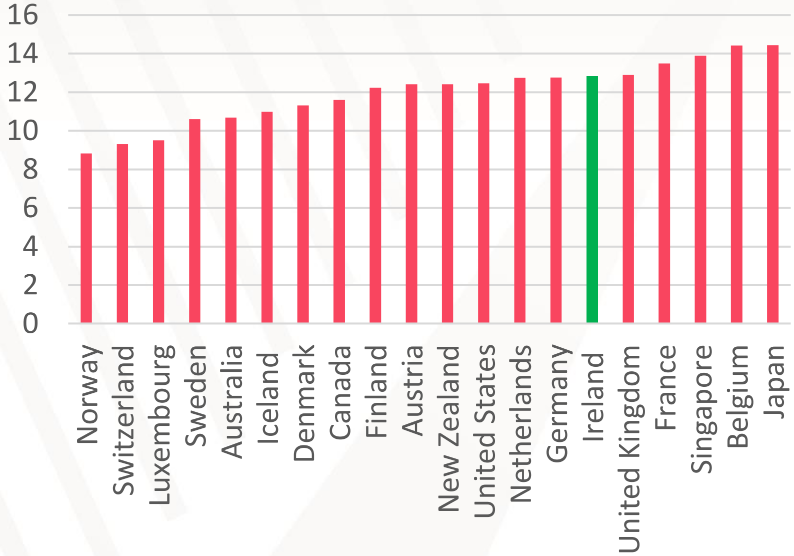
Source: Climate Change Performance Index; OECD Sustainable development report 2022

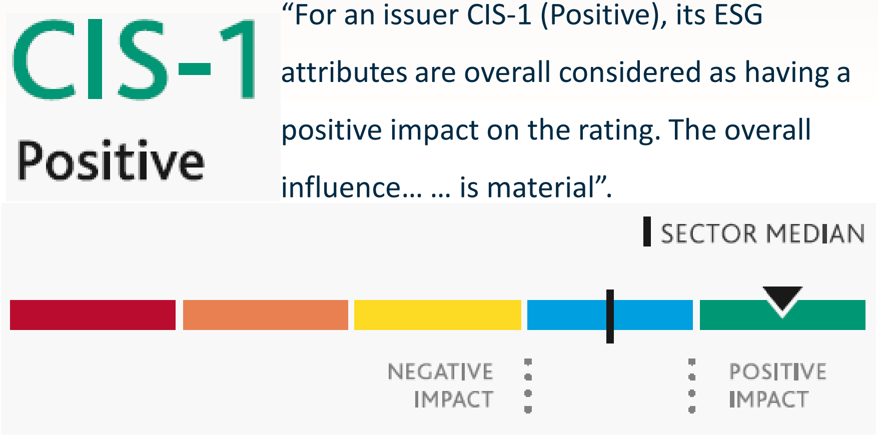
Ireland in top 20 most sustainable countries

Ireland rated highly by Sustainalytics and rating agencies on ESG

Ireland ranks 15th globally by Sustainalytics for ESG risk



Moody's view on Ireland much like other agencies – strong governance a key risk mitigant



"For an issuer CIS-1 (Positive), its ESG attributes are overall considered as having a positive impact on the rating. The overall influence… … is material".

Ireland's ESG Credit Impact Score:
"low exposure to environmental risk"
"a positive influence of its social considerations"
"very strong governance profile"

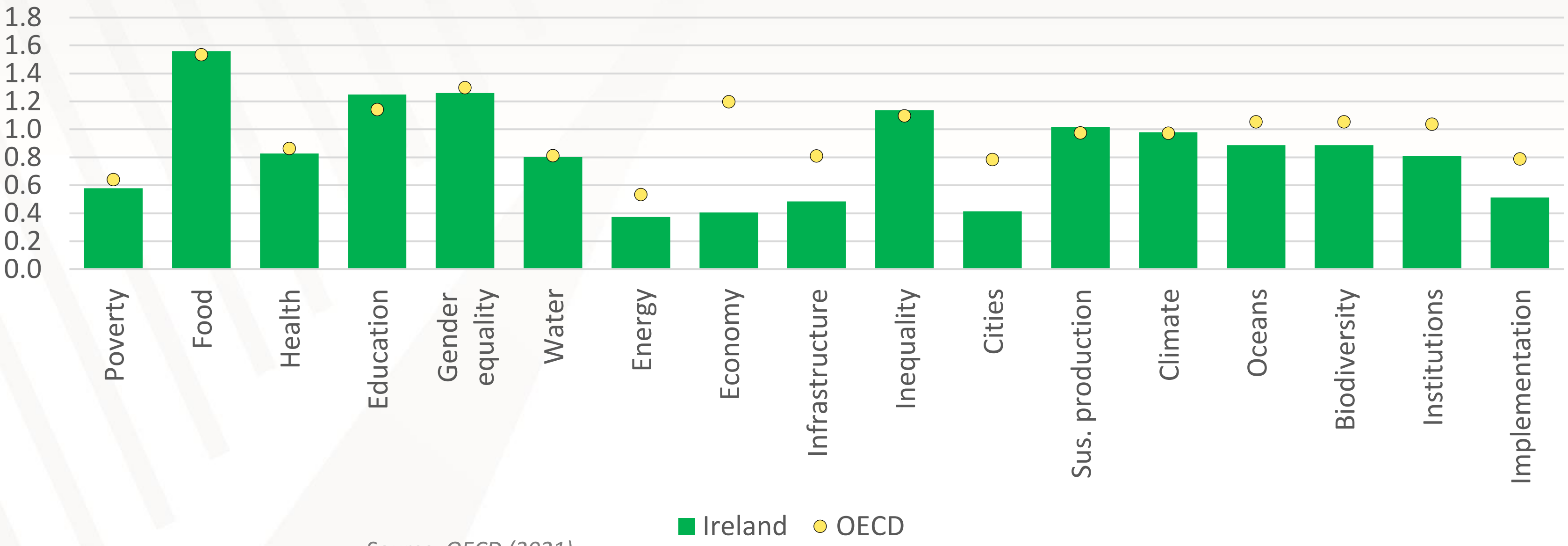
Gníomhaireacht Bainistíochta an Chisteáin Náisiúnta
National Treasury Management Agency

Source: Sustainalytics (2021), Moody's

Note: Sustainalytics score is out of 100, closer to zero means less ESG risk

Ireland compares well to OECD on “S&G”

Based on the 17 Sustainability and Development Goals of the UN



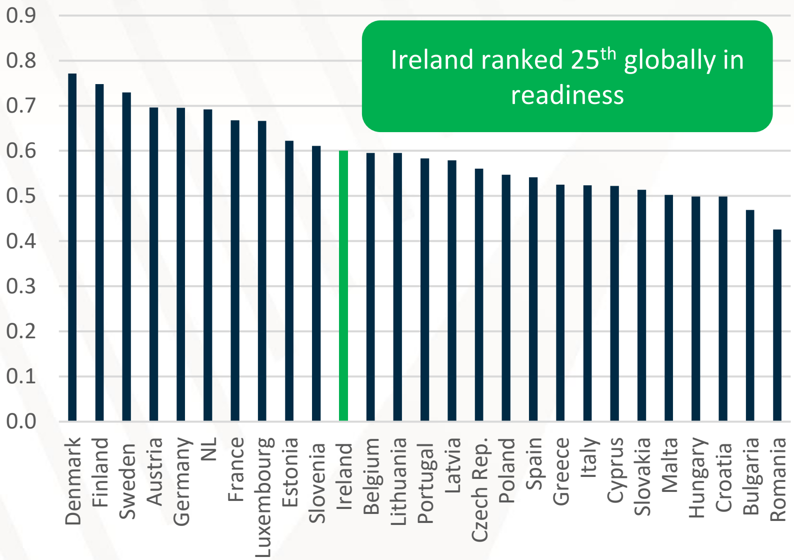
Source: OECD (2021)

Each bar shows “distance” country needs to travel to reach each SDG. Distances are measured in standardised units with 0 indicating that the level for 2030 has already been attained: and 3 is the distance most OECD countries have already travelled. Bars show the average country performance against all targets under the relevant Goal for which data are available, and diamonds show the OECD average.

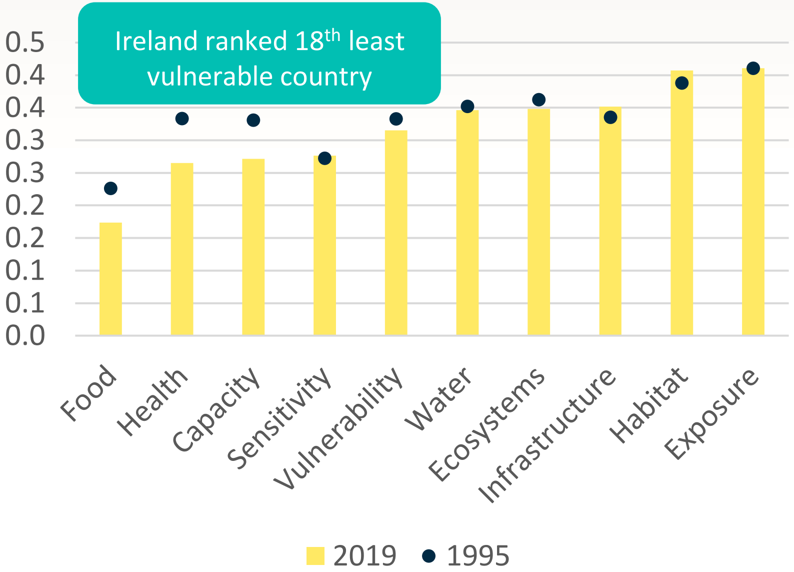
Readiness and vulnerability to climate change

Irelands vulnerability to climate change and readiness to strengthen resilience have improved

Ireland ranked middle of the pack for readiness* when compared to EU27



Ireland's overall vulnerability** has decreased 5.3% from 1995-2019



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Source: Notre Dame Global Adaptation Initiative

**Readiness: Measures a country's ability to leverage investments and convert them to adaptation actions.*

*** Vulnerability: Measures a country's exposure, sensitivity and capacity to adapt to the negative effects of climate change.*

Structure of the Irish Economy

Multinationals distort the “true” economic picture but offer clear benefits of jobs, income, taxes

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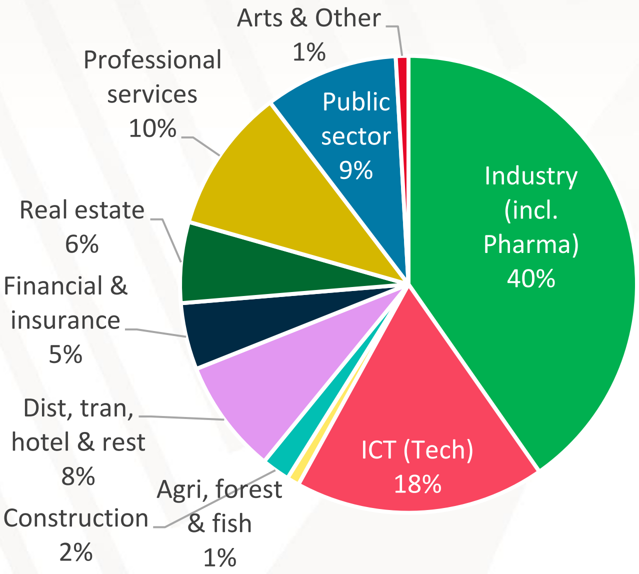
National Treasury Management Agency

Multinational activity distorts Ireland's data

Notwithstanding those issues, MNCs have real positive impact

Multinationals dominate GVA: profits are booked here but overstate Irish wealth generation



Domestic side of economy adds jobs; MNCs add GVA/high wages

	Share of Employment (2022 Q1)	Share of Wage Bill (2021)	Share of GVA (2021)
Agriculture	4.1%	1%	1%
Industry (incl. Pharma.)	**12.5%**	**14%**	**40%**
Construction	6.4%	4%	2%
Dist., Tran, Hotel & Rest	23.2%	17%	8%
ICT (Tech)	**6.6%**	**10%**	**18%**
Financial	4.9%	8%	5%
Real Estate	0.5%	1%	6%
Professional	10.7%	14%	10%
Public Sector	26.7%	29%	9%
Arts & Other	4.4%	2%	1%

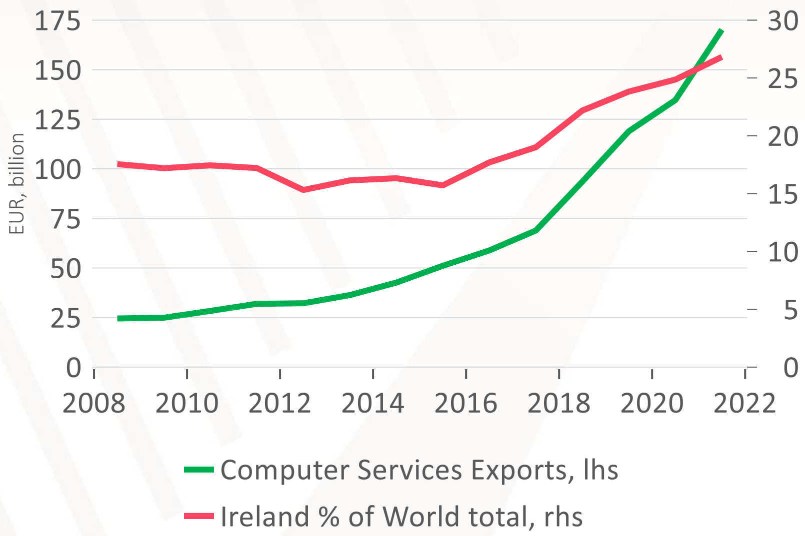
Source: CSO

2021 Real GVA used

€0.6trn of intellectual property into Ireland

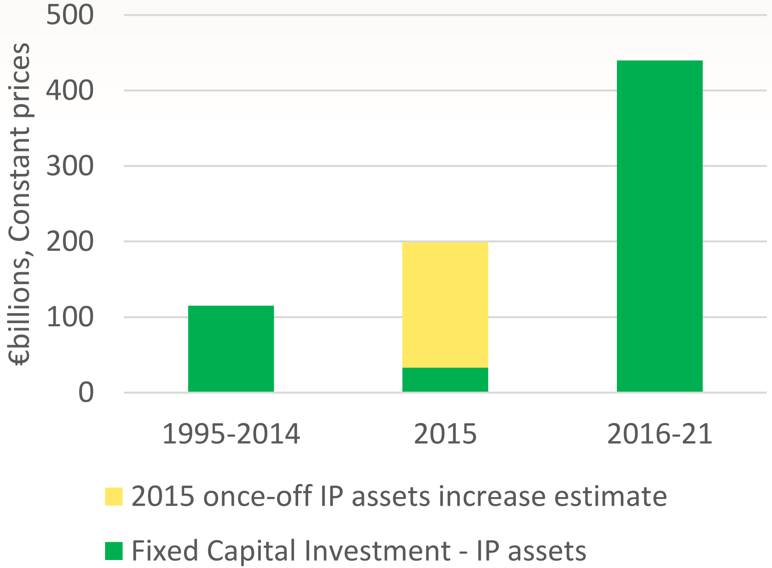
Assets brought here by tech. & pharma. in recent years

Ireland is now a leader in Computer Services; Exports have up from €50bn to €173bn since 2015



Source: CSO, WTO

Enormous inflows (c. €0.6trn) of IP assets into Ireland since 2015 on the back of BEPS 1.0 reforms



Source: CSO, NTMA analysis

Gníomhaireacht Bainistíochta an Chisteáin Náisiúnta
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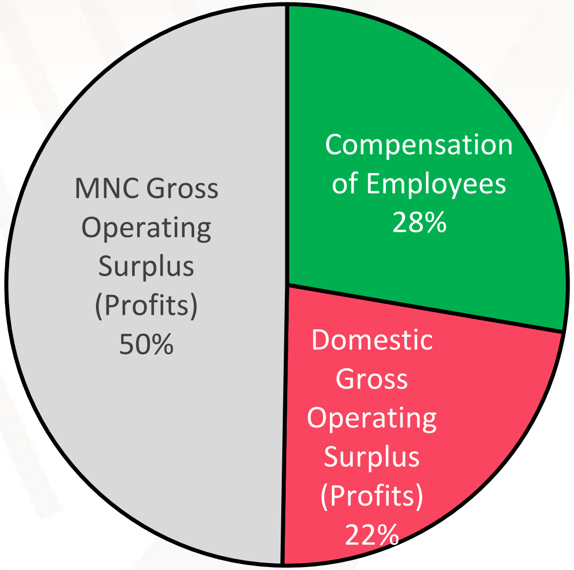
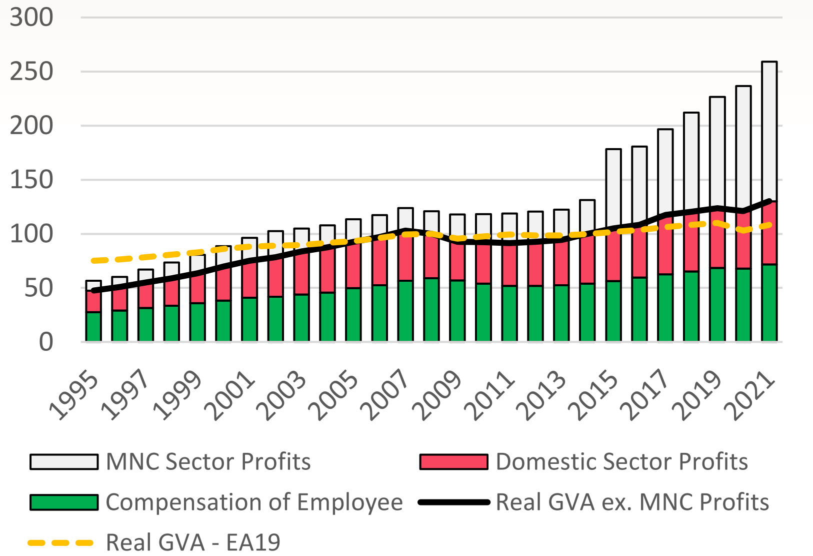
Underlying economy was robust pre-Covid

MNCs add real substance to IE economy as wage bill filters out to domestic sectors

Ireland's income = wages (all sectors) + domestic sectors profits + tax on MNC profits



Ireland, on an underlying basis, growing faster than euro area average in recent years (2008 = 100)



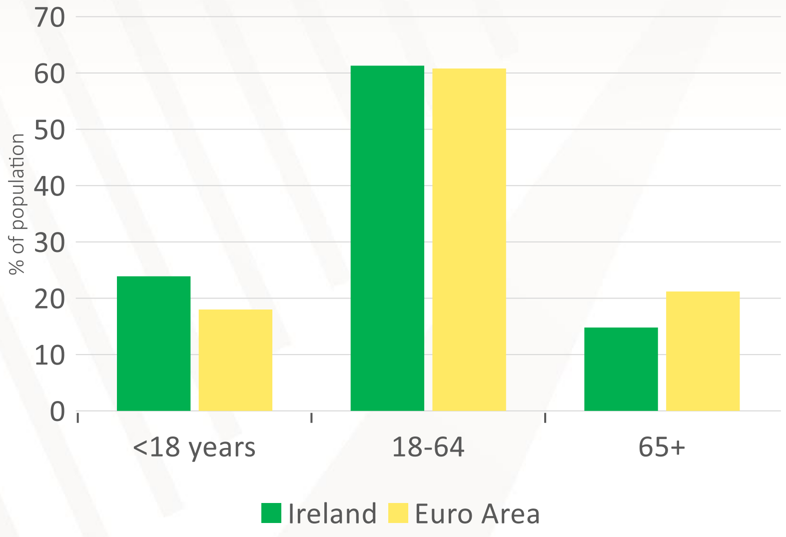
Source: CSO, NTMA calculations (Nominal 2021 data used in left chart)

Ireland's GVA data has been adjusted to strip out the distortionary effects of some of the multinational activity that occurs in Ireland. Specifically a profit proxy is estimated for the sectors in which MNCs dominate.

Ireland’s population helps growth potential

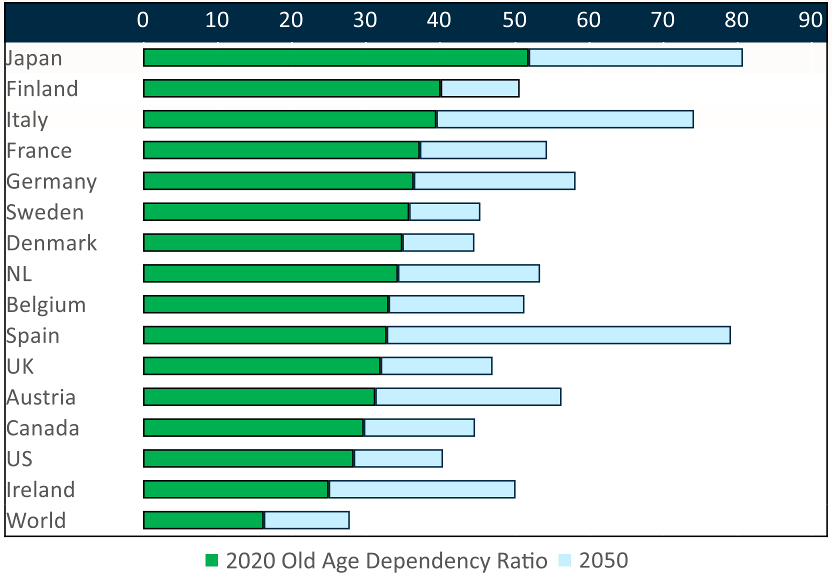
Age profile younger than the EU average

Ireland’s population at 5.12m in 2022: younger population than EU



Source: Eurostat

Ireland’s population will age in decades to come; to remain younger than most of its EA counterparts

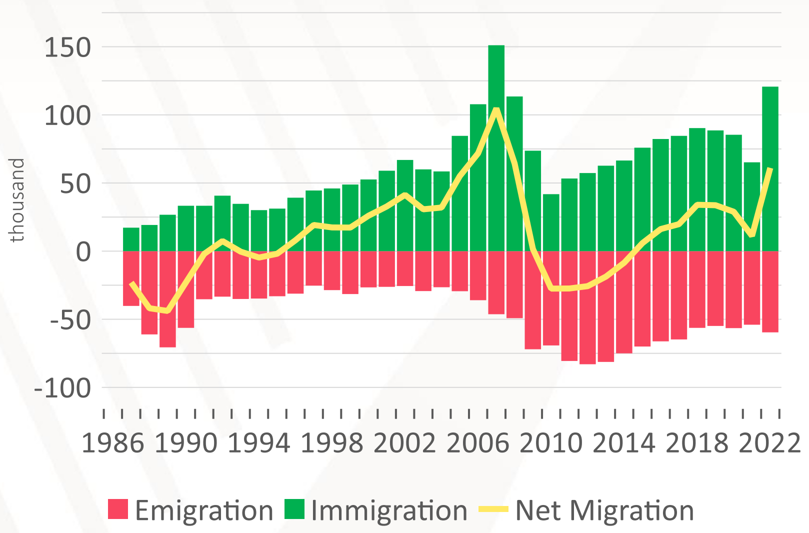


Source: UNDESA

Migration improves Ireland's human capital

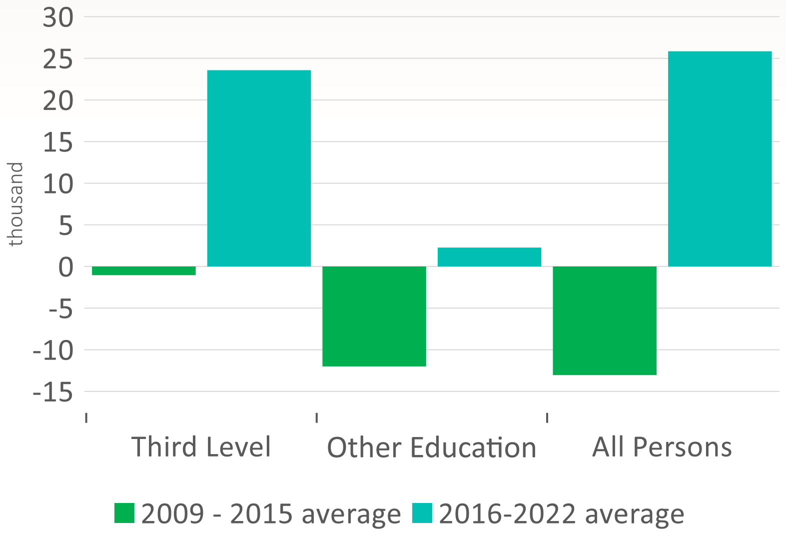
Ireland's net migration has swung back and forth on economic performance

Latest Census data show net migration positive since 2015 – recent slowdown due to Covid



Source: CSO

Migration inflow particularly strong in highly educated cohort – work in MNCs attractive



Source: CSO

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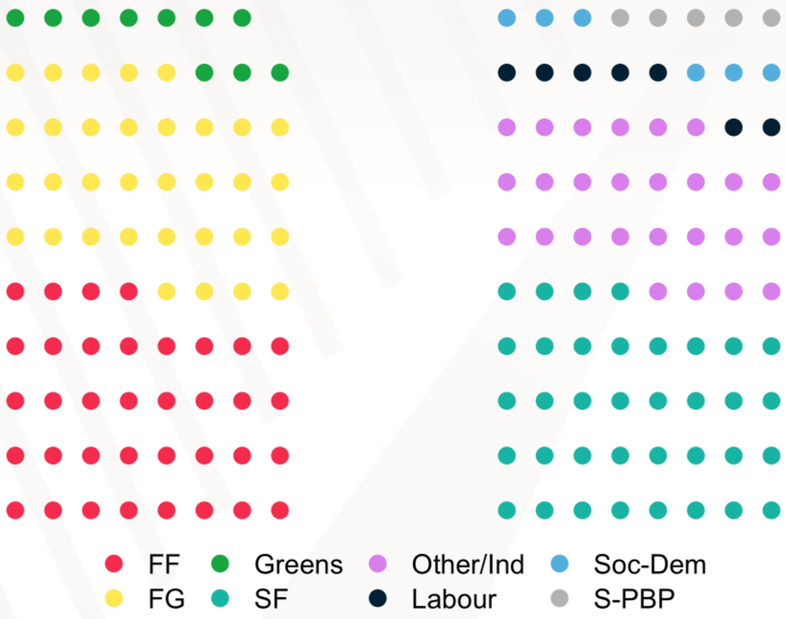
National Treasury Management Agency

Migration figures based on year to April

Ireland's Government

The composition of the Dáil Éireann is evenly balanced between Government and Opposition



Key information on the 33rd Dáil Éireann

- Leadership
  - Taoiseach: Micheál Martin (Fianna Fail)
  - Tánaiste: Leo Varadkar (Fine Gael) – (Martin and Varadkar swap roles in Dec 2022)
  - Leader of the Opposition: Mary Lou McDonald (Sinn Fein)
- Political groups
  - Government (79 seats, temporary lack of majority)
    - Fianna Fáil (36), Fine Gael (33), Green Party (10)
  - Opposition (80 seats)
    - Sinn Féin (36), Other/Independent (26), Labour Party (7), Social Democrats (6), Socialist – People Before Profit (5)
- Voting system: Proportional representation - Single transferable vote
- Last election: 8 February 2020
- Next election: No later than 20 February 2025

Source: Houses of the Oireachtas

Brexit

Free trade agreement has re-routed trade patterns

Gníomhaireacht Bainistíochta an Chisteáin Náisiúnta
National Treasury Management Agency

Free Trade Agreement in place

Allows for tariff free trade but non-tariff barriers have increased

Main points of FTA

- From January 1 2021, the UK became a "third country" outside the EU's single market and customs union. As such without a free trade agreement, trade would have been subject to tariffs and quotas.
- Under the deal, goods trade between the two blocs remain free of tariffs.
  - However, goods moving between the UK and the EU will be subject to customs and other controls, and extra paperwork is expected to cause disruptions.
  - Due to these non-tariff barriers, Brexit will likely result in less trade.
- Under the deal, services trade between the two blocs will continue but again could be hampered.
  - The Agreement provides for a significant level of openness for trade in services and investment.
  - But providing services could be hampered. For example, UK service suppliers no longer have a "passporting" right, something crucial for financial services. They may need to establish themselves in the EU to continue operating.
- The deal means less cooperation in certain areas compared to before Brexit. Financial and business services are only included to a small extent. Cooperation on foreign policy, security and defence will be lower also.
- Brexit is likely to result in less trade in the long run between the EU and the UK but the deal does avoid the worst case scenarios: Hard Brexit was averted and the economic impact to Ireland will be more modest.

Withdrawal Agreement signed in 2019

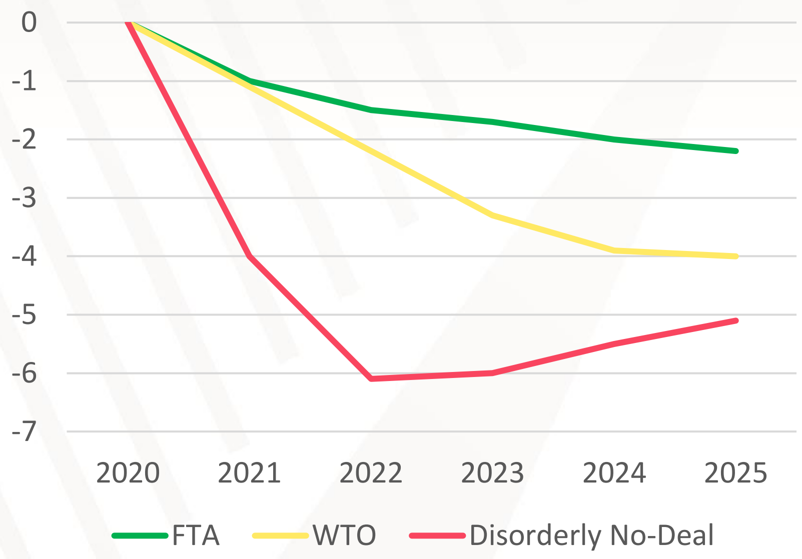
Northern Ireland protocol within Withdrawal Agreement resolves many but not all of the land border issues

- The withdrawal agreement is a legally binding international treaty which works in tandem with the free trade agreement.
- Northern Ireland will remain within the UK Customs Union but will abide by EU Customs Union rules – dual membership for NI.
- No hard border on the island of Ireland: the customs border is "in the Irish sea". Goods crossing from Republic of Ireland to Northern Ireland will not require checks, but goods that are continuing on to the UK mainland will.
- Complex arrangements will be necessary to differentiate between goods going to NI and those travelling through NI to UK or vice versa. Customs checks at ports, VAT and tariff rebates and alignment of regulations will be needed.

Impact of Brexit on Ireland likely net negative

Deal means the shock is smaller & spread over longer horizon

Modelled impact on output (in % of growth) versus No Brexit baseline: FTA reduces impact significantly



IE trading partners: UK important for good imports (land bridge) & services exports

% of total	Goods (2020)		Services (2020)		Total (2020)	
	Exp.	Imp.	Exp.	Imp.	Exp.	Imp.
US	31.2	15.5	13.5	35.0	20.6	30.7
<u>UK</u>	<u>9.1</u>	<u>23.1</u>	<u>14.4</u>	<u>6.6</u>	<u>12.0</u>	<u>10.0</u>
EU-27	39.6	34.9	30.6	11.7	34.2	16.8
China	6.8	7.6	2.9	1.6	4.4	3.0
Other	13.3	18.9	38.6	45.1	28.5	39.3

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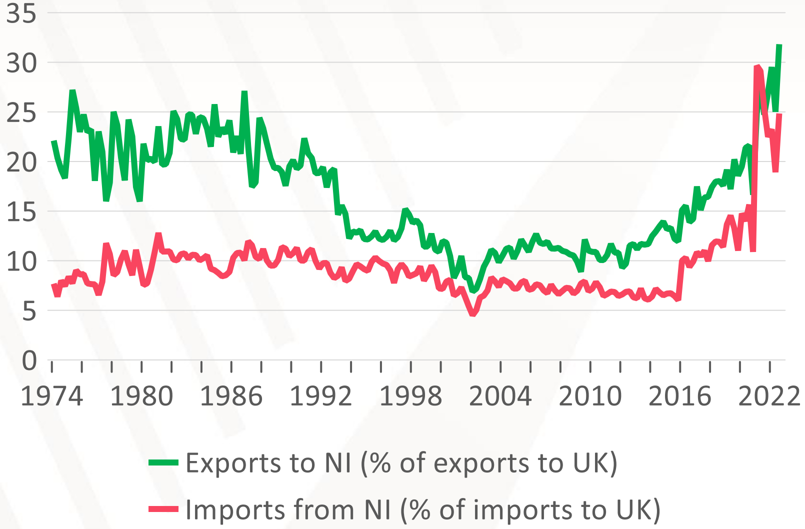
Source: CBI, NTMA analysis

Trading flows are changing after FTA

ROI-NI trade jumped in 2021, both imports and exports

NI trading route more important than ever for IE-UK trade – special trade status of NI a factor



Source: CSO

UK exit from single market will continue trend of lower goods trade between IE & UK

Source: CSO

Modest benefit: FDI inflows into Ireland

The UK (City of London) has lost degree of access to EU market

FDI: Ireland benefitting already

- Ireland could be a beneficiary from displaced FDI. The chief areas of interest are
  - Financial services
  - Business services
  - IT/ new media.
- Dublin is primarily competing with Frankfurt, Paris, Luxembourg and Amsterdam for financial services.
- The UK (City of London) has lost significant degree of access to EU market so there may be more opportunities in time.
- 2019 figures from the IDA have shown that at least 70 investments into Ireland have been approved since the announcement of Brexit.

Companies that have indicated jobs have or will be moved to Ireland

Barclays, Morgan Stanley, Citi, J.P.Morgan, Goldman Sachs, TD, Bank of America Merrill Lynch, Legg Mason Global Asset Management, S&P Global Ratings, Barings

Property & Banks

Significant price pressures resulting from a lack of supply and strong demand

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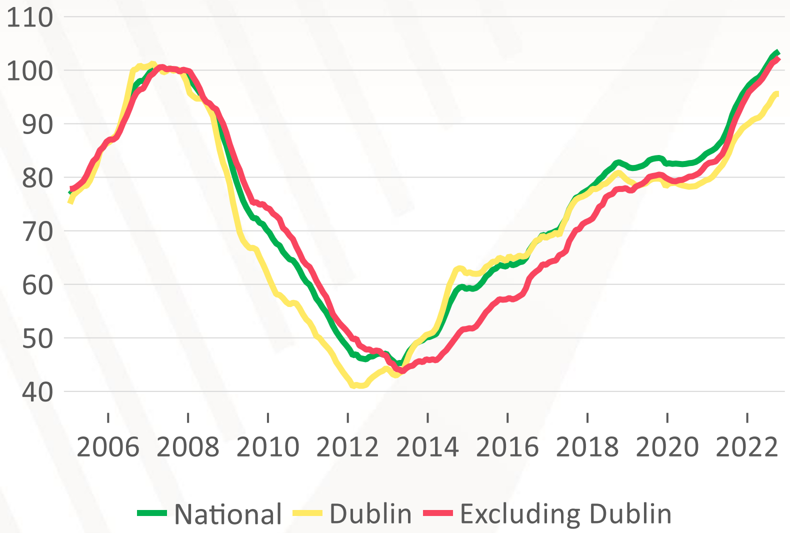
Prices have risen since Covid

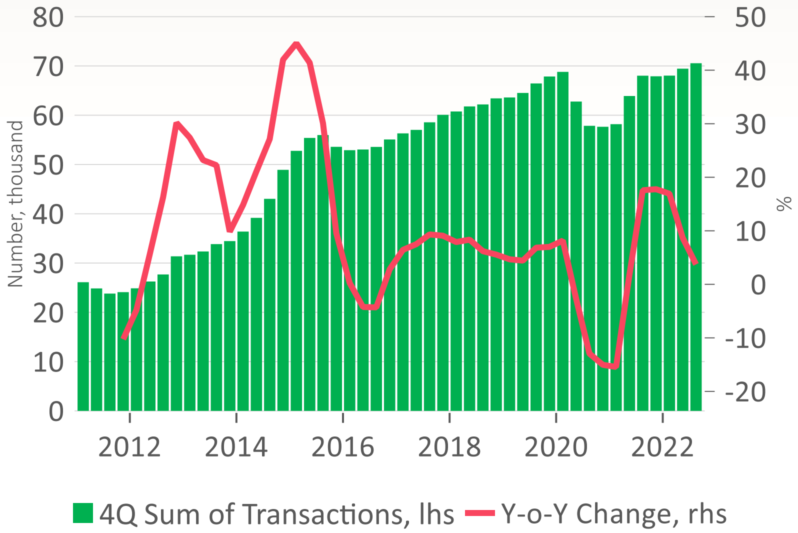
Supply hampered by the pandemic and construction inflation (c.33k units needed p.a.)

House prices up 9.8% y-on-y, now above previous peak in 2007



Source: CSO

Transactions now above pre-pandemic levels



Source: CSO

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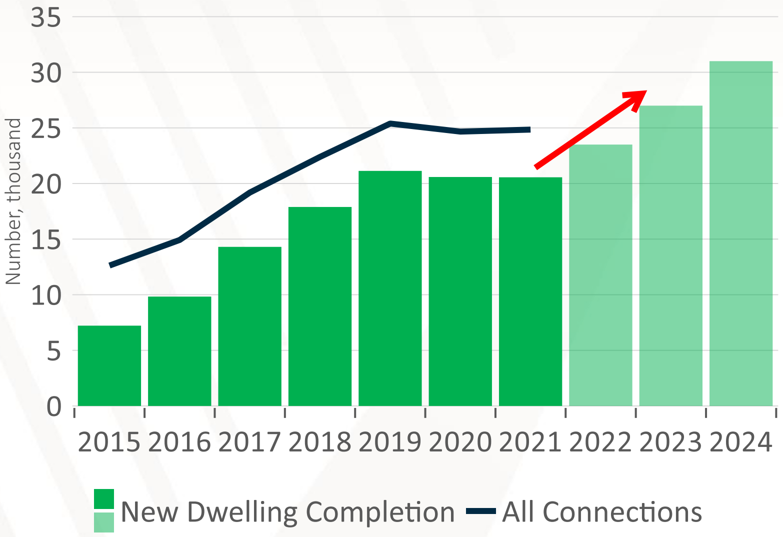
Supply outlook uncertain

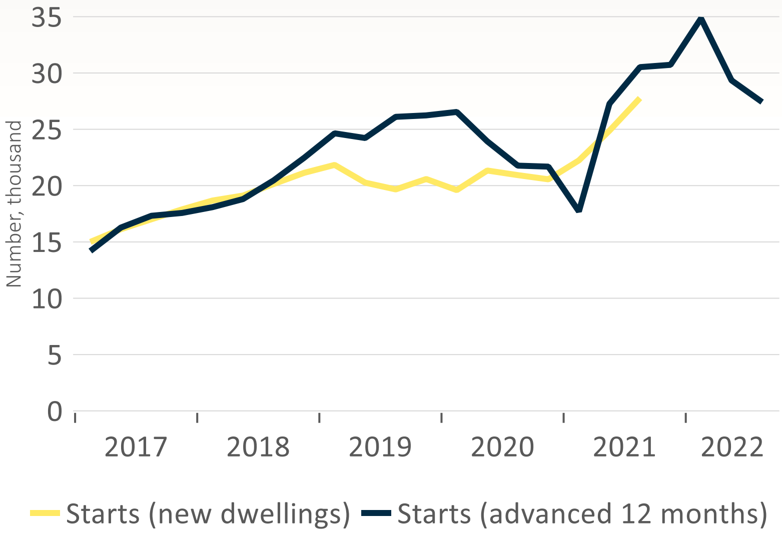
Scope for catch up in 2023 but set against input cost inflation and higher interest rates

New Dwellings Completions* forecasts revised down, estimated to be less than 30,000** in 2023



Source: CSO

Housing starts showed a pick up in supply in 2022, but supply chain issues and inflation may weigh on development



Source: CSO, Irish Department of Housing, Planning & Local Government

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* Housing completions derived from electrical grid connection data for a property. Reconnections of old houses overstate the annual run rate of new building (all connections in graph).

**CBI Forecast

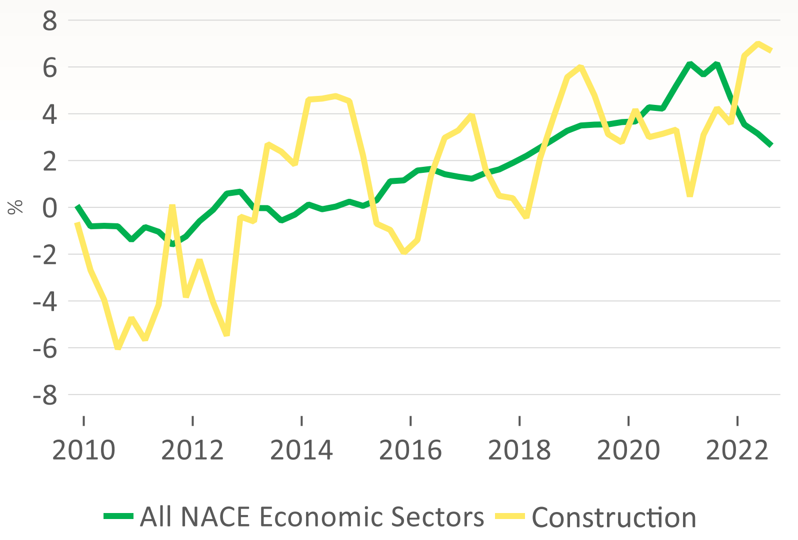
Inflation clear in construction sector

Increased material costs obvious along with large increases in labour costs

Materials up 17% year-on-year in September – may impede new development but inflation may have peaked

Source: CSO

Labour costs are rising, up 5% y-on-y in Q3 2022 vs. 3% for all sectors



Source: CSO

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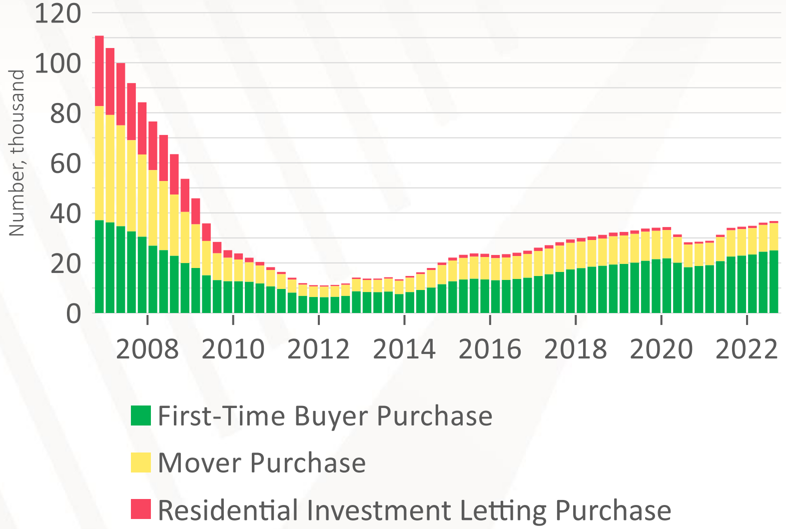
RHS = weekly earnings on a 4Q yearly growth rate

Demand is strong, drawdowns increasing

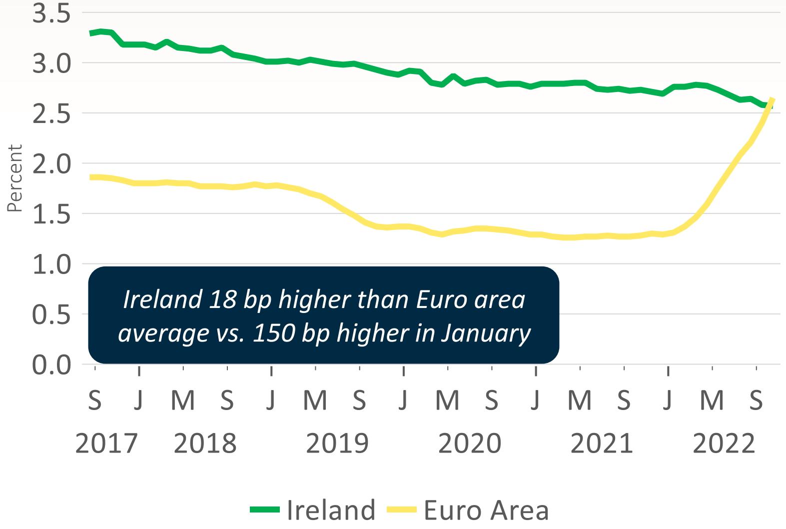
Amended CBI rules may increase demand; rates on new lending haven't risen yet

Mortgage drawdowns* continue to increase fuelled by strong demand



Source: BPFI

After years of higher priced mortgages, Irish rates** have moved toward EA average since January



Source: ECB

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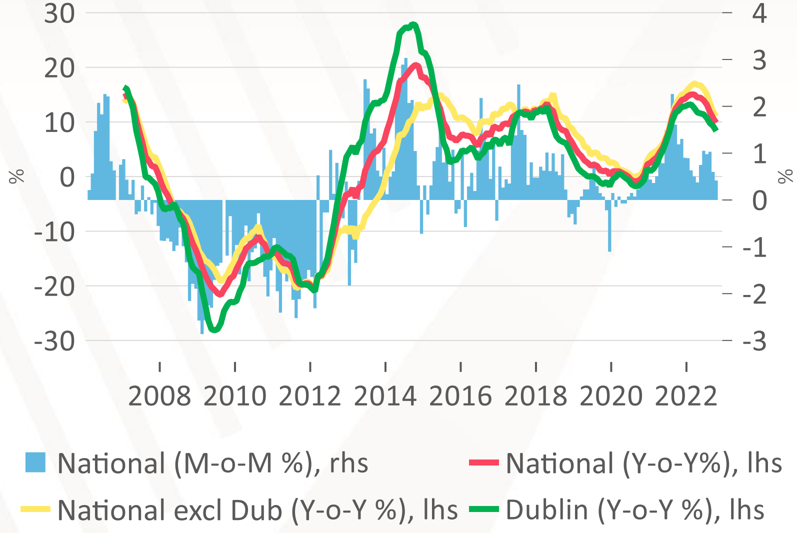
*4 quarter sum used (LHS)

** Mortgage interest rate on new lending for house purchase excl. revolving loans and others

House prices continue to rise

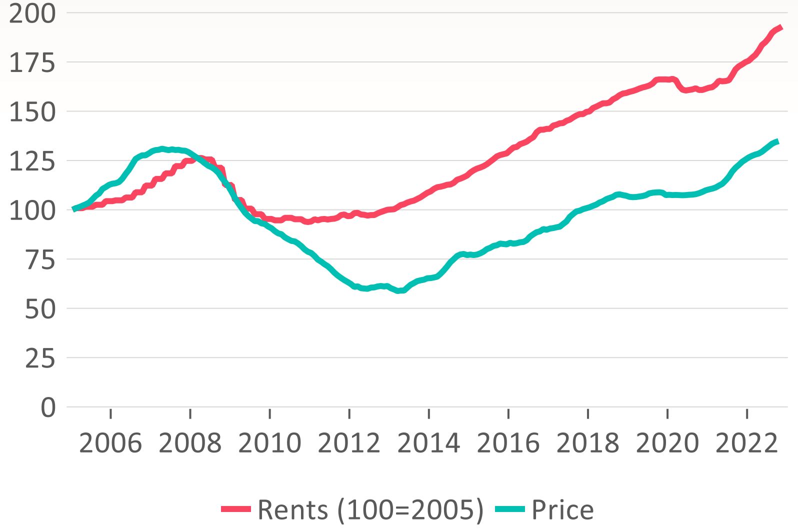
Inflation driven by strong demand, labour shortages and increased supply prices

House prices up 9.8% in the year to September 2022 with monthly growth still robust



Source: CSO

Rents pressures strong with a y-on-y increase of 11.1%



Source: CSO

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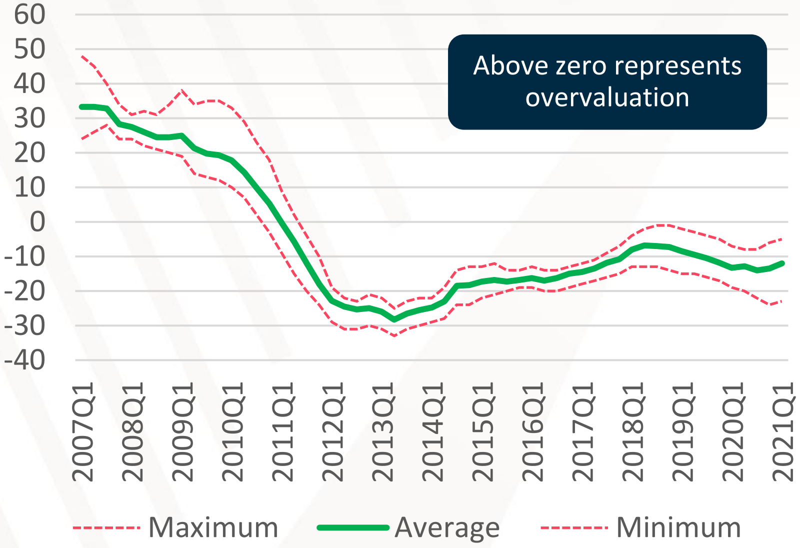
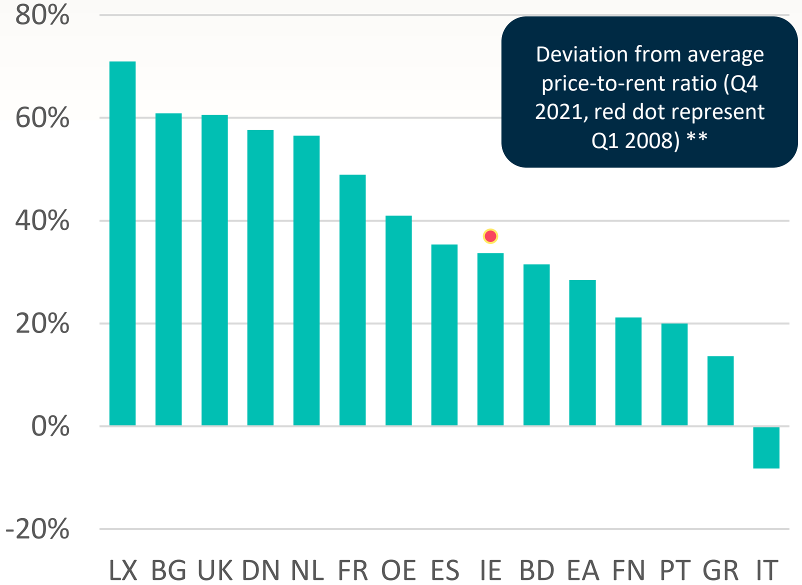
Price valuation metrics somewhat unclear

But the market is not comparable to mid 2000s

ECB estimates* indicate that residential prices in Ireland are currently undervalued…



…but by OECD measures they are above long run average price to rent metrics



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Source: ECB, OECD

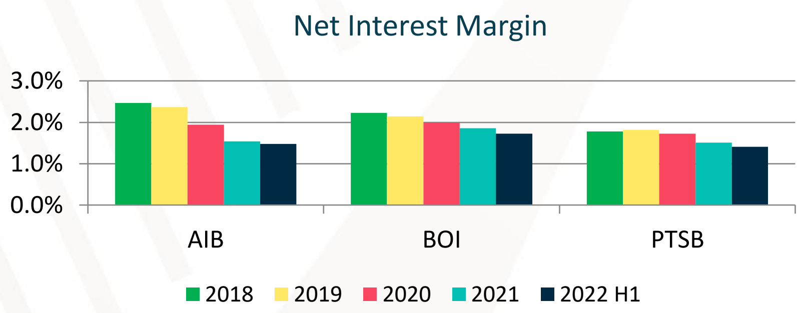
**Estimates based on methods relating to housing demand forces and asset pricing framework*

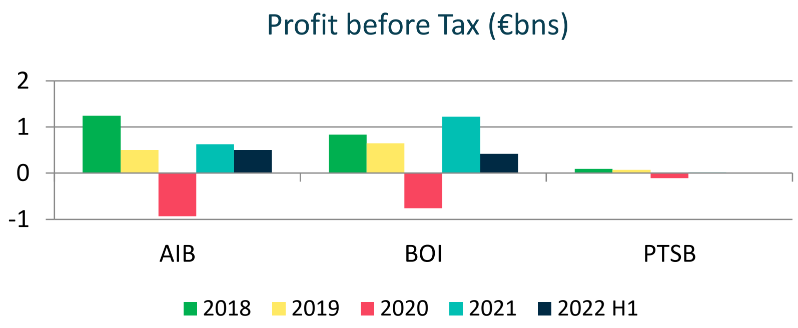
***Note: Measured as % over or under valuation relative to long term averages since 1980.*

Ireland's Banking Sector Overview

Less competition possible in decade to come

- Banks profitable before Covid-19: income, cost and balance sheet metrics much improved.
- Net interest margins will be helped by rising interest rate environment.
- Ulster Bank and KBC - both of which have no govt. ownership have decided to leave Irish banking market. Reduced competition is main impact.
- The Irish Government has sold its share in BOI. This leaves just AIB and PTSB with government involvement.
- A further tranche of AIB shares worth €396m were sold in Q4 2022. The Government still own approx. 57% of AIB.



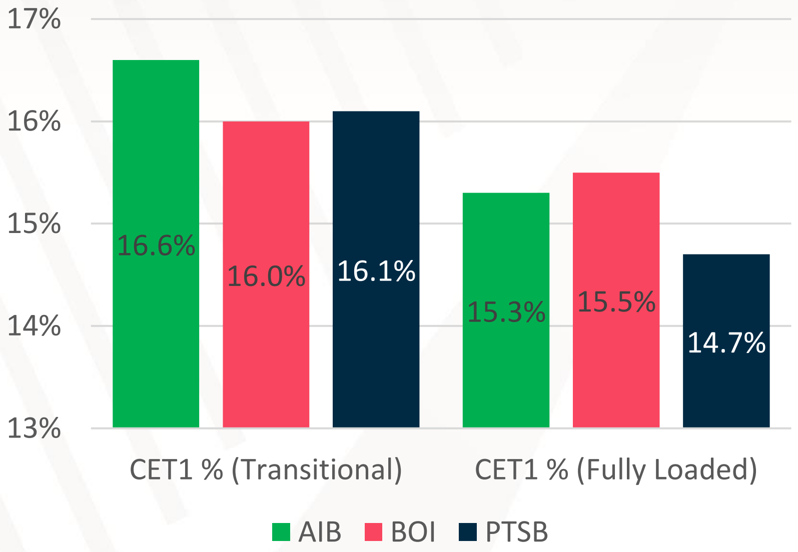


Source: Annual reports of banks - BOI, AIB, PTSB

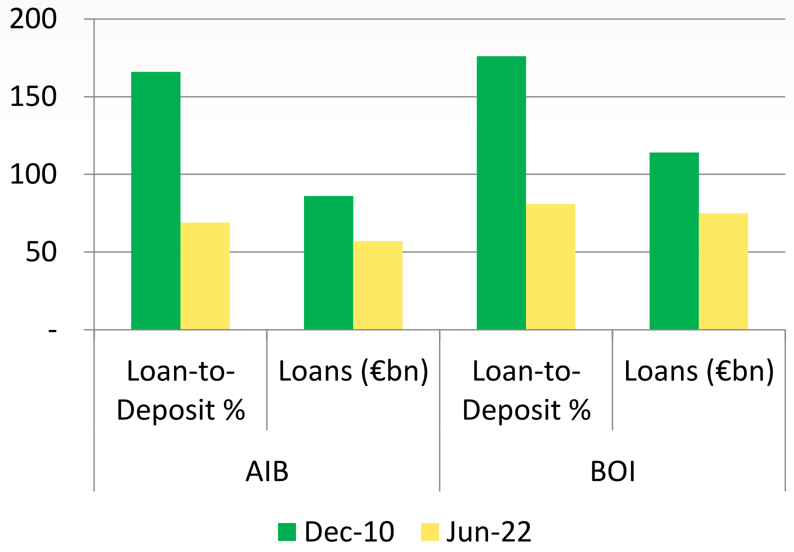
Capital ratios strengthened in last 10 years

Bank's balance sheets contracted and consolidated since GFC

CET 1 capital ratios allow for ample forbearance in 2022



Loan-to-deposit ratios have fallen significantly as loan books were slashed



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Source: Published bank accounts

Note: "Fully loaded" CET1 ratios used. Refers to the actual Basel III basis for CET1 ratios.

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